

Territorialising eGovernment

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Document version:

Early version, also known as pre-print

Publication date:

2008

[Link to publication](#)

Citation for published version (APA):

van Ooijen, C. W. (2008). *Territorialising eGovernment: Institutional innovation through the use of location aware technologies*. Tilburg Institute for Law Technology and Society.

http://www.eur.nl/fileadmin/ASSETS/fsw/Tufan/EGPA2008/Papers/PSG1/Van_Ooijen.pdf

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Territorialising eGovernment: Institutional innovation through the use of Location Aware Technologies

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Paper submitted to Study Group 1: Information and Communication Technologies in Public Administration

European Group of Public Administration Conference,
3 – 6 September 2008, Rotterdam, the Netherlands

Keywords: Location Aware Technologies, eGovernment, Deterritorialisation, Territorialisation, Institutional Innovation

Abstract - Deterritorialisation of state and society is one of the most striking effects of information and communication technologies (ICTs). However, location aware technologies (LATs) have emerged as ICTs reinstating the importance of place and time. ICTs may thus cause deterritorialisation and territorialisation at the same time. This paper focuses on exploring this possible territorialisation paradox for the interactions government may have with citizens as subjects, clients or citoyens. Three aspects of place affected by deterritorialisation are distinguished: power over a place, place as an organising principle and unity of place. Literature about the use of LATs in public administration shows that the territorialising capabilities of these technologies hardly counter the deterritorialising effects of ICTs. It is suggested that LATs create new meanings of place in citizen-government interactions when looking at place as an organising principle and unity of place. These developments can be understood as a paradox rather than a contradiction. Institutional innovation is expected to take place as a result of these types of applications of LATs.

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I Introduction

Information and communication technologies (ICTs) have changed the meaning of place and territory in a radical way. In the virtual world, people can communicate with each other and find information regardless of where they are in the physical world and without being concerned about crossing national borders. This deterritorialising effect of ICTs causes not only inconvenience for political institutions, but even erodes their legitimacy (WRR, 1998; Frissen, 1999).

However, location aware technologies (LATs) constitute an ICT-innovation which may pose a counter-movement through reinstating the importance of places and locations. The technologies which are presented as LATs in this paper are capable of combining location information about citizens with geographic information and personal information, thereby creating new ways for governments to interact with citizens. 'The state may be landing again' is what Snellen (2000: 138) already concluded pointing to the territorialising possibilities of Geographic Information Systems (GISs). In addition, positioning technologies such as GPS and GSM can deliver detailed location information about citizens to public institutions (Meints and Royer, 2007). The technological innovation created by a combination of different LATs, such as GISs and positioning technologies may thus constitute an institutional innovation by reterritorialising state and society.

The aim of this paper is to understand how LATs can attribute to an institutional innovation by affecting the citizen-government relationship. For this purpose, the possible territorialisation paradox posed by ICTs is explored. First, literature on the deterritorialising effects of ICTs will be discussed (II). A theoretical approach towards the meaning of place in the context of public administration will be introduced. The next section (III) is devoted to the citizen-government relationship. What concepts can be drawn from literature to describe this relationship in the ICT-age and how do these relate to the concept of place? After setting the theoretical stage, the next section (IV) will focus on the nature and qualities of LATs, thereby discussing some applications in public administration from the three perspectives on the citizen-government relationship introduced in the previous section. Section V of this paper will then answer the question how LATs potentially counter the deterritorialising effects of ICTs and generate new meanings in the citizen-government relationship. The final section (VI) will then reflect on the territorialising and innovative capabilities of LATs.

