

The Dutch "Digi Commissioner" (2014–2018) An Abortive Attempt at National Digital Governance

ALEXANDER CLAVER, LEIDEN UNIVERSITY AND DELFT UNIVERSITY OF TECHNOLOGY, THE NETHERLANDS

Abstract

The Dutch governmental digital infrastructure (Generic Digital Infrastructure; GDI) is a vital element of state functioning. This article investigates the governance of the GDI as exemplified by the activities of the Digi Commissioner (officially the 'National Coordinator Digital Government'). In 2014 the Digi Commissioner was made responsible for coordinating and re-structuring GDI-governance. Early 2018 his tasks were transferred to the Ministry of Interior Affairs. Some progress was made, but according to the Digi Commissioner himself the GDI still leaves much to be desired and is far from future proof. The article will discuss the Dutch digital infrastructure by adopting several perspectives. First, by defining and describing the development of the GDI. Second, by analysing the activities and achievements of the Digi Commissioner. Third, by applying behavioural economics and securitization concepts offering relevant insights with regard to the (lack of) GDI-progress.

Keywords: Digi Commissioner, Digital Infrastructure, Digital Governance, Behavioral Economics, Securitization, The Netherlands

1. Introduction

This paper focuses on the so-called "Digi Commissioner" (National Commissioner Digital Government), who was responsible for the governance of the Dutch digital infrastructure from 2014 to 2018. The generic – or core – digital infrastructure (Generieke Digitale Infrastructuur, or GDI) is of vital importance for Dutch government and society, and ultimately for the country's earning capacity in the digital age. (See Appendix 1 for a schematic overview of the Dutch GDI.) However, this recognition has far less substance than would appear from the appointment of the "Digi Commissioner" – partly resembling the tasks and duties of a national government CIO – in May 2014. Professional attention within the bureaucracy, academia, or media remained limited. As will be seen, the GDI as a topic – as personified by the "Digi Commissioner" – was largely neglected.

The state of the Dutch digital infrastructure still leaves much to be desired and is far from future-proof, as acknowledged and explained by the Digi Commissioner himself just before the end of his tenure (Eenhoorn 2017a). This begs the question: Why? Arguably, the indispensability and potential leverage of the GDI as a government tool warrants academic scrutiny. This requires a clear understanding of the limited results of the "Digi Commissioner" initiative and – by proxy – decisions regarding the governance of digital developments. The following paper focuses on the history of the Dutch digital infrastructure culminating in the

appointment of a Digi Commissioner tasked to address GDI's feeble governance structure. An assignment he did not, and could not, fulfil for a number of reasons. The "experiment" of the "Digi Commissioner" will serve to show the importance of subtle human psychological processes at play here.

Definition issues, digital relevancy and the historical context of the "Digi Commissioner" initiative will be sketched first. Second, the outcome of this "experiment" will be assessed from a securitization and behavioral economics perspective since considerations of rationality and rational actor behavior alone fail to answer the unsatisfactory results of the "Digi Commissioner's" activities. It will be shown that connecting security issues to psychological (governance) mechanisms has more promising explanatory value. The concluding paragraph will summarize and present the research results, and provide some considerations regarding the future of the Dutch digital infrastructure.

2. Research approach

What follows is a contextual narrative description linked to a specific case study: the Dutch GDI. This approach derives from Lars Mjøset, according to whom a researcher selects the case (the "Digi Commissioner"), and then defines the context (the GDI) – i.e. those elements to be treated as the environment of the case singled out (Mjøset 2009, 46-47). The concept of analysis as a narrative owes much to the work of Hayden White and Frank R. Ankersmit. Both have argued the importance of combining facts (singularities) into a narrative plot (representation of reality) (White 1973; Ankersmit 1983). The coherency between the facts is provided by the author whose personal and professional interests and choices shape the final narrative representation (Lorenz 1998).¹

According to information technology specialist Wyatt only narrative history can do justice to the richness and complexity of the "stories", i.e. the case studies she described (Wyatt 1998, 58). In the eyes of Flyvbjerg it is often not possible nor desirable to summarize and generalize case studies, given their contextual complexity. Good case studies should in his opinion be read as narratives within their context and in their entirety (Flyvbjerg 2006, 237-241). The historical investigation below is based on literature research.² The analysis itself is contextual, and offers a narrative description of the GDI with a security and behavioral economics focus.

2.1 Security Context

The functioning of Dutch government and society are highly dependent on safe and sound GDI performance. (See paragraph 3.2 for a description of the digitalized tax service system in the Netherlands and its huge benefits depending upon secure and undisturbed operations.) Security might be at stake here, but the realization that security considerations are of relevance is not a given. Security can be viewed as a factual condition, but at the same token security is always a construct. Securitization theory recognizes this and considers security a social and

¹ A possibly unexpected, but excellent, example of how this process works can be found in the work of the Dutch scholar in medieval studies F. van Oostrom. See, in particular, his book *Nobel Streven* (Van Oostrom 2017), in which methodological issues of the kind described above figure prominently.

