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From principles to practice

The Need for a Digital Environmental Strategy

WORKING PAPER #1



From Principles to Practice:

The Need for a Digital Environmental Strategy

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Abstract

This essay analyses the panoramic landscape of principles for the digital society that has emerged over the past five years. We find, firstly, a difference between principles that cover ethics, data quality and standardization; secondly, we argue that most of them are designed and formulated rather inconsequentially in the form of human rights to which nobody could object. A third characteristic of the landscape is that practically none of the principles have resulted in verifiable and enforceable measures. Nevertheless, they do represent a departure from exclusively economically oriented discourse concerning standardization that we have also observed and which has no place for citizens or other civic stakeholders in society. Finally, the set of principles mainly concerns general processes of digitization and rarely contains regionally or locally formulated goals.

We use two examples (citizens' measurements of noise pollution around Schiphol and political protest against smart lampposts in Utrechtse Heuvelrug), to show that the apparently harmonious context within which the ethical and quality principles and the ambition for standardization circulate, conceals important social oppositions (e.g. between the business sector, government bodies and citizens) and does not provide the responsible administrative bodies with clear tools to choose between opposing interests or bring them together. This is partly due to the fact that citizens and other parties often only become aware of digital solutions *after* they have been implemented, at which stage they have no other options than to accept or oppose. The principles, however, suggest strongly that digital solutions need to be developed, from the start, in collaboration with all societal stakeholders. Therefore we propose, in the final part of this essay, to ask local governments to complement their Environmental Strategy with a Digital Environmental Strategy.

1 Introduction

Municipalities, provincial government, ministries, regional water authorities and a broad range of other organizations are urgently exploring the principles for using digital and data technologies in society and public space. Increasingly, these discussions are focusing on automated data-processing and the analytics enabled by artificial intelligence.¹ The municipalities of Amsterdam and Eindhoven have jointly formulated values such as inclusion, openness, transparency, privacy and data ownership, which have echoed², among others, in the concise TADA principles.³ A closer look reveals numerous other attempts to establish ethical frameworks and societal participation for data use and artificial intelligence. Utrecht

¹ <https://www.rathenau.nl/nl/digitale-samenleving/overzicht-van-ethische-codes-en-principes-voor-ai>

² <https://innovationorigins.com/nl/eindhovense-smart-society-principes-gaan-landelijk/>

³ <https://tada.city/>

University and the Municipality of Utrecht, for example, together launched an ‘ethical data assistant’⁴; the Rathenau Institute published suggestions to reappraise public values in the digital society⁵; the Dutch green party GroenLinks is working on a Smart City Charter⁶; and the Association of Universities in the Netherlands (VSNU) has proposed a four-part set of data-science and societal standards.⁷ The digital society and responsible data use are also high on international governmental agendas. The cities that position themselves as ‘smart’ are especially leading the development of tool kits for responsible data use. They collaborate in alliances of cities and regions, such as the Cities Coalition for Digital Rights⁸ or the Sharing Cities Alliance⁹. The British government works according to the ‘GEMINI principles’, which state that data use must have clear purpose, must be trustworthy and must function effectively¹⁰, the government of Dubai’s key principle is that data and digital technologies should make its citizens happy¹¹, while the city of Barcelona’s main priority is to ensure digitization does not disadvantage its citizens.¹²

There is clearly something for everyone in the abundance of data principles that are currently circulating at the national and international level. What does that mean for Dutch governmental bodies seeking guidelines? Do they need to invent their own wheel or are the existing principles sufficiently instructive? How can the existing principles be adapted to specific provincial, regional or urban policy and culture? And who will be responsible for implementing and enforcing these principles? These are the questions that we will address in this essay.

We will first continue the analysis of the existing landscape of principles to see if we can find commonly shared values. We will see that the existing principles mainly describe process values (the how-question) and that the end values (the why-question) for digital and data technologies are far less clear. Dubai’s goal to strive towards making its citizens happy is uncommon in its explicitness. We will also observe that the principles are not very directive and have certainly not been operationalized into specific practices or administrative responsibilities. We will subsequently focus on how principles and guidelines can be practically implemented and what governance this will require. We will conclude that there is a need for various government bodies to develop a Digital Environmental Strategy analogous to the Dutch Environmental and Planning Act, within which responsible data use becomes the outcome of collaboration between the different stakeholders and their specific interests.