II ICT and deterritorialisation

When ICTs were first introduced in the context of government they were considered as instruments which merely supported existing practices. Only in more recent years, researchers and government practitioners have acknowledged that ICTs can fundamentally transform the organisation and meaning of government as well as its relationship with society. Over the years, eGovernment research has shown that ICTs influence the efficiency and effectiveness of governmental organisations, transform public service delivery, and foster new forms of democracy (Snellen, 2005). Some of the most striking effects of ICTs are virtualisation and deterritorialisation (Frissen, 1996; 1999; 2005). The virtual world becomes ever more important alongside the physical world. As a result, people and processes are less often linked to a fixed location, or specific time. The rise in e-democracy and government e-services demonstrates this. Furthermore, the territorial boundaries which traditionally connect state

and society seem to fade, consequently creating problems of a legal and administrative nature. Several authors have, to a large degree, attributed this process of deterritorialisation to the entanglement of ICTs, especially the Internet, with daily activities of both citizens and public organisations.

An understanding of deterritorialisation

In 1998, the Dutch Scientific Council for Government Policy (WRR, 1998) published a report about the administrative consequences of ICT, identifying deterritorialisation as a major ICT-driven development which has to be taken into account. What then is the meaning of deterritorialisation? Deterritorialisation literally means 'to undo territorialisation' or 'removal of territorial features' or maybe even 'anti-territorialisation'. In all cases, the notion of territory loses its meaning and validity. Providing that 'territory' has the meaning of 'an area under the jurisdiction of a ruler or state' (Oxford University Press, 2008), to deterritorialise could mean that either the designated area or the power of the adhering institution is less significant, or both. Deterritorialisation certainly cannot be attributed to ICT-developments alone; it can be traced back to older times and other contexts. However, ICTs are generally believed to be an important cause of deterritorialisation, which reinforces other causes like internationalisation (WRR, 1998; Frissen, 1999) and increased mobility of people (Pontier, 1997). The accelerating capacities of ICTs can be attributed to the characteristics of dematerialisation (also: virtualisation; see Frissen, 1996) and technological turbulence (Wetgeving voor de elektronische snelweg, 1998: 4). Dematerialisation opens up the possibility of easy copying and distribution of new, non-tangible forms of information. Technological turbulence refers to the speed and unpredictability of technological developments.

When looking at literature about deterritorialisation, three aspects of its meaning for public administration can be distinguished: loss of power over a place, loss of the importance of place as an organising principle and loss of unity of place.

Loss of power over a place

This aspect of deterritorialisation refers to the power, both internally and externally, that an institution has over a designated area. Regarding the national state its sovereignty constitutes a monopoly on using violence, raising taxes and posing regulation within its national borders. On top of that, the state has an autonomous position, governing independently with regard to other states. The same reasoning applies to other government institutions with territorially bound power, such as certain regional authorities (e.g. the German Bundesländer) or municipalities. In other words, these institutions have both the right and the ability to regulate affairs within their territories. This territorially bound power is affected as soon as the scale at which decisions are made changes. ICTs have contributed to the destabilising of traditional, territorially tied, hierarchical scales, thereby creating new subnational and supranational scales (Frissen, 1999; Sassen, 2007), which increasingly seem to overlap.

Loss of importance of place as an organising principle

Another way to understand the deterritorialising effects of ICTs is through an organisational approach (Snellen, 2000: 38). Online communities arise out of the common needs, interests and goals of people and not so much because of physical proximity. The death of distance caused by the Internet, for example, connected activists from all over the world (Capling and

Nossal, 2001). This development can be viewed as a radicalisation of the increased mobility of people which already eroded distances (Pontier, 1997). So, functional and temporary criteria rather than location based ones determine how organisations are formed (Frissen, 1999). When interacting with these virtually formed communities, governments are forced to look beyond their traditional territorial boundaries.

Loss of unity of place

The WRR Council describes deterritorialisation as a process in which human activities or interaction between human beings can no longer be univocally attributed to a specific and appropriate jurisdiction (1998: 54). Loss of unity of place means that actor, action and consequence can no longer be attached to a single location. This aspect of deterritorialisation is generally considered as a typical consequence of the Internet. In the virtual world, many of the restrictions of place and time we know in the physical world do not exist. Contrary to their physical equivalents, such as the town hall information desk or the tax office, government websites can be simultaneously accessed by multiple people from all over the world and don't have office hours or queues. As a result, it is no longer clear where a certain process or interaction takes place.