² Much time and effort was spent on collecting relevant and accessible primary and secondary sources in order to provide a comprehensive overview of research material. This includes the availability of recent large-scale evaluations of the "Digi Commissioner", "Delta Commissioner", and "Key Registry System" – based on hundreds of stakeholder interviews – as well as annual quantitative monitoring reports of the GDI, and the "Key Registry System" as its core component. The "Digi Commissioner" did not answer requests to discuss his GDI experience.

inter-subjective construction, whereby something is turned into a security issue by labeling it as such (speech act). By stating that a particular referent object is threatened in its existence, a securitizing actor can justify extraordinary measures to ensure the survival of the referent object. That a given subject is securitized means that someone has successfully constructed an existential problem.. Securitization thus investigates how a certain issue is transformed by an actor into a matter of security to allow for the use of extraordinary measures. To be successful the securitization act must therefore be accepted by the audience, regardless of the subject matter being a real threat.

2.2 Behavioral Context

The fusion of psychological and economic concepts since the 1990s has inspired a new field of science: behavioral economics.³ Behavioral economics differs from classical economic science in using a more realistic and complicated model for people and institutions, while differing from psychology in focusing on institutions and the organizational contexts in which (economic) decisions⁴ are made (Darling, Datta, and Mullainathan 2013). Here, behavioral economics is defined as studying the effects and consequences of psychological factors on the (economic) decisions of individuals and institutions (Camerer 1999; Wilkinson and Klaes 2012, 2-11).

Behavioral economics uses psychology to inform economics by improving the realism of the psychological assumptions underlying economic theory, and delivering better predictions about economic behavior and better policy prescriptions as a result thereof (Camerer 1999, 10575; Rehman 2017, 131). In other words, it extends rational choice theory by increasing the explanatory power of economic science through more realistic psychological foundations (Frederickson 2012, 193-218; Wilkinson and Klaes 2012, 3; Mathis and Steffen 2015, 45).

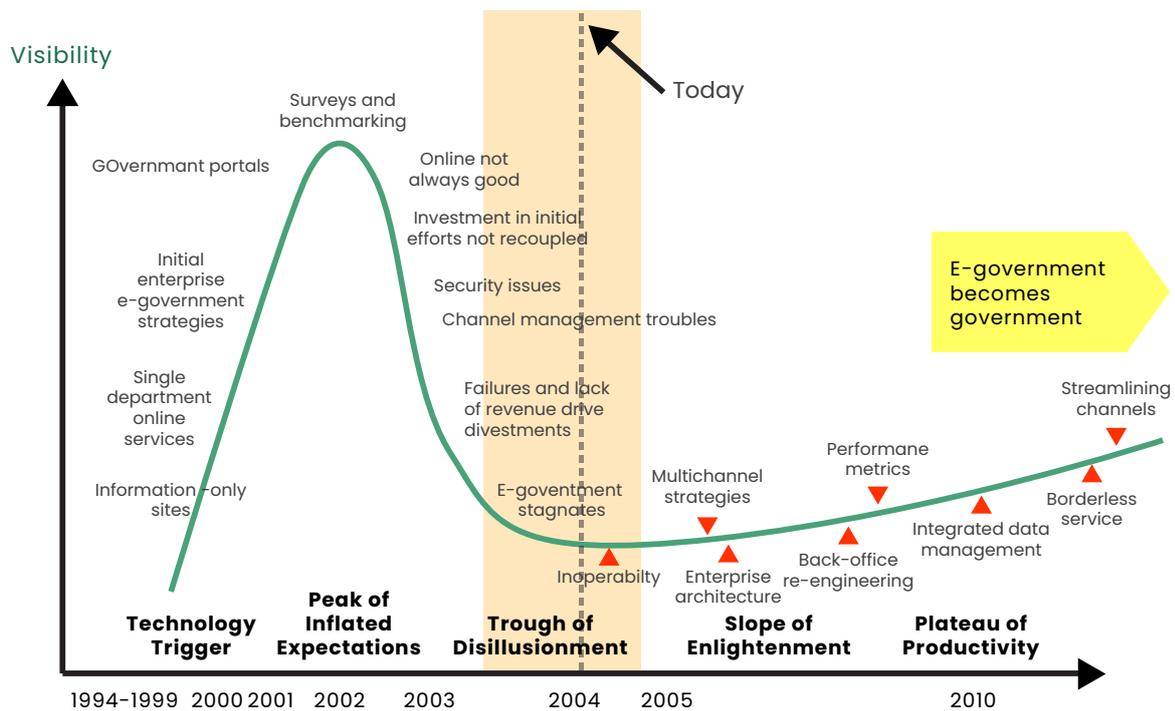
3. eGovernment and Digital Infrastructure: Definitions and Relevancy

The development of governmental digital infrastructures is linked to the existence and maturing of so-called eGovernment initiatives which surfaced in the 1990s (*e-Government Primer* 2009, 1-3). See Figures 1 and 3 below.

³ Detailed and highly readable overviews of the field of behavioral economics are Kahneman 2011, Thaler 2015, and Lewis 2016. For a good, short academic introduction to the field, see Baddeley 2017.

⁴ People and institutions have to fulfil their needs with limited resources at their disposal. Economic decision-making refers to the process of identifying and choosing between alternative options/courses of action in a condition of scarcity. For the Digi Commissioner this translated into deciding what aspect of GDI-governance would warrant his attention first: e.g. legislation, funding, security, communication, administrative support, etc.

Figure 1. eGovernment initiative, 1990s-post 2010



NB: Governments worldwide have been developing digital services as they became aware of the benefits. The timeline presented here is a visual impression of eGovernment becoming (virtual) real government.

