

PERSONAL NUMBER MANAGEMENT

PERSONAL NUMBERS AND IDENTITY FRAUD - NUMBER STRATEGIES FOR SECURITY AND PRIVACY IN AN INFORMATION SOCIETY - PART I

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For the sake of clarity and manageability, this article is in the form of a checklist. It will be published in two parts. The first part in this issue presents some practical and juridical characteristics of personal number systems. But at the end of the day, it is the number strategy that matters. The second part in the next issue, therefore, covers some important aspects of any number strategy and presents a step-by-step plan for the choice, design or assessment of number systems and strategies. Within the Dutch government there is a discussion going on about the introduction of a general personal number for compulsory use by every government agency or any private organization with a public task. The main conclusion of the analysis in this article is, however, that such a number strategy is not good enough for a complex information society. Sectoral personal numbers are the cornerstones of safety and privacy. They should not be put at stake. This article has the Dutch situation in mind, but the analysis and conclusions apply to many other democratic jurisdictions as well.

Number systems, both private and public, are deeply embedded in our society. They are needed for information processing and communication relating to natural persons or social objects and manifestations, such as legal entities, real estate, objects, locations, transactions and occurrences. They fulfil all sorts of functions, often several at the same time. Personal numbers matter greatly in an information society and deserve more public and political debate. They are getting more widely used as means of person recognition, off line and on line.

This article is about number strategies covering twenty aspects of number systems including social, legal and security aspects. It provides a framework within which to identify and answer the most important issues regarding the design, use and management of number systems. Although this article focuses primarily on personal numbers, insights that apply to personal numbers are often applicable to other numbers, especially when those numbers are accompanied by personal details, i.e. details that can with a little effort be traced to a person.

1. INTRODUCTION

Number systems are systems based on logical series of numbers that are used, for example, to identify natural persons, legal entities, real estate, objects, locations, transactions and occurrences within a delineated or definable group. These numbers can be numerical (purely digits) or alphanumerical (digits and letters). The term 'system' is taken to mean that the number is assigned and later withdrawn according to certain rules, and that the use of the number is subjected to certain rules.

Number systems are deeply embedded in society. Most of them are used internally. Besides these, there are external, public number systems that fulfil important functions in social chains or sectors.² In some cases, number systems of this nature have even gained an autonomous position at chain level as an independent, neutral basis for mutual communication in the chain. As a third category of number systems, there are general numbers, which feature a geographical area of application.

Number systems fulfil all sorts of functions, often several at the same time. Simply being able to identify a single instance in a series is in itself an important function. A case in point is when one wishes to record a detail in a register or indicate a certain order, as a butcher would, for instance. By using a number it is possible to trace a detail or establish that two details belong to each other, for verification purposes for example. Verification is much more effective with numbers than only with words (name and address details) or images (photograph, signature, logo). Comparing numbers can prevent or reveal errors when linking details about the same persons, objects or occurrences. The number can also prevent confusion from arising when it is difficult or impossible to write down an identifying personal detail in a straightforward manner. Examples include when information systems use a limited number of letter characters or when foreign sounds can be rendered in various ways in Dutch.

Number systems are attracting increasing interest. The education sector, for example, needs an education number

and decided at the beginning of 2001 to adopt the existing social security number. There are also calls for a Care Identification Number (CIN) in the healthcare sector for the electronic patient file, and here too consideration is being given to using the social security number. However, there has been a sharp rise in fraud using the social security number in the social security sector. Financial fraud and identity fraud with social security numbers go hand in hand: many people have more than one social security number; others assume the number and the identity of someone else. If this contamination spreads to the education sector or renders the patient file unreliable, we will be facing major social problems. The social security number problem that has come to light is not restricted to this number system, but shows what can happen to any number system in the future if it is not adequately managed. Unfortunately, that is the case with virtually all of our public number systems.

Number systems therefore are important, especially if they are held up against the broader background of identity and identity fraud and are viewed from the perspective of the future information society. The increasing use of numbers for registration, identification and verification is a phenomenon that is inherent to the advancing computerisation of society. The number is increasingly likely to function as an identifying feature in electronic data processing, verification and combating fraud. The increasing use of numbers to identify people and objects is however also bringing to light the vulnerability of number systems. Not enough attention is being paid to the management of important public numbers that have through the years gradually taken on an identification function. There are many ways to frustrate number verifications, and identity fraud using personal numbers is increasing sharply. In practice, a personal number functions as a pseudo proof of identity with which people can misappropriate rights and other advantages (fraud and access to confidential information), or with which they can render themselves invisible (organised crime and terrorism). This can be done both online and offline. Personal numbers prove to offer unintended possibilities for these purposes.