The historical importance of territory in public administration

Now, why is this process of deterritorialisation so problematic for the state? It is not only that the deterritorialising effects of ICTs threaten the mere existence and legitimacy of the state, but they touch upon its history and customs. The history of mapmaking teaches us that the human desire to travel, expand knowledge and give meaning to the world played an important role for the evolution of states (Coessens, 2008). Newly discovered places were given new names and new rulers. Maps were used as a means to describe and claim this new reality. Already in 1595, Mercator, one of the most significant geographers in the sixteenth century, in his *Atlas* draws attention to a new added value of geography: 'it will contribute greatly to the knowledge of political regimes, providing that it describe not only the position of various places, but also their nature or legitimate condition, which the duty of the geographer always demands' (Crane, 2002: 250). The French absolute rulers were one of the first to use the possibility of drawing borders of their territory by putting them on a map. Because *La France* was ruled from a central residence, either in Paris or Versailles, the king had to find new ways of keeping an eye on his territory. The French monarchs discovered that a map was an ideal way of keeping an overview of the territory and, at the same time, they could also shape and define it. In the course of the eighteenth century, the borders of the state territory became more explicit. State rulers assigned cartographers to map their territories and especially the exact location of the state borders. These maps started playing an important role in diplomatic negotiations and disputes. From this time on it became more common to enclose maps as part of treaties. For example, in the Anglo-Dutch treaty of 1718 a map delineated the frontier between the United Provinces and the Austrian Netherlands (Black, 1997: 16).

This quick glimpse at the political history of cartography shows that one of the core activities of a state consists of mapping and shaping both its territory and the society within that territory. These activities of mapping and shaping are mutually dependent and reinforce one another. As Scott (1998) puts it, states want to make society legible in order to be able to control it. This striving for control is in the very nature of the state. It is part of its history, present and future and it is territorially bound. However, today's governments are likely to be interested in reterritorialising society for more reasons than just controlling citizens. In the

next section, along with the control-perspective two other perspectives on the citizen-government relationship are presented. These three perspectives will serve as a starting point to organise the ideas on the possible reterritorialisation of state and society by means of location aware technologies.

III The citizen-government relationship in the ICT-age

Institutional innovations refer to ‘fundamental transformations in the institutional relations between organizations, institutions, and other actors in the public sector, and more specific in public administration’ (Bekkers, van Duivenboden and Thaens, 2006: 12). Lips, Taylor and Organ (2006: 214) indicate that institutional innovation can thus mean “the renewal of traditional citizen-government relationships as a result of the creation and development of new information practices”. In an earlier publication (1998) Lips already discusses three scenarios to describe these possible changes: Orwell/Big Brother, Athens, and Soft Sister. Even though e-government research has advanced several years, these scenarios still provide useful concepts to describe the citizen-government relationship in the ICT-age. In each scenario different values regarding citizenship are dominant matching a different role the citizen can fulfil when interacting with government.

The citizen-subject

In the Orwellian scenario, as stated by Van de Donk and Tops (1992), the citizen is predominantly treated as a subject of the state. Government has the power to draw limitations to the behaviour of citizens and make sure that they obey the will of the state. The increased transparency of the citizen, caused by ICT only helps government in steering and controlling society. Any deviant behaviour can easily be detected and acted upon. Government thus uses ICT as a weapon against citizens.

The citizen-client

The Soft Sister perspective (Frissen, 1997) emphasizes the role of the citizen as a client of government. Government makes it its top priority to provide many and excellent services to its clients. As a client, the citizen expects and demands a certain service level when interacting with government. ICT opens up new ways to cater to these needs by increasing the quantity and quality of public services as well as tailoring to the desires of the individual client. Government uses ICT as a tool to act in favour of citizens.