Source: *e-Government Primer*, infoDev/World Bank (Washington, DC, 2009), 3.

This paper uses the following definitions of eGovernment and eGovernance:

"eGovernment focuses on the use of new information and communication technologies (ICTs) by governments as applied to the full range of government functions. In particular, on the networking potential offered by the Internet and related technologies, which has the potential to transform the structures and operation of government." (OECD 2001).

"Electronic governance or eGovernance is the application of IT for delivering government services, exchange of information, communication transactions, integration of various stand-alone systems between government to citizen (G2C), government-to-business (G2B), government-to-government (G2G), Government-to-employees (G2E) as well as back-office processes and interactions within the entire government framework" (Saugata and Masud 2007).

Without a digital infrastructure in place eGovernment is a non-starter. The potential leverage of a national digital infrastructure as an instrument of eGovernment policy – benefiting the state as well as its citizens and businesses – is easy to recognize. A digital infrastructure is a vital element of (digital) state functioning. By collecting, connecting, correlating, and analyzing the huge amounts of data circulating within a digital infrastructure, governments can make use of the digital opportunities on offer. This enables them, for instance, to consolidate or

broaden their tax base and/or improve government service levels in national healthcare and education. An ideal-type breakdown of benefits accruing from digital services illustrates eGovernment’s large potential and clearly shows what is at stake for its beneficiaries (see Figure 2 below).

Figure 2. Breakdown of eGovernment benefits

BENEFITS	GOVERNMENT	CITIZENS & BUSINESS
Direct Financial Benefits	<p><u>Cost reduction</u></p> <ul style="list-style-type: none"> - freeing resources for public and private innovation - increasing value of products and services 	<p><u>Burden reduction</u></p> <ul style="list-style-type: none"> - simplified administration - provision of higher valued and faster services - saving time and money - Improvement of equity
Direct Non-Financial Benefits	<p><u>Capture of investment benefits</u></p> <ul style="list-style-type: none"> - synergy across service delivery channels - sharing and re-use of data for pro-active service delivery - promoting access as part of channel management 	<p><u>Increased user satisfaction</u></p> <ul style="list-style-type: none"> - 24/7 service - Improving personalization and service quality - Improving access and equity - addressing security and privacy concerns - Transparency - Choice
Indirect Benefits (Good Governance as a Public Good)	<p><u>Legitimacy support</u></p> <ul style="list-style-type: none"> - supporting security and trust at aggregated levels - modernization and transformation of the public sector - ensuring equity - increased responsiveness - Accountability - Participation 	<p><u>Growth support</u></p> <ul style="list-style-type: none"> - improvement of business environment - creating an information society - establishment of an infrastructure for secure and reliable transactions

Source: adaptation of *e-Government Primer*, infoDev/World Bank (Washington, DC, 2009), 31.

At the same time, governments have to guard data security, and prevent breaches – accidentally or purposefully – from impairing data confidentiality, integrity, and availability. If not, this will rapidly corrode citizens’ trust in their government. When zooming in on data integrity it is clear that without maintaining the highest level of integrity, analysis of the available data will produce wrong or sub-optimal results upon which policy decisions are based. Once recognized by the general public this will lead to a reduced sense of (data) trust, and by implication a reduction of citizens’ trust in the reliability of government/state functioning.⁵ Though far from practice, cyber security should therefore be of paramount

5 See also Figure 2; items "Legitimacy support" and "Increased user satisfaction".

importance from a government’s perspective; being a far-reaching phenomenon extending into commercial life, law enforcement, and the military sphere (including both defensive and offensive measures). This includes a robust governance of the national digital infrastructure.

3.1 Dutch Digital Initiatives

The appointment of a "Digi Commissioner" in 2014 did not come about in a digital government vacuum. Governmental implementation of ICT developments has been underway for decades (Wierda 2004, 7-8, 73-74). Digitization efforts by the Dutch administration began in the 1980s with information and computer technology starting to support government administration. Figure 3 below shows eGovernment initiatives multiplying from the 1990s onwards (Memorie van Toelichting 2016, 4-60; Pieterse 2009, 36-38). The government’s awareness of digitization benefits slowly increased, translating into a national eGovernment implementation program (2009-2014).⁶ In 2013 "Digitaal 2017" envisioned the transition of all contact (either personal, by telephone or letter) between the state and its citizens to digital services towards the end of 2017 (Visiebrief Digitale Overheid 2017).

Figure 3. A non-exhaustive list of Dutch e-government programs

Year	Title	Main Points
1990	BIOS-II	For the first time ICT is recognized as a means to improve service delivery.
1994	BIOS-III	Primary function of ICT becomes service delivery.
1995	Elektronische Snelwegen (Electronic Highways)	New channels (Internet, GSM) gain attention. Internet is seen as a tool to improve services and improve internal efficiency.
1996	OL2000	Introduction of the "one-stop-shop" idea. First aimed at the physical counter, later on the online channel.
1998	Boven NAP, Herijking Actieprogramma Elektronische Snelwegen (Above NAP, Recalibration Program Electronic Highways)	Focus on the possibilities of ICT's for international collaboration and service delivery.
1998	Elektronische Overheid (Electronic Government)	Extension of the thought about making government more efficient and affective, focal point is the Internet.
1999	Digitale Delta (Digital Delta)	Specific attention for the Internet as a means to improve communication.
2002	Beter Bestuur voor Burger en Bedrijf (Better Administration for Citizen and Business)	Again attention for the possibilities of ICT/ the Internet) to reduce costs and improve customer satisfaction.
2003	Andere Overheid (Different Government)	ICT to improve services, lower costs and administrative burdens. Targets for e-service delivery (supply)
2006	Antwoord© (Answer©)	Municipalities as main portal for governmental service delivery. Although not specifically aimed at ICT, ICT is an important instrument.