2 A broad landscape of principles

To get some grip on all circulating principles, we must first recognize that they cover different dimensions: a first set relates to ethics and social significance, the second group mainly concerns reliability and quality of the data systems and the third cluster concentrates on the issue of standardization. These differences are all related to the groups and organizations that propagated them, as we shall see below.¹³

⁴ <https://dataschool.nl/deda/>

⁵ <https://www.rathenau.nl/nl/digitale-samenleving/opwaarderen>

⁶ <https://wetenschappelijkbureaugroenlinks.nl/artikel/handvest-voor-de-slimme-stad>

⁷ <https://www.thedigitalsociety.info/about/data-principles/>

⁸ <https://citiesfordigitalrights.org/>

⁹ <https://sharingcitiesalliance.com/>

¹⁰ <https://www.cdbb.cam.ac.uk/system/files/documents/TheGeminiPrinciples.pdf>

¹¹ <https://www.smartdubai.ae/>

¹² <https://www.barcelona.cat/digitalstandards/en/digital-services/0.1/>

¹³ This is based on an ongoing systematic international study to explore and identify principles, which will be published in a scientific journal at a later date.

2.1 Ethical principles

Principles addressing the ethics and social significance of data use are the result of frustration about citizens having lost control of their own data and having no insight into how governments, businesses and international platforms use it. The TADA principles, for example, were developed because data could help cities become cleaner, safer, healthier and more pleasant, but 'only as long as people maintain control over data, and not the other way around.'¹⁴ The Cities Coalition for Digital Rights, a joint initiative of Amsterdam, Barcelona and New York that has already attracted some 30 affiliate cities¹⁵, strives to ensure 'policies, tools and resources to promote and protect resident and visitor rights online.'¹⁶ Likewise, the Smart City Charter by Dutch green party GroenLinks states that 'citizens and politicians must regain control of technological development.'¹⁷ The Sharing Cities Alliance also emphasizes the important role of politics and government – who just like ordinary citizens, have lost control – and therefore seeks to empower municipalities, particularly against the multinational platforms.¹⁸

Their collective assessment is that citizens, their representatives and their governments have become digitally vulnerable and, therefore, a set of carefully formulated principles is, necessary in order to mitigate and reverse this vulnerability. The initial proponents of this movement were progressive municipalities, in particular Amsterdam and Barcelona. Their leadership is not by chance, as they have the necessary electoral mandate for such progressive direction and an administration that is capable of implementing these principles. For example, Barcelona has formulated how participation, policymaking, procurement and licencing will be executed for each policy area in accordance with the city's digital principles.¹⁹

However, the formulated principles do reflect a much more general collection of public values than the original progressive policy would suggest. For example, the principles in GroenLinks's Smart City Charter (democracy, solidarity, human dignity, privacy, sustainability and equality) can be directly linked to the widely supported Sustainable Development Goals established by the United Nations, while the TADA principles also express a general human rights discourse rather than a specific progressive ideology. As early as 2017, the Dutch Rathenau Institute proposed 'digital human rights'.²⁰ The relative neutrality of the thus developing ethics enables a wide range of actors to commit to them, from government bodies and civic groups to social enterprises and local or national business. This neutrality also allows a diverse range of decisions to be made at the local level: the Municipality of Barcelona makes it impossible for Uber to operate in the city²¹ while, in contrast, the Municipality of Amsterdam uses Google to measure air quality in the city²². This mobilizing force is also enhanced by the format of the manifesto or charter in which these ethics are established: signing up to these manifesto is open and free for individual citizens and organizations alike. One joins a community of like-

¹⁴ <https://amsterdamsmartcity.com/projects/tada-data-disclosed>

¹⁵ <https://citiesfordigitalrights.org/cities>, consulted on 21/08/2019.