Figure 1 shows a number of examples of number systems. At the butcher's the number determines the order in which customers are served. The post code takes our mail virtually to the front door, and in combination with the house number a letter is posted in the right letterbox. A car can be identified by its registration plate or chassis number, a passport by its document number. People can see where they are by looking at the number on a road. Two telephones can be connected with telephone numbers. Also, each connection with the Internet has its own IP address, using which information packets are directed from the one connection to the other. People can be distinguished from each other with personal numbers. Virtually all companies use their own customer numbers to separate their clients and keep the right details with the right client. Banks identify their account holder when issuing money or making PIN card payments by the combination of a pin code and a bank account number, thus using two different number systems. An example of a personal number in the public domain is the social security number which is used by the tax and social security authorities.

Figure 1. Examples of number systems

- 1 - order of service at the butcher's
- 2 - post code and house number
- 3 - car registration plate or chassis number
- 4 - document number (passport number, for instance)
- 5 - road number
- 5 - telephone number
- 6 - Internet address (IP address)
- 7 - customer number
- 8 - pin code and bank account number
- 9 - social security number

As number systems gain significance in an information society for social and economic processes (electronic remote verification, electronic communication), the correct functioning and the integrity of public number systems take on overriding importance. As calls are being made for the introduction of a compulsory general public personal number under pressure from increasing identity fraud and the threat of terrorism, sector and chain numbers in particular will be the future pillars of the information society. But they will have to be properly managed. The quality of the management of chain and sector numbers is vital to the safety of society, especially the extent to which the misuse of numbers and the accompanying identity fraud are being actively frustrated and combated. There is a pressing need to develop the number administrator's profession, with a professional code and strict disciplinary rules, for instance.

Number systems present politicians, public administrators and information managers with difficult choices. They have to choose between a differentiated approach with many different sectoral personal numbers or a uniform number strategy with only a general compulsory public personal number, for example. They also have to choose between extending the use of an existing number or introducing a new one, which is a topical matter in the education and healthcare sectors. For a certain application, a choice must be made between a personalised number, a semi-anonymous or entirely anonymous number.

As a result of the complex interplay of forces surrounding these choices, it is often the case that the less suitable solutions are erroneously given preference. Despite the willingness to acknowledge that number systems are difficult to manage, calls are being made for a uniform approach with a general compulsory public personal number. Wrong choices are difficult to reverse. That is why this checklist is important.

2. EXPLANATION OF THE CHECKLIST

For the sake of clarity and manageability, this article is in the form of a checklist of twenty different aspects, divided into three sections, each of which is explained below. Finally, section IV presents a step-by-step plan for the choice, design or assessment of number systems.

Section I of the checklist, *Properties of number systems*, discusses the function, area of application, unicity, format and significance of numbers. Each combination of these properties leads to another type of application, with specific pros and cons. The purpose of this list is to indicate which

diversity of solutions is available to those designing, introducing or managing a number system. The choice is determined by the problem that has to be solved using the number system. That problem can differ between cases or situations. It is often the case that people are only vaguely aware of this, and spontaneously opt for a number system with unnecessary restrictions or for the joint use of an existing number that is in fact less suitable for the envisaged function.

Section II of the checklist, *Aspects of number systems related to privacy law*, discusses the legal position of a number system from the perspective of Dutch privacy law.³ The subjects covered in this section are objective, proportionality and subsidiarity, target group, voluntary nature, storage of the number, scale of application, external supervision and security.

Number systems for social objects and manifestations (legal entities, real estate, objects, locations, transactions or occurrences) are not generally subjected to special rules for the protection of privacy unless they qualify as personal data. In those cases, there are all sorts of conditions that have to be met to make lawful use of the numbers. That is why anonymous and semi-anonymous number applications will be particularly important in the information society of the future. An application is deemed to be anonymous if it is not possible for someone to find out who a number relates to without making a disproportionate effort. Semi-autonomy (also called pseudonymity) is defined as there being at least one body that knows (e.g. the body that issued the number) who the number relates to, while other users of the number cannot find out. Despite the legal restrictions that apply to numbers by name, in practice people usually opt unnecessarily for a number system of this type. It is often the case that the purpose of the application can be achieved equally well with anonymous or pseudonymous numbers. Contrary to the commonly-held view, personalised numbers are no safer than anonymous or pseudonymous numbers. That safety is determined primarily by the quality of the number management.