Source: Pieterse 2009, 37.

⁶ "Nationaal Uitvoeringprogramma Dienstverlening en e-Overheid" (NUP 2009-2010), and its successor i-NUP (2011-2014).

The GDI consists of a dynamic set of generic digital basic services, products and standards which allow government organizations to set up their digital processes (Website Digicommissaris; Van der Stelt 2016). Currently the GDI consists of 37 separate components. These components are subject to modification because of technological developments or new insights. New services (or functionalities of services) can be added, and existing services can be phased out (Website Digicommissaris; Memorie van Toelichting 2016, 3). The GDI components contain a mindboggling amount of data that need to be protected as they are sensitive from a privacy, commercial, and government perspective. The more so because they can be – and are – interlinked to raise levels of efficiency and effectiveness and provide better government service.

A concrete example of GDI reality is the so-called "Loonaangifteketen" (LAK) which makes use of GDI-components and simultaneously feeds into the same or other components. The LAK is a co-operation between the "Belastingdienst" (tax authorities), the "Centraal Bureau voor de Statistiek" (national statistical institute), and the "UWV" (responsible for the mandatory insurance of employees against unemployment, sickness, etc.). Annually, the LAK receives data on approximately 21 million so-called employment/benefit relationships, enabling tax returns worth about 156 billion Euros (government budget 2017), i.e. 60% of the state coffers (Ketensamenwerking in de loonaangifteketen 2017; Website Loonaangifteketen; Veld, Meijer and Schurink 2017, 6).

Despite this telling description, most government ICT initiatives have spent little time on effects and results. Though GDI indispensability and profitability might seem obvious, progress has moved at a slow and unsteady pace, and public awareness has been virtually non-existent (Veld et al. 2017, 7). The available literature has shown little interest (either academic, journalistic, or otherwise) with regard to this topic, contradicting the value (real and potential) of the GDI, whose components consist of huge amounts of linked and sensitive data that require sophisticated governance and a consistently high level of security.

Consider – by contrast – the Dutch road infrastructure. People do tend to discuss this topic, since they instantly experience the consequences of a badly functioning road infrastructure on a daily basis. Because of this personal experience shared by all road participants societal problems, such as traffic congestions, are more easily recognized. By comparison, government ICT failures, budget overruns, and data breaches have only occasionally given rise to public discussion. Why? Because of the absence of truly disconcerting personal experiences so far, leading to significant public indignation and protest. No sense of urgency can be expected when people do not feel the consequences.

In the Netherlands the stated objective of having a digital infrastructure is to deliver better government services to citizens and businesses. Digital traffic therefore needs to run smoothly with few barriers. This requires a well-regulated system offering a reliable and secure base level of digital services, which is encouraged by connecting as many governmental organizations as possible to the GDI (Internationale quick scan 2016). Unsurprisingly, the "Digi Commissioner" described the GDI as the cornerstone for the digital transformation of the Dutch government.⁷

A generally accepted and uniformly used definition of the GDI, however, does not exist. The "Digi Commissioner" himself only offered a definition in the broadest of terms: "*The GDI consists*

⁷ <https://www.digicommissaris.nl>; Factsheet "The Dutch Generic Digital Infrastructure as a Basis for Providing Public Services."

of a dynamic set of generic digital basic services, products and standards which allow government organizations to set up their digital processes" (Website Digicommissaris; Van der Stelt 2016). Such wording disregards stakeholders representing the "consumption side" of the digital infrastructure, i.e. citizens and businesses. They profit from digital government services offered to them, as does the government from the aggregated and interlinked stream of data these "consumers" provide. The "Digi Commissioner" did acknowledge this by stating on his website: "The GDI provides government bodies with the basic digital platform to help them organise their primary processes. Thanks to the common use of the GDI, people experience coherence in the government's services, and a uniform way of communication" (see also Appendix 1).

The following GDI definition is used in this paper:

*The **Generic Digital Infrastructure (GDI)** is a collection of digital services, products, and standards, that is increasingly being used by government organizations, public organizations, and private parties, to contribute to the realization of an effective and coherent digital government benefitting the state, its citizens and businesses alike.*

3.2 The "Digi Commissioner"

Although structural problems concerning governmental ICT projects were recognized earlier, as evidenced by the establishment of a parliamentary investigative committee (Commissie Elias) in 2012, the "Digi Commissioner's" appearance in May 2014 seemed sudden and unexpected (Veld et al. 2017, 7-8). The decision was based upon a bureaucratic advice drafted shortly before, stating that government service provision could not do without an excellent digital infrastructure. Such an infrastructure was characterized as an "extremely crucial provision", which could not do without a national coordinator (Instellingsbrief 2014; Kuipers 2014, 4, 7). The choice for a dedicated commissioner was motivated by emphasizing the wide gap between ambitious digital government goals – requiring a digital infrastructure as well as sufficient financial and material resources – and the actual means at disposal.