¹⁶ <https://oascities.org/amsterdam-barcelona-and-new-york-city-launch-global-coalition-to-protect-digital-rights/>

¹⁷ <https://wetenschappelijkbureaugroenlinks.nl/artikel/handvest-voor-de-slimme-stad>

¹⁸ <https://sharingcitiesalliance.com/about-us>

¹⁹ <https://www.barcelona.cat/digitalstandards/en/init/0.1/index.html>

²⁰ Van Est, R. & J. Gerritsen (2017). Human Rights in the Robot Age. Rathenau Instituut, with the assistance of Linda Kool. <https://www.rathenau.nl/sites/default/files/2018-02/Human%20Rights%20in%20the%20Robot%20Age-Rathenau%20Instituut-2017.pdf>

²¹ <https://www.bbc.com/news/business-47071710>

²² <https://www.google.com/earth/outreach/special-projects/air-quality/>

minded people who collectively formulate their ethical intentions and see them as shared responsibility, in a manner that transcends direct self-interest.

The mobilizing force of these relatively neutral digital ethics – which widely begin to take shape – may rest exactly in their somewhat inconsequential nature: it is undefined who can address those that violate the principles. Can all possible parties subscribe to a certain manifesto or charter? And if not, who can decide this? What happens when subscribing parties disagree? In areas where a particular government body has formulated or adopted digital principles itself, such as the province of Zuid-Holland²³, it seems obvious that the government body in question would be responsible for maintaining and enforcing digital principles, but their concretization and operationalisation does not keep pace with the discussions and is as yet absent. We will come back to this later.

2.2 Quality principles

A slightly different collection of principles that is being intensively (albeit less audibly) discussed, concerns the quality and reliability of data and data-related systems. After all, ethical use and application of data – whether ‘big’ or small – is not possible if data has not been correctly collected, indexed, stored, cleaned, analysed, presented and applied in the first place. This concerns the basics of data technology, in fact, and its correct and reliable application. Statistics Netherlands and quantitative social and behavioural scientists have traditionally played a key role in developing and maintaining such quality principles, aspects that have been formulated in terms of reliability and validity. However, the explosion of data in recent decades has brought new players in, especially data scientists. The Research Agenda for the Digital Society²⁴, published by VSNU in 2018, adopts their quality principles: FAIR data, ROBUST systems and FACT algorithms, all of which cover specific elements of data science. In contrast to the more general ethical principles, these focus much more on verifiable criteria that could even result in the establishment of a quality score for data practices conducted by the diverse range of government bodies, organizations and businesses.

The principle of FAIR data states that data should be Findable, Accessible, Interoperable and Re-usable. These four criteria have been operationalized into fifteen specific directives for the allocation of metadata and protocols, among other issues.²⁵ FACT is an acronym that reflects the efforts of data scientists to develop algorithms that function in a manner that is Fair, Accurate, Confidential and Transparent.²⁶ Finally, ROBUST systems are designed to be Resilient, Open, Beneficial, User-Oriented, Secure and Trustworthy. More and more scientists embrace and apply these criteria, although government bodies and the business sector have been far slower to adopt these principles into their practices. In these areas, it is difficult to say whether people have even heard of the criteria, whether the criteria function as guidelines or whether current data practices are or could be made compliant with them. One of the authors of this essay recently published a detailed analysis of three types of data projects that are popular within the municipal social domain: data warehouses, dashboards and predictive analytics.²⁷ She found that in this context the validity and reliability of the data itself cannot

²³ <https://www.zuid-holland.nl/@23133/visie-digitale/>

²⁴ <https://www.thedigitalsociety.info/wp-content/uploads/2018/04/VSNU-Digital-Society-Research-Agenda.pdf>

²⁵ <https://www.force11.org/group/fairgroup/fairprinciples>

²⁶ <https://redasci.org/>

²⁷ Van Zoonen, L. (2019). Opnieuw fatale remedies: een kritische reflectie op datatransities in het sociaal domein [More fatal remedies: a critical reflection of data transitions in the social sector]. *Sociologie*, 15(1), p. 19-45.

be guaranteed; that, as a result, any predictive model will be neither fair nor accurate; and that the people to whom the data relate are rarely informed of or involved. Her conclusion was that not only are municipalities probably breaking the new General Data Protection Regulation, but that the lack of data quality and the analytical models tend to lead to mistakes and stigmatization.²⁸