The citizen-citoyen

In the Athens perspective (Van de Donk and Tops, 1992) democratic values prevail when government interacts with the citizen-citoyen. On top of representing the citoyen government aims at cooperation. As a citoyen, the citizen must have part in the processes of policymaking and decision making. ICT may facilitate new ways for governments to involve citizens in its activities. In this view, ICT is used in cooperation with citizens.

Now, what can government do to deal with the deterritorialising society? Paradoxically as it is, government may find itself turning to ICTs to try and reterritorialise society.

IV Location Aware Technologies: characteristics and applications

How can ICTs reterritorialise state and society? In order to do that, they must go beyond cyberspace and reconnect with physical places and locations. The technologies which are presented in this paper as location aware technologies may be able to do this. First, some general characteristics of LATs are discussed. Then, possible applications in public administration are dealt with in light of the three perspectives on the citizen-government relationship which were presented in the previous section.

Characteristics of LATs

The local law enforcement of the Dutch city of Nijmegen used cell phones in March 2006 to find possible witnesses to a criminal act. Three-thousand people received a text message asking them to contact the authorities if they could provide information about the murder of activist Louis Sévèke (Nu.nl, 2006). These people were not selected because they lived in the neighbourhood of the crime scene or because they were acquainted with the victim. They were merely selected because of their location or, to be more precise, the location of their cell phones at the time of the murder. This technological possibility instigated their involvement in the police investigation. The local law enforcement requested these data from the telecom providers and consequently, was able to send the request for information to the given phone numbers, resulting in several reactions.

The Louis Sévèke case demonstrates a way in which citizens' spatial information could be of use to public authorities. There are several technologies which can be used to generate, store and (re-)use location information. These can be considered as part of the ICT family, since ICTs can be defined as 'technologies which are used in order to collect, store, modify and transfer information in a dematerialised way.' (WRR, 1998: 17). Location aware technologies (LATs) do all these things for a specific type of information, location information, and may be used to provide so-called location based services (LBS). LATs usually function within location systems, which typically consist of two or three components:

1. One or more devices sending location information to sensors – in the case where sensors do not operate optically.
2. Sensors to receive and transfer location and time information to static or mobile backend systems.
3. Backend systems interpreting and / or using location information.

(Meints and Royer, 2007: 18)

In the above-mentioned murder case, the first component consisted of people's mobile phones in GSM cells, which sent location and time information to the second component, the provider's antenna, transferring the information to the third component, the provider's backend system with its own database. Subsequently, the spatial information was re-used, after its initial use for telecommunications purposes, to generate the selected list of mobile phone devices and send out the call for information.

LATs comprise of more than just mobile phone technology to use spatial information about people. Two groups of LATs can be distinguished: positioning technologies and geographic information systems (GIS). Both types of LATs are needed within a location system to generate meaningful spatial information. First, positioning technologies render raw data in the

shape of either coordinates or network locations (Küpper, 2005: 18). Then, a GIS translates these data into descriptive location information which helps the user to understand where a given person is. The figure below presents the location of the Tilburg University Faculty of Law as a spatial location, a network location, and a descriptive location.

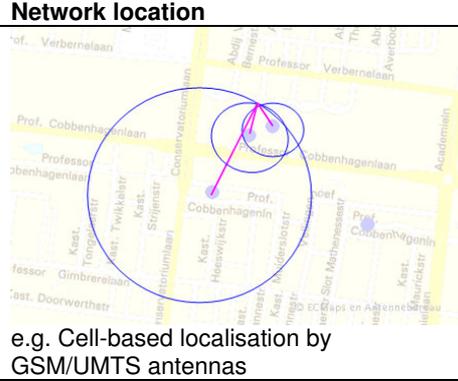
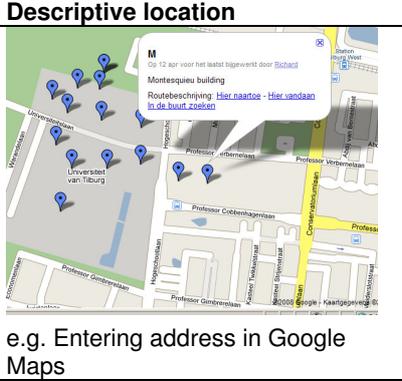
Spatial location	Network location	Descriptive location
Width: N 51.5629° Length: E 5.0472° Accuracy: 18 m Height: 55 m Accuracy: 35 m e.g. GPS-based coordinates	 e.g. Cell-based localisation by GSM/UMTS antennas	 e.g. Entering address in Google Maps
<i>Positioning technologies</i>		<i>Geographic Information Systems</i>