On 28 May 2014 Bas Eenhoorn – former mayor, consultant, and VVD chairman (Dutch conservative-liberal political party) – was officially appointed the Dutch "Digi Commissioner". This appointment finally seemed to signal a shift towards a more comprehensive digital government approach. The GDI appeared to become part of the Dutch critical infrastructure at large. Taking up his post on 1 August 2014 Bas Eenhoorn became responsible for coordinating the governance, finance and content of the GDI. Was the less tangible Dutch digital infrastructure about to come on a par with its physical counterparts, like the road infrastructure, and recognized as part of the critical infrastructure?

The conditions under which the "Digi Commissioner" had to perform his duties were less than favorable. This was quickly noticed. The earlier mentioned Committee Elias paid extensive attention to the appointment of a "Digi Commissioner". Its members seriously questioned the lack of mandate and power of the "Digi Commissioner" to implement a successful GDI program. "Deltacommissioner" Wim Kuijken – responsible for the Dutch water infrastructure – did not mince his words either. Comparing his position – as described in law with an allocated yearly budget of 1.2 billion Euros – with the "Digi Commissioner" he stated that without a proper mandate, accompanying powers, nor money things do not tend to go well. In his words: "You

cannot tell someone just to go to work" (Koning and Niemantsverdriet 2017).

The "Digi Commissioner's" starting position, i.e. mandate and budget, proved feeble. The support base was insufficient and deteriorated over time. In 2017 a full-scale evaluation of the "Digi Commissioner" was conducted (Veld et al. 2017, 4-5, 52, 60-61). The evaluation findings were sobering, offering little promise for the future. Numerous shortcomings were reported, illustrated by using the recommendations of the report that spurred the appointment of the "Digi Commissioner" as a benchmark (Kuipers 2014). The comparison showed that only two recommendations had been realized: incidental GDI financing and initial GDI standardization. Six recommendations were not realized, and three only partially (Veld et al. 2017, 45).

Governance and finance matters had overshadowed the deliberations between stakeholders, leading to the neglect of important topics like content and functioning of the GDI. Disagreement among stakeholders had prevented the realization of comprehensive GDI legislation, leaving the digital infrastructure without sufficient legal assurance. Last but not least, digital infrastructure security had been seriously neglected (Veld et al. 2017, 46-49).

The commission also noted mutual distrust and soured relationships between the different stakeholders. Policy competition between government stakeholders proved persistent: between the Ministry of Interior Affairs and the "Digi Commissioner", but also between the Ministry of Interior Affairs and the Ministry of Economic Affairs. Support for the position of the "Digi Commissioner" never materialized. Some decisions regarding the GDI were taken without even notifying the "Digi Commissioner". This could be done without repercussions, given the weak mandate of the "Digicommaris". The results achieved did not meet the expectations of most stakeholders. After two and a half years the "Digi Commissioner" failed to fulfil the set tasks and goals (Veld et al. 2017, 46-48).

The "Digi Commissioner" offered no contrasting vision in his own evaluation (Eenhoorn 2017a). Some of his statements clearly echo the findings of the commission report. He put much emphasis on the lack of trust between government organizations, which he encountered after taking up his position. A position, he added, that was openly questioned in his presence. The resistance and lack of support encountered was often based upon organizational desire for autonomy. Ministries in particular, he concluded, behave like separate realms ("koninkrijkjes") serving their own institutional interests (Eenhoorn 2017, 3).

The "Digi Commissioner" himself recognized the discrepancy between tasks and resources, and the resulting dysfunctionality of his position. He offered to resign his position in September 2017, pleading for a forceful coordination of the GDI under the responsibility of a single minister with strong powers and sufficient means (Eenhoorn 2017, 6; Hartholt 2017; Van der Molen 2017; Mom 2017). The external commission evaluating current GDI governance simultaneously warned against digital government stagnation, which would seriously impair the positive effects of digital government service on society (Veld et al. 2017, 46-49). In the end, "Digi Commissioner" Eenhoorn quietly returned to his old profession as he was appointed acting mayor of Amstelveen on 1 October 2017.

Formally, the "Digi Commissioner" ended his activities on 17 January 2018. The governance of the Dutch digital infrastructure became served by a "system" of so-called government-wide policy consultation rounds ("Overheidsbreed Beleidsoverleg Digitale Overheid"; OBDO) and a

"Program Board" ("Programmeringsraad"). The coordination of the Dutch digital infrastructure now lies with the state secretary of the Ministry of Interior Affairs (Besluit instelling OBDO).

In the end, the "Digi Commissioner" constituted an abortive governance attempt for the GDI. In a final interview Bas Eenhoorn acknowledged this, stressing once again the resistance of entrenched stakeholders as a primary obstacle of effective GDI-governance. In his opinion financial deficits had been tackled, but more emphasis on legislation and his mandate would probably have mattered (De Jong 2018). By comparison, the former "Delta Commissioner" Wim Kuijken stressed the importance of the Delta Law, a strong mandate, and – above all – accompanying budget to which he alone could grant access ('t Hart 2018, 137-138, 141-142, 150-153). In his words: "Money helps of course: there is one billion Euro's a year in the pocket to spend. I am the 'gatekeeper' to that money ..." ('t Hart 2018, 139).