In the debate about responsible data use the quality principles for data science feature much less prominently than the ethical principles, although the two come together in the fear of autonomous algorithms whose actions and decisions nobody understands. According to the ethical principles, citizens, governments and politics must regain control of these algorithm; moreover, they shouldn't even be allowed to operate autonomously and they also should be maximally transparent. However, it is clear that for municipalities and other government bodies, it is much simpler to embrace the general ethical principles of responsible data use than to ensure that data systems are robust, algorithms are fair and accurate, and data are findable and exchangeable. These three quality principles require a series of organizational measures and financial incentives that are out of reach for most municipalities in the Netherlands (and other countries).²⁹

2.3 Standardization

A third set of principles on which a diverse range of actors is working relate to the standardization of the data infrastructures. These mainly cover two components of the FAIR principles: interoperability and re-usability. The exchange of data between government bodies, their various service departments and possible societal actors is currently severely hindered by huge variation in data collection, storage and modes of access. There have been countless attempts at standardization. Already in 2016, the European research project Espresso identified 88 organizations from 23 different countries working on standardization of and within 'smart cities', concluding, nevertheless, that it had been impossible to gain a clear overview of everything.³⁰

In the Netherlands, the NEN (Netherlands Standardization Institute) recently began consultations with local authorities, knowledge institutes and businesses about standards for smart cities, with the goal of ensuring that 'all kinds of parties will be able to develop applications enriched by data from other sources in order to provide higher-quality and more sustainable services.'³¹ Initially, attention will be paid to the standardization of open 'urban data platforms', as according to the NEN, these offer significant opportunities for residents and businesses in individual cities to collectively devise new solutions to specific urban problems.³² The NEN thus directly links the need for standardization of smart infrastructure to the ethics of openness and collectivity that speaks from the various manifestos and charters discussed earlier. This link between ethics and standardization is also reflected in the results of the standardization project Espresso. Among other issues, the research group is considering whether important ethical issues – particularly privacy issues – can be resolved via standardization.

²⁸ Idem, p.32-33

²⁹ VNG/Berenschot (2018) Datagedreven sturing bij gemeenten. https://vng.nl/files/vng/nieuws_attachments/2018/datagedreven_sturing_bij_gemeenten_lr.pdf.

³⁰ <http://espresso-project.eu/content/deliverables/>; deliverable d7.4, p.11

³¹ <https://www.nen.nl/Normontwikkeling/Doe-mee/Normcommissies-en-nieuwe-trajecten/NEN-smart-cities.htm>

³² Idem

The combined attention for standards and ethics is particularly striking if we compare the arguments of NEN and Espresso with the manner in which the International Organization for Standardization (ISO) introduces standardization in smart cities on its website. Here, it states that standards are the 'holy grail of an interoperable, plug-and-play world where cities can mix and match solutions from different vendors without fear of lock-in or obsolescence or dead-end initiatives.'³³ The more detailed explanation addresses how 'we' can optimally capitalize on the opportunities and improvements to public services that data offer. The same market-orientation is apparent in the Smart Cities standards of the British Standards Institute: first and foremost, these state that standardization offers the best solutions for the commercial and technical interests of smart city businesses and are necessary to accelerate innovation in the market.³⁴

Without further analysis, we cannot claim yet that mutually distinct philosophies of standardization exist, i.e. Dutch-European vs British-international. Nevertheless, the contrast between the NEN and Espresso on the one hand, and the BSI and ISO on the other, matches a more general discussion about the desirability of a European public model of the digital society as opposed to the corporate model led by the multinational superpowers Apple, Alfabet, Amazon, Google and Microsoft and the totalitarian state model taking shape in China.³⁵ The various arguments also show that rather than being a neutral technical coordination exercise, standardization always but often implicitly carries vital ethical choices.

2.4 Preliminary conclusions

Our exploration of the landscape of principles leads to a number of provisional and partial conclusions. Firstly, the principles to which all kinds of government bodies and social actors currently subscribe seem to be designed and formulated in a non-committal manner. They rarely rise above the level of general human rights that nobody could disagree with and seldom translate into verifiable and enforceable measures. Their importance only becomes apparent when they do *not* feature as principles, as we see, for instance, in the ISO and BSI standardization strategies. Secondly, it is striking that this set of principles primarily relates to the process of digitization. This must be 'good' in two respects: ethically responsible because everyone can participate and the data science must be of solid and reliable quality. To the extent that end goals are included (why are we doing all this?), they entail abstract values like liveability and efficiency. What do these relatively neutral process ethics mean for government bodies who wish to design their data practices according to ethical and quality principles?