Figure 1 Localizing Tilburg University Faculty of Law

1. Positioning technologies

The following technologies can be used to gather location information (Meints and Royer (2007: 15).

- Satellite-based positioning systems (GPS; European Galileo system)
- Cell-based mobile communication networks (GSM; UMTS)
- Other wireless technologies (Radio Frequency Identification (RFID); wireless communication systems, e.g. WiFi or Bluetooth)
- Sensor-based systems (biometrical systems; optical sensors; passive infrared-based systems)
- Chip-card-based systems (ATMs; personalised access cards)

These technologies differ regarding their accuracy, their distance to the person which needs to be localised, and whether they have fixed or mobile sensors. It can be useful to combine several positioning methods in one device to enhance its accuracy. An example can be found when looking at mobile phones with incorporated GPS technology. This results in a combination of spatial location and network location, thereby enhancing the availability and accuracy of location information.

2. Geographic Information Systems

Today's GIS (Geographical Information Systems), which are increasingly being used in public administration, are more than maps. They are 'automated, digital information systems concerned with data related to locations stored on computers' (Black, 1997: 229). Vanneste (2001: 86) mentions several advantages of GIS over the traditional paper-based map. Now, maps can be treated digitally, do no longer have scale and are unlimited as to the spatial area and the objects that are depicted. Furthermore, a large database can be set up containing attributes about all map objects. This possibility works for both static and dynamic objects on a map. An attribute about a static object could be the name of the owner of a building which is shown on a map. A characteristic of a dynamic object could be the gender of the owner of the GPS unit which can be spotted moving on a map. Then, the different map layers and attributes

can be combined in several ways. In summary, the map transforms from a static device into a dynamic system. When looking at the most interesting possibilities of the use of GIS within public administration, these come down to analyzing and monitoring functions by means of combining, visualizing and correlating spatially spread data of social entities and their characteristics on the one hand (Snellen, 2000), and providing web-based citizen-oriented services on the other hand.

It can be stated that LATs have some specific qualities which makes their use interesting for governments.

1. First of all, location data can be collected on an individual level thereby providing more detailed information than, for example, from a database organised at neighbourhood level.
2. Secondly, a high level of accuracy can be achieved. GPS can locate a person at a precision of 1 to 15 metres and RFID at less than 1 to 50 metres (Meints and Royer, 2007: 16).
3. A third specific quality of several LATs is the high frequency of measurements, thus delivering dynamic data. Real time tracking of people lies within the possibilities.
4. Fourthly, the quantity of data can be large, since most people nowadays own a mobile telephone and the market for navigation devices with incorporated GPS technology keeps on growing. The European Commission even concluded about the Netherlands that 'Mobile penetration is now more than 100%' (2007: 1), implying that averagely Dutch people have one or more mobile phones.

However, all of these qualities regarding the collection of location data do not guarantee that governments are able to use these data for the spatial indexation of the rich collection of data about citizens they have access to. The authorities may increasingly be aware of the locations of individuals, but they do not automatically know (parts of) their identities. For example, if the police were able to determine the exact location of convicted bank robbers at the time of a new robbery, this might contribute to solving the case. Then anonymous dots on the map would get virtual faces.