In the meanwhile, the "Digi Commissioner" maintained that in his opinion a "maximum, though no optimal achievement" had been reached (De Jong 2018). However, on his personal website Bas Eenhoorn sounded skeptical with regard to the future and the effectiveness of the new digital governance approach consisting of consultation rounds and program board deliberations. Noting a continued disregard of digital urgency, uniform legislation, and sufficient budgets, he argued strongly to make digital governance a top priority, or "Chefsache" (Eenhoorn 2017b).

The "Digi Commissioner" failed to achieve an autonomous and recognized position within the Dutch digital community contrary to, for instance, the "Delta Commissioner" within the Dutch water community (Van Twist 2013, 64).

The following characterization of the differences between the "Digi Commissioner" and the "Delta Commissioner" sums it up neatly ('t Hart 2018, 154-155):

As 'Digi Commissioner' Bas Eenhoorn had to deal with a larger number of ministries, services and other authorities; each wanting to give substance to digitization and e-government in their own way. He sounded the alarm, called for sessions, stamped his feet, pointed out to stakeholders the growing urgency of system innovations necessary to establish an integrated, efficient and reliable electronic government in the Netherlands. But, he largely got stuck in the [policy] trenches of The Hague.

Kuijken performed his duties ... within another constellation and with other means than his predecessors. They did not have their own budget to serve as a lubricant, Kuijken did. He came up with enough [money] to be taken seriously within the field, but not enough to simply use financial means to have people do as he wished. Kuijken also had a direct communication line to a committed, decisive and influential minister. ... On account of having been secretary-general, he had deep knowledge of and a position of authority within the ministry and the executive organisation. His task domain was furthermore tangible for each and every one, appealed to the collective memory as well as the core of Dutch identity. The threat he was supposed to help fight applied in principle to all Dutchmen.

4. The "Digi Commissioner": A Behavioral and Security Perspective

Academic research has shown that decision makers are confronted with three constraints. First, they are imperfectly informed, either about the outcomes that will occur (prospective uncertainty) or about what has transpired (retrospective uncertainty). This situation is aggravated by time constraints: the availability of limited time to make up one's mind and make a decision. Last but not least, there are unavoidable (cognitive) limitations of the human mind to evaluate and process the amount of information available (Allison 1969, 1971; Bendor and Hammond 1992).

The economist Herbert Simon coined the term "Bounded Rationality" to describe the interplay of these three elements. Even if they are intent on making rational choices, decision makers end up satisficing (a combination of the verbs satisfy and suffice). In other words, seeking satisfactory solutions rather than maximizing or optimizing their choices (*Economist* 2009). By accepting satisfactory solutions people take reasoning shortcuts in order to deal with complexity. The concept of bounded rationality thus relates to behavioral economics, which focuses on mapping the mental shortcuts that people use to come to their decisions.

The main problem encountered by the "Digi Commissioner" appears to have been governmental departmentalism. From a theoretical perspective government decision-making is the outcome of imperfect interaction between different actors in which information exchange processes play a crucial role (Allison 1969; Bendor and Hammond 1992). In this view the existence of separate realms and the wish to defend autonomous positions account for problematic (institutional) behavior and sub-optimal results. Without a shared sense of urgency vertical coordination (based on hierarchical relations with a central dominating actor) and horizontal coordination (based on trust relations) collide and fail to be combined (Hazelbag 2016, 61, 64-75, 78-85). In economic terms this outcome is caused by misaligned incentives and interdependencies called externalities: inescapable side effects of one actor's decisions on other actors. This accounts for the fact that costly deficiencies, that seem perfectly avoidable, do occur.

4.1 Securitization and Digitization

The importance of the digital infrastructure as described earlier would seem to warrant a high sense of urgency and clear recognition of shared interests into a viable and secure GDI. So how can the irrationality of the displayed behavior be explained? Securitization theory can provide relevant insights to account for the fruitless attempts to:

1. put the digital infrastructure high on the political agenda;
2. establish a unified (vertical and horizontal) approach in dealing with highly interrelated problems;
3. and allocate sufficient resources on a structural basis.

Securitization theory argues that security is a social and inter-subjective construction, whereby something turns into a security issue by labeling it as such (speech act). By stating that a particular referent object is threatened in its existence, a securitizing actor

can justify extraordinary measures to ensure the survival of the referent object. The issue is thereby taken out of the sphere of normal politics into the realm of crisis management and emergency consideration. Here, it can be dealt with faster and – most importantly – without the customary rules and delaying checks and balances of democratic policy-making. That a given subject is securitized thus means that someone has successfully constructed an existential problem (Buzan et al. 1998; Taureck 2006). In sum, securitization investigates how a certain issue is transformed by an actor into a matter of security to allow for the use of extraordinary measures. To be successful the securitization act must be accepted by the audience, regardless of the subject matter being a real threat.

Securitization involves four aspects without which a given subject – the Dutch digital infrastructure (GDI) – cannot be securitized (Brito and Watkins 2012; Nissenbaum 2005):

- A securitizing actor/agent: an entity that makes the securitizing move/statement;
- A referent object: an object (or ideal) that is being threatened and needs to be protected;
- An existential threat: an object (or ideal) that has been identified as potentially harmful;
- An audience: the target of the securitization act that needs to be persuaded and accept the issue as a security threat.

The whole process is triggered by means of a so-called speech act.