3 Challenges for governments

The question about the meaning of the data principles for the practices of Dutch government bodies can best be explored by two concrete examples that demonstrate where the problems occur.

To start with, we will examine the do-it-yourself measurement movement, in which citizens independently measure everyday problems and issues in their local area using all sorts of sensors and mobile phone apps. The RIVM (National Institute for Public Health and the

³³ <https://www.iso.org/sites/worldsmartcity/>

³⁴ <https://www.bsigroup.com/en-GB/smart-cities/The-Cities-Standards-Institution/>

³⁵ Van Dijck, J., Poel, T. & M. de Waal (2016). *De platformsamenleving. Strijd om publieke waarden in een online wereld*. [The Platform Society: the battle for public values in an online world.] Amsterdam: Amsterdam University Press.

Environment) is an important player in this movement and has included a high volume of measurements taken by citizens working with cheaper sensors. Residents living near Schiphol Airport use the app Explain to measure the decibels produced by planes flying over, because the official measurements do not match their own experiences.³⁶ The same is happening with the pollution caused by Tata Steel³⁷ and levels of particulate matter in in Rotterdam areas³⁸. Such do-it-yourself measurement by citizens ties in perfectly with the ethical principles that we discussed earlier: giving people control of data and developing data together. The process of participation is thus ensured, but we encounter a problem when we add the principles of data quality. The systems with which these data are being collected differ greatly from each other, the citizen measurements are not officially validated and it is uncertain whether their measurements are replicable. Standardization of such measurements is also fundamentally impossible, as this would mean citizens are only allowed to take measurements if they do it according to the standards of others. Citizen participation could well lead us to a scenario in which different data sets (those taken by official institutions and those taken by citizens) contradict each other, for example, during discussion of the expansion of Schiphol, the pollution caused by Tata Steel or traffic flows in Rotterdam. What decisions must the local authority in question make in such situations? We already get a taste of such disputes via the comments of the institution officially responsible for noise measurement at Schiphol: it says that the citizens' app Explain does not differentiate between aircraft noise and background noise, the measurements made by the various devices cannot be compared and there is a substantial difference between measurements made in rural areas and urban areas.³⁹

A second example comes from the Municipality of Utrechtse Heuvelrug in the middle of the Netherlands. In 2018, the street lighting had to be replaced and the municipality wanted to experiment with lampposts to which all kinds of smart applications could be connected, such as cameras, 5G technology, sensors, chargers and lighting scenarios. The municipality had also devised a business case which enabled innovative entrepreneurs to purchase their own smart spot on the lamppost. At the time, other experiments with such smart lampposts were being conducted in places such as Hengelo, Eindhoven and Texel.⁴⁰ In 2017, a policy document for smart lampposts had been approved by the Amsterdam municipal council without issue.⁴¹ But in Utrechtse Heuvelrug, a group of citizens voiced serious concerns about the lampposts, particularly in relation to the possible radiation that 5G masts on the lampposts would cause. They organized consultations with councillors, a social media campaign and a series of community meetings. The resulting social unrest prompted the municipal council to completely withdraw the idea of smart lampposts.⁴² It is a wonderful example of citizen participation, be it with an outcome that directly contradicts the assumptions of ethical principles. Those suggest, by and large, that when everybody has their say and participates, a

³⁶ Stil, H. (2019). Omwonenden Schiphol meten geluidshinder zelf. [Schiphol residents measure noise pollution themselves.] *Het Parool*, 30 June.

<https://www.parool.nl/amsterdam/omwonenden-schiphol-meten-geluidshinder-zelf~b66f51c8/?referer=https%3A%2F%2Fwww.google.com%2F>

³⁷ Idem

³⁸ <https://www.rijnmond.nl/nieuws/183759/Onderzoek-naar-stikstof-Mensen-zijn-benieuwd-wat-er-gebeurt-in-hun-tuin>

³⁹ Idem, footnote 34.

⁴⁰ Van Dijk, J. (2018). Adviesrapport slimme lantaarnpaal in Enschede. [Advisory report on smart lampposts in Enschede.] Bachelor's assignment in Civil Engineering, University of Twente.