Applications of LATs

One of the most interesting possibilities that LATs offer for public administration is the connection of spatial information with personal information, providing the basis for new types of analysis. Where Snellen (2001: 134) indicates that GISs bring '*the life world of people* -in contradistinction to *the system world* of the bureaucrats- on the screen', it can be stated that LATs show us the *live movements of people*. From the discussion of the meaning of the deterritorialising effects of ICTs for the citizen-government relationship earlier in this paper it has become clear that so far in literature not much attention has been paid to the service perspective and the democracy perspective. As will be demonstrated, this does not mean, however, that place and location are irrelevant for government-client and government-citizen interactions. Location information about citizens may prove to be useful from all three perspectives.

The citizen-subject

In December 2007 the Dutch Ministry of Transport, Public Works and Water Management announced the Cabinet's decision to implement a new pricing system for the use of public roads (Ministerie van Verkeer en Waterstaat, 2007). According to the plan, by 2012, car drivers will be charged a price per kilometre. To implement this new system, the Dutch government will be using the latest satellite technology to collect location information about every car. Even though the legal, political and technological specifications have not yet been entirely determined, it is evident that the gathered location information will need to be connected to personal data in order to be able to send the right bill to the right person. Of course, the underlying report mentions that considerations about people's privacy will be taken into account when developing the system. Already, a private company has offered the responsible Minister a technological solution which doesn't measure a person's exact route, but just the number and type of roads he drives on instead, thereby realising a lesser invasion of his privacy (Pieper, 2007). Nevertheless, a rich database with up-to-date, accurate, highly precise information about activities on the Dutch roads will be available. Processing this information with GIS technology opens up possibilities for analysing and monitoring citizens (Snellen 2000: 133). Violators of speeding limits may not be able to escape fines anymore. This is account of Mr Turner which lead to the case 'James Turner v. American Car Rental Inc.' at the Connecticut Superior Court (Brouwer, 2005), proving that this is a realistic scenario. Turner hired a car and paid for it through his credit card. When he wanted to pay for gasoline using his credit card it was refused because he had exceeded his payment limit. It turns out that the rental company had placed GPS equipment in his car, measuring the driving speed. Every time Turner speeded, his credit card was charged in advance with the anticipated fine. This account proves that LATs do not just pose a future threat in this respect, but offer a real possibility to monitor citizens and act upon the rendered information.

The citizen-client

Ahas and Mark (2005) show that the space-time behaviour of society can be investigated when the social identifications of the mobile phone carriers are added to the location data. The authors reveal a number of applications this technology enables in the areas of dynamic space and planning. The dynamic space application Ahas and Mark mention is aimed at acting upon registered changes over time in the human social composition in space, resulting in different functions and meanings of places. 'For example, the language and message content of certain informative signs may be changed depending on whether there are more tourists or locals in the area' (Ahas and Mark, 2005: 558). Clearly, providing dynamic, better tailored information offers certain advantages from a service-oriented perspective. Furthermore, data on the chronological distribution of movement loads in a city, for example, could be of use in the planning of transportation and infrastructure. In fact, this method has already been applied in the urban planning of some Estonian cities (Ahas and Mark, 2005: 549). Maps were created showing, for example, the movement patterns of different age groups in a city during one week. One could argue that as a result the public service of planning roads is being improved, because the actual behaviour of the citizen-clients is taken into account. Even though the majority of the above mentioned applications is based on mere speculations, the apparent advantages for both governments and citizens make it likely that public institutions will be interested.

The citizen-citoyen

Regarding public participation, a very direct way of involving citizens' opinions in policy decisions can be established through asking people location based questions by sending them a sms or calling them on location (Ahas and Mark, 2005). For example, when passing by the site of a demolished building a person could receive a sms from the city council, asking him whether he would find it best to create: a) a children's playground, b) a school, or c) a new apartment block. An even more radical way of involving citizens is requesting them to cooperate in solving societal problems in a certain area. With this philosophy in mind, in 2008 the Dutch Police is continuing the Citizen net (Burgernet) program by doing pilots in eight cities. Citizens who enrol in this program are sent a message whenever their ears and eyes are needed to help the police. For example, in case of a robbery the police send out a Citizen net request to immediately alarm the police if a person matching the robber's description is seen. So far, citizens who actually receive such a message aren't selected based on their location at that very moment, but based on the registered address. However, LATs do offer the possibility to make this kind of citizen-government interaction more dynamic, and therefore more appropriate. This would eliminate the chance of a Citizen net member being contacted while outside the region. Additionally, LATs could also facilitate the reporting process, because citizens wouldn't need to explain to the police verbally where they were when seeing the robber; this location could be detected automatically.