Section III of the checklist, *Number strategy*, covers seven related subjects that provide starting points for the way in which a number system can be positioned and managed. The following points are discussed: positioning, chain or sector connection, multi-chain use, management, social effects of number systems, simple or composite number strategies and development patterns of number systems.

According to my 'chain computerisation' approach, positioning is possible at a minimum of three different levels. The chain and sector connection which, pursuant to the Dutch Data Protection Act, applies to personal and other numbers that are linked to personal details proves according to 'chain computerisation' to be a good starting point for all number systems. Using the same number system in more than one chain or sector throws up additional management problems. At least six different forms of management can be differentiated. Number systems have two important social effects. Single strategies for personal numbers are not sufficient in a complex information society. Finally, there is a certain logic in the development pattern of a number system. This can be taken advantage of when developing a number system or a number strategy.

Finally, Section IV of the checklist discusses, by way of a summary of the twenty aspects covered, a step-by-step plan for the design, selection or assessment of a number system. Sections III and IV will be featured in the next issue of CLSR.

3. CHECKLIST I - PROPERTIES OF NUMBER SYSTEMS

(a) Function

Number systems fulfil all sorts of functions, often several at the same time. The unique ability to identify a single instance in a series is in itself an important function. Cases in point are when one wishes to record a detail in a register or indicate a certain order, as a butcher would, for instance. By using a number it is possible to trace a detail and also establish that two details belong to each other, e.g. for verification purposes. Verification is much more effective with numbers than only with words (name and address details) or images (photograph, signature, logo). Comparing numbers can prevent or reveal errors when linking details about the same persons, objects or occurrences. If a number contains a visible property of a person or object (year of birth or sex or validity or place of issue), this information can easily be passed on to somebody else by using the number. In combination with other numbers of data, number systems enhance the ability to manage databases and combat data contamination or fraud. It is important in this context that number systems do not only facilitate the verification of an individual detail, but also enable detection at the level of the number series as a whole, the double occurrence or absence of numbers and the completeness of a series, for example. It is important, for instance, to the quality of a personal number system that one can check whether somebody wrongly has several numbers at his disposal or that a number is wrongly being used by more than one person.

(b) Scope of application

Number systems have a certain scope of application, in terms of both content and geographical area. A car registration plate relates to road traffic in all its aspects (content) and can be used by everybody internationally (geographical area). The butcher's serial number is only used internally for serving customers (content) locally (geographical area). Other number systems are public and are used in a sectoral or chain context. Besides sectoral or chain numbers, there are also inter-sectoral or chain-transgressing number systems. These systems are used in several sectors or chains. The social security number, for example, has been used for many years by the tax authorities and since 1988 by the social security authorities. The social security number was also recently designated as the education number. It is a national number. Other number systems are local, regional or international. The use of these numbers does not have to be the same everywhere within the geographical area of application. A certain sector in the one region can use its own sectoral number, for

example, while the same sector in another region uses a general national number. Finally, there is the alternative of a general national number, e.g. for people, the use of which may be rendered legally compulsory. Viewed from the perspective of the Netherlands, this is the most extensive scope of application, but from an international perspective a number of this nature is also geographically and functionally limited in more or less the same way as sector and chain numbers.

(c) Unicity

A number's unicity has two dimensions: time and place. A house number is unique in the same street. It is not related to one particular house, as once that house has been demolished it will be reassigned to a new one at the same location. The house number is permanently unique within the geographical limitation of the street. The butcher's number is an example of a unique local number that has a very short lifespan. This number can be disposed of immediately after use. The sole issue of importance is that two of the same numbers do not occur at the same time in the queue. Missing numbers or series of numbers are not important, because they do not affect the order of the numbers that are present.

Other numbers are temporarily unique for a longer period of time in a large geographical area. A car's chassis number, for example, must remain unique for a long period of time and requires a large geographical range. That number does not lose its significance until the car is scrapped. After a certain holding period, the number could be assigned to a different car. A temporary unique number is also sufficient in the area of application immigration and naturalisation. This aliens number must guarantee, for the period of time that a person stays in the Netherlands as an alien, that data and decisions relate to the right person. Ultimately, however, that person assumes Dutch citizenship or departs. The aliens number can therefore be discontinued following the completion of the admission procedure or the stay in the Netherlands.

Conversely, a social security number must last for longer than a person's life since confusion with the data of somebody else must be avoided for years after a person's death. What is required for this is a unique number which is never assigned to another person.