<https://essay.utwente.nl/75944/1/Dijk-Jarka-van.pdf>

⁴¹ Van Zoonen, L. (2017). *Linke Lantaarnpaal*. [Loony Lamppost.] *Sociologie Magazine*, March, p. 9.

⁴² <https://www.earth-matters.nl/11/14368/verborgen-nieuws/utrechtse-heuvelrug-tegen-smart-lantaarns.html>

collectively shared set of ‘good’ digital/data solutions to urban problems will pleasantly emerge. However, they do not take into account the fact that participating groups of citizens could be radically opposed to such solutions, as is the case in Utrechtse Heuvelrug.

The two examples show that the apparently harmonious context within which the ethical and quality principles and the ambition for standardization circulate, conceals important social oppositions and conflicts of interest (e.g. between the business sector, government bodies and citizens) and does not provide the responsible administrative bodies with clear tools to bring opposing interests together. The question whose data will be considered most important when deciding about the expansion of Schiphol Airport or the lampposts in Utrechtse Heuvelrug will come down to economic power and local political relations, even if all of the competing data sets could be standardized and made compliant with the desired ethical and quality principles.⁴³ The examples also show that if a government body is forced to make decisions concerning digitization, the principles mainly serve as necessary preconditions (‘this must be implemented at the very least’), but do not provide firm foundations on which decisions can be based. This is because they embrace process values and present the end goals as mere operational ambitions: urban problems will be solved more efficiently, markets will become more innovative and government bodies and other organizations will be able to offer faster and more personal services.

Technology critic Evgeny Morozov calls this type of thinking ‘solutionism’: the conviction that every problem can be solved with technology.⁴⁴ However, neither the technology itself nor the desired solutions are neutral and equally beneficial to all⁴⁵, as is demonstrated by the examples. For this reason, the current landscape of principles also needs signposts to precise and substantive end-goals. As explained earlier, these are currently pointing to the values of the multinational market economy (US) on the one hand and the values of the centrally governed state (China) on the other. In the former model, citizens are consumers, the government keeps it distance and only provides services to citizens, while in the other the citizens are subjects and the government controls and directs everything.⁴⁶ Neither scenario gives citizens or their representatives any control of how (process values) and to what end (end-values) their digital society is developing. In this regard, we have made much more progress in urban areas in the Netherlands and Europe, as shown by our analysis of the landscape of principles. It established that there is a reasonable degree of consensus concerning how we must further develop the digital society, although the question as to what end has not yet been extensively debated. How can we encourage discussion of these end-goals, what kind of digital society do we want anyway, and what role should the government play?

4 Digital Environmental Strategy

In the Netherlands, the various civil services cannot play an independent role in formulating the end-values for society as they need a public mandate to do so. Within the confines of the laws and human rights, there are infinite opportunities for citizens and social movements to explore, formulate and promote such end-values and negotiate them into policy. This happens simply through elections, but also through referenda and other forms of public consultations and – to an increasing degree – via direct citizen involvement in the policy preparation and execution that take place in living labs, testing grounds, learning studios, community

⁴³ Also see Van Zoonen, L. (2014). Data delirium. *Sociologie Magazine*, September, p. 10.

⁴⁴ Morozov, E. (2012). *The net delusion. How not to liberate the world*. London: Penguin Books.

⁴⁵ <https://www.open-overheid.nl/interview/marleen-stikker/>

⁴⁶ Footnote 33, idem.

enterprises, etc. Citizens can also take over government duties if they think they can do better, an initiative put forward under the motto *'The right to challenge'* (R2C). The Environmental and Planning Act (Omgevingswet), which comes into force in 2021, even obliges governments to 'take the various regional interests into account' while considering the planning and regeneration of public space. It states that 'at the moment, government bodies are often the sole party involved in project decisions.'⁴⁷

The latter sentence, about government bodies often being the only parties involved in planning, is particularly interesting in the context of the ethical principles discussed earlier. The process values they propagate, demonstrate the same need for to shape our society collectively and in collaboration, rather than leaving it solely to government bodies, multinational corporations or a combination of the two. One could say that the ethical principles express a need for a Digital Environmental Strategy. It should not come as a surprise that spatial policy can offer a source of inspiration for the further concretization of principles for the digital society. After all, we have been using spatial metaphors for a long time, such as the electronic highway, The Digital City⁴⁸, testing ground or data warehouse. 'If we involve everybody in the design and discussion of physical public space, then why don't we do this for the design of digital public space: data warehouses, dashboards, analytics and algorithms?'⁴⁹