The question here is whether and how the concept of speech acts and the securitizing elements relate to the activities and (lack of) achievements of the "Digi Commissioner".

1. First of all, the "ignition trigger", or speech act for securing the Dutch digital infrastructure remains to be found. When looking back, the highly publicized Diginotar incident in 2011 comes closest. The breach of this government supplier of digital security certificates has, however, faded in people's memory, even though a (partial) government breakdown could only be avoided with great effort. Initially, the security lesson from the Diginotar case seemed to prioritize digital security efforts. In 2013 the "Taskforce BID" ("Bestuur en Informatieveiligheid Dienstverlening") was set up to strengthen information security within the government. Still, towards the end of 2014 its goals were considered to have been reached. The taskforce was replaced by an awareness campaign ("iBewustzijn Overheid") and the activities of the newly appointed "Digi Commissioner".

2. Second, the problem for the GDI is that it cannot function as a true referent object, an object recognized by everyone as threatened and in need of protection. The GDI seems too conceptual and diffuse to serve this purpose.

3. Third, the same can be said of the existential threat. Incalculable cyber threats exist, which remain difficult for the human mind to grasp. As they are not of flesh and blood people have no emotional connection with such threats and cannot identify with them. In other words, people fail to be persuaded to see cyber-attacks as existential security threats. Not in the least because they have not suffered the costs of a GDI breach with the government trying to shield the general public from the consequences of such a cyber incident.

4. Fourth, the "Digi Commissioner" was never able to function as a securitizing actor. Digital security was not on his priority list, and his primary focus on bureaucratic governance

and financial arrangements were never translated into securitizing statements.

5. Finally, it never became clear to whom the "Digi Commissioner" was speaking. What audience was addressed or should have been addressed? Ostensibly, the digital infrastructure is there to serve the general public. But the general public does not talk to 37 different GDI components, and the "Digi Commissioner" never acted as the single voice of the GDI. Investigation of the outreach of the "Digi Commissioner" indicates how limited and specialized the audience was that he managed to reach.

4.2 Behavioral Economics in a Digital Environment

Behavioral economic arguments allow for a further breakdown of the reasoning above and detailed analysis of the mental shortcuts at play that propagate choices with less than optimal results. As said before, people often do not behave rationally, i.e. they do not base their decisions on an informed rational cost-benefit analysis. They are inclined to being loss-averse and ready to dump responsibility and liability problems on others (called by economists a moral hazard effect). In addition they also use heuristics (mental shortcuts) to take snap decisions (Tversky and Kahneman 1974). People have a large set of heuristics at their disposal, which they use constantly. Several of these shortcuts have been identified, of which the availability heuristic in particular applies to the presented case of the "Digi Commissioner". In general heuristics are useful in a multitude of circumstances, but people using heuristics are prone to systematic (cognitive) biases and errors. A cognitive bias is a persistent pattern of deviation in judgment. These biases affect how people perceive their environment, which in turn affects the choices and decisions they make (Anderson 2001; Anderson and Moore 2006; Schneier 2008). From the many biases identified the hindsight and confirmation biases clearly play their part when considering the failed experiment of the "Digi Commissioner".⁸

Availability Heuristic: The availability heuristic centers around the ease with which a particular event or occurrence can be brought to mind. Availability leads to predictable biases related to the easy imaginability or easy retrievability of the event. When, for instance, an infrequent event can be thought of easily this judgmental heuristic overestimates its likelihood. To put it differently, easy-to-remember information is given greater weight than difficult-to-remember information. Another aspect of availability is the vividness of information which affects people's choices far more than abstract, factual, category based or statistical information (Tversky and Kahneman 1974, 1127-1128). In this sense personal stories are far more persuasive because people will remember vivid arguments better. This ignores the fact that memories might just be vivid because they are so extreme, and thus more unlikely to occur (Schneier 2008).

Hindsight Bias: Availability of information also stimulates the tendency to see past events as being predictable once the outcome is known. This is called the hindsight bias. Events that have happened are easier to imagine than future events, and the probability of those events is easily overestimated (Schneier 2008).

The following quote by Bruce Schneier sums it up neatly:

... (1) the more available an event is, the more frequent or probable it will seem; (2) the more

⁸ Excellent overviews of the field of behavioral economics, heuristics and biases can be found in Kahneman 2011, Lewis 2016 and Thaler 2015.

vivid a piece of information is, the more easily recalled and convincing it will be; and (3) the more salient something is, the more likely it will appear to be causal (Schneier 2008).

Confirmation Bias: The last bias to be considered applicable within the context of the "Digi Commissioner" is the confirmation bias, which describes the tendency of searching and/or interpreting information to confirm existing beliefs. Information that does not support a previously held position is less likely to be noticed and might even be discredited. It is not difficult to see that confirmation bias reduces critical thinking and promotes tunnel vision (Schneier 2008).