(d) Format

Number systems are found in a wide range of formats. A telephone number in the Netherlands has ten positions, a social security number nine. The number of positions required depends on the application. A number does not have to comprise only digits, but can also contain letters. An apartment, for example, is often indicated with a combination of digits and a letter. Car registration plates and chassis numbers are also alphanumeric. One of the advantages of letters in a number is that a position of a letter can have 26 different values, as opposed to that of a digit which only offers ten alternatives (0-9). Another advantage is that a number with digits and letters is usually easier to read and to remember than a number of equal length containing only digits.

(e) Significance

Numbers often contain visible or concealed information.⁴ Many personal numbers make use of the date or year of birth, thus indicating the holder's age. Those who know that the road network in the Netherlands is numbered clockwise from Amsterdam can use this concealed information without much topographical knowledge to work out that the A1 goes to Amsterdam, whereas the A27 probably does not. The German car registration plate indicates with the first letters the area in which the car is registered. The Dutch registration plate, on the other hand, contains a sequential national number system with six letters and digits, so that the number individually indicates the approximate year in which the registration number was issued. Some numbers also contain a reference digit to indicate whether there is anything wrong with the number. The social security number, for instance, consists of 9 digits, the last of which is a verification digit. To calculate that last digit, the first digit is multiplied by 9, the second by 8, and so on, and the results of these multiplications are added together. This result is then divided by 11. The digit that is carried after the division forms the ninth digit of the social security number. This verification digit makes it possible to discover recording errors or social security numbers that cannot exist.

4. SECTION II - ASPECTS OF NUMBER SYSTEMS IN PRIVACY LAW

The critical point of the position of a number in privacy law is whether it can be traced to a person, possibly by making a concerted effort to do so. The Dutch Data Protection Act applies to these numbers, and – depending on the degree of sensitivity of the number and the purpose of the process – prescribes various protection regimes. Protection of privacy for numbers by name and other numbers related to personal data (the accompanying name can be established with some, not disproportionate, effort) has been harmonised within the European Union.

As well as the Data Protection Act, there are often special laws that are applicable, such as the Passports Act (e.g. in relation to the document number and the social security number given on the passport) or the Municipal Administration Act (GBA), for the resident's A-number used in that administration.

To establish whether a number is a personal detail the application must be viewed as a whole rather than looking only at the number. Consideration must therefore also be given to all surrounding technical, procedural and organisational facilities. A person whose identity cannot be established without making a disproportionate effort, is anonymous. If a personal number remains entirely anonymous within an application, it is justifiable for no special protection to be provided for its use by privacy legislation. Semi-autonomy (also called pseudonymity) is defined as there being at least one body that knows (e.g. the body that issued the number) the identity of the personal number holder, while other users of the personal number cannot find out. In this example the Data Protection Act does apply to the number issuing authority only.

Given below is a policy framework derived from privacy law for systems involving personal numbers or other numbers that must be regarded in a specific application as personal data

(for the sake of clarity, these numbers will be referred to below under the general term 'personal numbers').

(a) Clear, identifiable and admissible objective

The purpose of the use of personal numbers must be clear and identifiable to all parties involved. The use of a personal number must in principle remain restricted to the original purpose. The requirement of clarity and recognition is in principle met in the case of use by (semi) public authorities if usage is provided for in a generally binding regulation. It is not permissible to collect and/or use personal numbers contrary to the prevailing regulations. In assessing the admissibility of an application, the mutual power ratio between the citizen or client versus the government or company plays an important role. There is however also a grey area in which it is less easy to establish whether the application is admissible. It is in any event important that unrestricted objectives are avoided.

(b) Proportionality and subsidiarity

The use of a number system must be proportional, which means that there must be a reasonable link to the objective for which it is used. Subsidiarity means that if the objective can also be achieved in another, less radical way, that way must be given preference. The objective must for example justify that the use of a personal number is compulsory, otherwise the number must be used voluntarily. The subsidiarity requirement is also met, for instance, by using a number with less extensive properties, or by screening the number in such a way that less invasion of personal privacy is possible. A case in point is the rule that a personal number may not be centrally stored if its objective can be equally achieved with non-central storage on a chip card for which the holder of the number has full right of say.

(c) Precise delineation of the target group

A number system's target group must be clearly defined in advance. This is of particular importance to communication with that target group and to the way in which the legal relationship between the parties is shaped. If the target group comprises the entire population of the Netherlands or a municipality, it makes sense to regulate the number system by legislation or (municipal) by-law. If, on the other hand, the target group is the personnel of a company or a shop's clientele, it will be appropriate to include regulation in the collective bargaining agreement or employment contract or general conditions respectively. Finally, the precise delineation of the target group is also important for auditing the data collection.