One can simply copy all the work that has gone into designing the Environment and Planning Act. The Ministry of the Interior and Kingdom Relations in the Netherlands has already assembled an extensive collection of tools for the creation of an Environmental Strategy and indicated exactly which steps need to be taken in the process. Inevitably, this begins with an analysis of existing policy and the formation of a broad project group. But then the ministry dictates that a whole range of external partners need to be engaged to jointly formulate the ultimate ambition for the environment and 'construct the story'.⁵⁰ According to the logic of the Environmental Strategy, it is not enough to simply guarantee the process values. If everybody has had their say, and the quality of the construction and spatial design (the data structure) is high, then the final results must represent a shared ambition and story, i.e. an end-value. By definition, the objective for the digital society must not be purely economic, as we found to be the case in the BSI and ISO standards. It also cannot imply a top-down governance model, as is the case in the oppressive Chinese system⁵¹. Therefore, the Ministry of the Interior has advised municipal government bodies to consider their own role in the development of their Environmental Strategy, which can vary between regulatory, collaborative or facilitative.⁵²

If the process values are focused on collectivity and collaboration, then it makes sense that the end-goals will also place the emphasis on the 'shared story' as propagated by VSNU in its Research Agenda for the Digital Society⁵³. There, so-called SHARED standards serve as

⁴⁷ <https://www.rijksoverheid.nl/onderwerpen/omgevingswet/vernieuwing-omgevingsrecht>

⁴⁸ This was the name for an early internet platform initiated in Amsterdam (De Digitale Stad)

⁴⁹ Van Zoonen, L. (2019). Datadrang. [Craving data.] In: *Data in de stad*, Platform 31, print edition.

⁵⁰ <https://aandeslagmetdeomgevingswet.nl/wetsinstrumenten/gemeente/omgevingsvisie/starten/>

⁵¹ Furthermore, a number of critics claim that the manner in which the national and regional government bodies in the Netherlands make use of social data opportunities does not differ much from the Chinese state control model: <https://bijvoorbbaatverdacht.nl/syri-medio-2019-voor-de-rechter/>

⁵² <https://aandeslagmetdeomgevingswet.nl/wetsinstrumenten/samenhang/omgevingswet-alleen/kies-sturingsstijl/>

⁵³ The SHARED values were initiated by the LDE Centre for BOLD Cities.

assessment criteria for the human-centred digital society alongside the aforementioned technical quality principles for data science.⁵⁴ These stand for the following definitive values:

- **Sustainable**, i.e. the digital strategy and policy must be compatible with the ecological environmental agenda as well as being implementable and effective in the long term. Therefore, the collaboration between all parties involved cannot be a one-off: it must be continually repeated and embedded.
- **Harmonious**, which means that the digital strategy and policy must be open and inclusive, respectful of legal and moral frameworks and civil behavior, and must not further inflame existing differences.
- **Affective**, as the digital strategy and policy must also recognize and take into account the fact that technology does not raise purely rational issues: it can evoke a wide range of positive and negative emotions for particular individuals and groups.
- **Relevant**, which means that the digital strategy and policy must particularly involve the groups and interests that will be most affected by digital and data technology. In the social domain, for example, this will mean that benefit recipients will have to participate much more than they currently do in discussions concerning how the data transitions in the social domain should be designed and implemented.⁵⁵
- **Empowering**, i.e. the digital strategy and policy must also enable all parties to understand and evaluate the technology in question, and whenever possible, to use it.
- **Diverse**, the final value, not only entails that the diversity of society must be recognized and acknowledged, but also that the technology itself must be designed in a way that enables it to be used and applied in a diverse range of ways.

The SHARED values have been formulated in a sufficiently broad manner to enable a wide range of operationalisations and facilitate the ever-changing dynamics that characterizes all digital strategies and policy. Nowadays, technology and society are changing so rapidly that the ability to make constant adjustments to the design of digital and data technology must be a built-in feature. For this reason, the innovation community now likes to talk about things being in a state of ‘permanent beta’⁵⁶ while critical technology researchers prefer to use the term ‘contestable by design’⁵⁷.