Plotting these heuristics and biases on to the "Digi Commissioner" and the Generic Digital Infrastructure (GDI) is revealing. The case of the "Digi Commissioner" negates the discussed availability heuristic and hindsight bias. The "Digi Commissioner" and/or the Dutch digital infrastructure cannot easily be imagined or retrieved, not by a more specialized professional audience, let alone by the general public. There is no vividness of information contained in the 37 components of the GDI, and there can be no connection with past events that allow for causal linkages and predictability pertaining to the activities of the "Digi Commissioner" or the GDI. Confirmation bias is clearly mirrored in the display of departmental opposition, bureaucratic inertia and downright disregard for the initiatives of the "Digi Commissioner" (Veld et al. 2017). Owing to confirmation bias people were never swayed in their existing beliefs, and tunnel vision could not be overcome. As a result, stakeholders chose their own path. For example, the so-called electronic identification scheme (eID) received its own governance structure even though it is part of the GDI core. And, arguably, it even received its own legislation since GDI law initiatives deal exclusively with the eID scheme (Veld et al. 2017, 46-48).

5. Concluding Remarks

Bounded rationality and behavioral economic concepts highlight important decision mechanisms below the surface that better explain the "Digi Commissioner's" lack of results. Recognition of these economic and psychological mechanisms can serve as a useful peg for improving the governance and security of the GDI. The selected heuristics and biases apply to the aforementioned five securitizing components. They clearly show that the "Digi Commissioner" – and the digital infrastructure he personified – faced a daunting, if not impossible task with no convincing speech act, while simultaneously lacking a referent object, existential threat, securitizing actor, as well as a responsive audience.

Misaligned incentives and externalities played their part, as well. The "Digi Commissioner" failed to persuade the actors involved because of differing (institutionalized) interests and entrenched bureaucratic positions. So far, these actors have not endured any real costs and/or consequences of a GDI breach and the ability of transferring (dumping) financial, responsibility and liability problems on to other actors involved. Therefore, a sense of urgency regarding the GDI never materialized, and powerful governance, clear legislation, and actionable budgets have yet to be put in place.

The development and security of a vital digital infrastructure, digital government, and digital society in the Netherlands remains a daunting task. The apparent neglect of the security aspect fails to match the importance of, for instance, the 'Loonaangifteketen' (LAK) and the

public attention awarded to cyber security incidents and their potential threats.

Given the strategic importance of a functioning and well-protected Dutch digital infrastructure it is suggested that future research should adopt a quantitative as well as qualitative approach.

- The potential of quantitative research is apparent in the annual "Monitor Generieke Digitale Infrastructuur" (external progress report of the GDI) as well as the "Monitor Kwaliteit Stelsel van Basisregistraties" (evaluation of consistency and data integrity of the "GDI core"). These quantitative investigations – accessible through the government website digitaleoverheid.nl – and can serve as an example of the possible results and bigger picture revealed when collecting, aggregating and analyzing large data sets.
- In addition, qualitative research by comparing the activities of the "Digi Commissioner" with the highly successful governance model of the "Deltacommissaris" could be considered and complemented by similar qualitative case studies of GDI core components, such as the civil registry (Basisregistratie Personen; BRP) and the cadastre (Basisregistratie Kadaster; BRK).

The ensuing results might thus provide new and valuable insights, enabling a much-needed reconsideration of GDI-governance in the Netherlands after the "Digi Commissioner".

Appendix 1. GDI-categories and components

CATEGORY	COMPONENT	
Identification & Authentication (4x)	<ul style="list-style-type: none"> Digi iDentification (DigiD) DigiD authorization 	<ul style="list-style-type: none"> Idensys (eID Program) eRecognition
Data & Registration (17x)	<ul style="list-style-type: none"> Digi linkage Digi supply Digi notification <p>THE CORE OF THE GDI</p>	<ul style="list-style-type: none"> GDI catalogue Social Security Number system <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Core Registries* (12x)</p> <ul style="list-style-type: none"> - civil registry - credit registry - cadastre - car ownership registry - trade register - etc. </div>
Service & Information Provision (10x)	<ul style="list-style-type: none"> Mijnoverheid.nl (government portal) Digital Entrepreneurial Portal Mailbox for Citizens 	<ul style="list-style-type: none"> Catalogue Linkage Mailbox for Companies Standard Business Reporting E-invoice etc.
Service & Interconnectivity (6x)	<ul style="list-style-type: none"> Digi-portal Certification (PKI Overheid) 	<ul style="list-style-type: none"> Standards List Standardisation Forum etc.

*Core Registries (Basisregistraties)	
BRP	Basisregistratie Personen (persons)
BRK	Basisregistratie Kadaster (cadastre)
BRV	Basisregistratie Voertuigen (vehicles)
BRI	Basisregistratie Inkomen (income)
BGT	Basisregistratie Grootchalige Topografie (large topography)
BRO	Basisregistratie Ondergrond (below surface)
BRT	Basisregistratie Topografie (topography)
BAG	Basisregistraties Adressen en Gebouwen (addresses and buildings)
WOZ	Basisregistratie Waarde Onroerende Zaken (estate value)
HR	Handelsregister (trade register)
BLAU	Basisregistratie Lonen, Arbeidsverhoudingen en Uitkeringen (salary, work relations, and social benefits)

Source: adapted from Website Digi Commissioner (www.digicommissaris.nl);
 Website Digitale Overheid (www.digitaleoverheid.nl);
 e-Government country factsheet EU 2017

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Alexander Claver studied history at Utrecht University – specializing in economic history and entrepreneurship – and cyber security at Leiden University and Delft University of Technology. He holds a Ph.D in Social Sciences from the Vrije Universiteit in Amsterdam. His research interests include the study of entrepreneurship, company policy, cyber security and governance. Dr. Claver may be contacted at alexanderclaver@hotmail.com.