(d) Voluntary or compulsory use of personal numbers

Leaving aside the moral and ethical limits and measures designed to protect people from themselves, the voluntary use of personal numbers for private purposes is in principle permitted. But when is voluntary co-operation truly voluntary? If a party occupies a monopoly position or a position of power, such as the government in relation to the citizen or the

employer in relation to an employee, that co-operation cannot be regarded as completely voluntary. It is not however only the market conditions that determine the issue of true freedom of choice. Complete freedom of choice can only exist if there is an alternative of equal value without the compulsory use of numbers. A party who issues or uses a personal number will have to meet stricter conditions as more questions marks can be placed alongside the extent to which use of the number is voluntary. An example of a condition of this nature is that the voluntary character must be attested to by the unequivocal, express permission of a personal number holder.

(e) Storage

There are various methods that can be used to store personal numbers. The two extremes are storage in a central database of all numbers and non-central storage, where each number is stored separately on a document or chip card that is issued to the holder. 'Central' in this context means that all stored personal numbers with the additional personal details are directly accessible and can be compared in a single query. The data can be physically stored in concentrated form in one place, but that is not necessary. Using a central database of this nature makes it possible to carry out checks that would not otherwise be possible. A number administrator with a central database can for instance directly establish whether someone has already been included in the collection but under another number. He can also establish whether a number is being used by more than one person. The distinction between central and non-central is of legal significance because central storage involves more social risks. The number issuing authority will have to make a clear balance of interests between relevant alternatives for an application.

(f) Scale

It is important that a wide scale, general personal number appears to be sooner considered for governmental supervision or for governmental regulation than a small scale sectoral personal number because the risks to privacy are less manageable in the first case and the chances of success are bigger when it comes to deliberately impersonating others. Small scale applications are less risky and could in principle also promote privacy; certainly if there are many small scale applications with various, independently managed number systems.

(g) External supervision

It can be desirable to have the use of personal numbers supervised by an independent party. This could be the Dutch Data Protection Authority or the privacy official mentioned in the Dutch Data Protection Act. Other options include an ombudsman or another third party.

(h) Security

Unauthorised access to and/or use of personal numbers must be prevented. The storage and use of personal numbers must therefore be appropriately safeguarded, and the level of security must be higher in keeping with the interest of the personal number being protected. This security requirement

of the Data Protection Act relating to the interest being protected is separate from the requirement that the Criminal Code sets for a punishable violation. A violation is only punishable if 'any means of security' shows that there is a will to secure the number.

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Editor's note: The second part of this article will feature in the next issue of CLSR

FOOTNOTES

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²The terms 'sector' and 'chain' are used synonymously subject to the caveat that 'sector' does not cover too broad an area. We therefore refer to the 'agriculture' sector, but not the 'public' sector. The mutual process-dependence of collaborating organizations are preferably referred to with the term 'chain'.

³ In some cases there are also special arrangements regarding number systems in private, administrative and criminal law. The State Taxes Act, for example, stipulates that a social security number may only be assigned following verification of the future holder's true identity on the basis of a legal proof of identity. Number fraud again comes under the rules of criminal law, e.g. the punishability of a specific case of a number being unlawfully used.

⁴ Blocksma, M and H. van Maanen, *De Schaal van Richter en andere getallen* [Richter's scale and other numbers], Publisher Bert Bakker, Amsterdam, 1990.

BOOK REVIEW

Information Law

Information Law in Practice, 2nd Edition by Paul Marett, 2002, hard-cover, Ashgate, 230 pp. £50.00, ISBN 0 566 08390 6.

The second edition of this work comes some ten years after it was first published. The latter had grown out of a series of lectures which the author gave to postgraduate students in what is now the Department of Information Science at Loughborough University. In it the author sought to paint what he calls a "broad picture of the legal environment of information, and more particularly (but not exclusively) of professionals in the information field, librarians, information scientists and others who exercise a management function in the information and media fields". This latest edition builds on that intent but takes account of new law particularly that dealing with defamation, data protection, trademarks as well as amendments to the field of copyright and new issues raised by the growth of the Internet. Following an introduction there are chapters dealing with the protection of written or written work; entertainment and related media; the work of the artist, designer and photographer; electronic data; patents and other industrial property; copyright abroad; transnational protection of intellectual property; legal portions for the information provider; and a chapter on the future. There are also appendices providing an overview of the Copyright Designs and Patents Act 1988 and the duration of protection for intellectual property.

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