Evidently, we do not pretend that the SHARED values will prevent disputes and conflicts of interest. Although the collaboration between government bodies, businesses, knowledge institutes and citizens (or their representatives) are seen as a vital factor in ensuring successful and widely supported innovation, it is inevitable that differences, delays, arguments, annoyances, frustration and failures will crop up along the way. All levels of government play a dual role in this regard, both as collaboration partner and – in our opinion – as the only party within this complex network that is capable and legitimized to take an overarching role as the guardian of the collective process and end values. We cannot expect citizens, businesses or knowledge institutes to always take each other’s ideas and interests into account: this

⁵⁴ <https://www.thedigitalsociety.info/wp-content/uploads/2018/04/VSNU-Digital-Society-Research-Agenda.pdf>

⁵⁵ For the complete and detailed version of this argument, see Van Zoonen, L. (2019). Opnieuw fatale remedies: een kritische reflectie op datatransities in het sociaal domein [More fatal remedies: a critical reflection of data transitions in the social sector]. *Sociologie*, 15(1), p. 19-45.

⁵⁶ Welling, W. (2017). Permanent bèta. i-Bestuur online, 11 October. <https://ibestuur.nl/weblog/permanent-beta>

⁵⁷ For example, see the work of Gerd Kortuem at Delft University of Technology: [https://pure.tudelft.nl/portal/en/persons/gw-kortuem\(d3f86f6b-35c6-438d-957d-e82b650d4bac\)/publications.html](https://pure.tudelft.nl/portal/en/persons/gw-kortuem(d3f86f6b-35c6-438d-957d-e82b650d4bac)/publications.html)

responsibility can and must be fulfilled by the government, which have been given the mandate to do so by the citizens who elected it. Admittedly, this is easier said than done as each of the individual government bodies contains a diverse range of contrasting and conflicting opinions as well, especially in relation to digital and data strategy. Differences of opinion also sometimes occur between different ministries and government institutions regarding the objectives for the implementation of digital and data technology.⁵⁸ The appointment of the municipal privacy officers – as mandated by the GDPR – has, for instance, created countless conflicts of interest between departments that want to do more with digitization and data and these new privacy gatekeepers who are responsible for interpreting the new law.⁵⁹

How should the alderman of Utrechtse Heuvelrug resolve the streetlighting issue⁶⁰ and how should the government proceed with the general development of principles for the digital society? The process values for the design of the digital and data technologies have already been solidly formulated, as was shown by the first part of this essay. It is also clear that the government must carefully consider its desired end values for the digital society, as we stated in part two. Furthermore, in the final part, we made an academically supported recommendation for the development of these end values and suggested that a Digital Environmental Strategy is the perfect tool to enable collective and good (from both an ethical and technical perspective) design of digital and data technology. For now, our task is at an end, and we'd like to close by considering that through such Digital Environmental Strategies, the Netherlands and its provinces, municipalities and regional water authorities could potentially set a unique example in the quest to establish a digital society controlled not by the state or gigantic digital platforms, but by each and every one of us.

⁵⁸ See, for example, the Letter to the Dutch Lower House of Parliament from the Minister of Economic Affairs and Climate Policy concerning public interests in relation to data provision. Dutch Lower House, Session Year 2018-2019, 35 000 XIII, no. 81.

⁵⁹ See, for example, Harthoff, S. (2017). Gemeenten hopen op duidelijke regelgeving voor sensoren. [Municipalities hope for clear legislation on sensors.] *Binnenlands Bestuur*, 31 October, <https://www.binnenlandsbestuur.nl/digitaal/nieuws/gemeenten-hopen-op-duidelijke-regelgeving-voor.9574094.lynkx>; and Schoemaker, R. (2018). Gemeenten moeten kiezen tussen twee kwaden. [Municipalities have to choose the lesser of two evils.] IB&P, dat gaat je niets aan, 7 March. <https://privacy-gemeenten.nl/2018/03/gemeenten-moeten-kiezen-persoonsgegevens-2/>

⁶⁰ The authors are currently in discussion with the alderman in question regarding the exploration of possible solution scenarios.