These couple of examples of the use of LATs in public administration show that these technologies can facilitate new ways for citizens and government to interact. In this lies a promise for institutional innovation. What do these possibilities mean when looking at the ICT induced deterritorialisation of state and society?

V Reterritorialising society

A possible paradox can be found when looking at the effects of ICTs on the meaning of place for public administration. Where traditionally ICTs are considered to cause deterritorialisation of state and society, now location aware ICTs (LATs) have emerged which may have territorialising effects. Now, how can the three aspects of place which have been eroded by ICTs, power over a place, place as an organising principle, and unity of place, be restored by LATs? Figure 2 shows a theoretical approach to understand the territorialising capabilities of LATs. Each aspect of place is looked at from a different perspective on the citizen-government relationship.

	Power over a place	Place as an organising principle	Unity of place
Citizen-subject	Monitoring and steering individuals within a given territory	Monitoring and steering groups of citizens based on their locations	Monitoring and steering by unifying location information and (personal) data about citizens
Citizen-client	Offering tailored services within a given territory	Offering tailored services to groups of citizens based on their locations	Offering tailored services by unifying location information and (personal) data about citizens
Citizen-citoyen	Cooperating democratically with citizens within a given territory	Cooperating democratically with groups of citizens based on their locations	Cooperating democratically by unifying location information and (personal) data about citizens

Figure 2 The territorialising capabilities of LATs

Now, looking at applications of LATs which were presented in the previous section, how can these reterritorialise society?

Power over a place

LATs offer possibilities to help government to regain power over its territory. LATs enable government to relate functional regulations, such as traffic tax in the Netherlands, to the actual location of citizens. It will be possible for the Dutch government to monitor and bill all users of the Dutch road network. The current road tax system is restricted to registered car owners in the Netherlands. This artificial reality as stated in the Dutch administrative system is replaced by the reality of GPS signals on the road. This greater knowledge about people and places (i.e. legibility of society, see Scott, 1998) constitutes an increase in the institutional power to act. Furthermore, power over activities within the territory increases, because government will have the opportunity to not only better monitor and control the same Dutch car owners, but formerly unregistered road users, such as tourists, as well. Clearly, these types of reterritorialising possibilities are especially interesting from the perspective of the government-subject relationship.

Place as an organising principle

The possibilities of LATs to restore place as an organising principle look promising for all three types of citizen-government interactions. The meaning of place may be changed in a radical way. The static notion of place which is constituted by the traditional political territory is now challenged by a dynamic form. A variety of changing places instead of a number of traditionally predetermined fixed places will dominate activities in public administration. These are multiple places, both in space and time, which will be formed, based on the meanings users attach to them. Local government may, for example, decide upon implementing a new infrastructure for public transport in a particular area based on analysis of mobility data. The actual mobility data, as opposed to the traditional institutional territory, then determine what will be the place for which a change is desirable. This new place may be part of the institution's territory, but it might as well cross its boundaries, thereby urging multiple institutions to cooperate on solving the problem. So, functional and temporary criteria along with location based ones may determine how government policies are formed and organised. As a result government institutions would increasingly be urged to operate outside their traditional territories. These dynamic places may also be formed because citizens consciously interact with one another based on physical proximity. For example, the location based dating service 'Ollo' offered by the Dutch telecom provider KPN is already a fact. Subscribers to this service receive a text message in case a possible match is detected having a network location close by. This example demonstrates that LATs can help people to get organised based on mutual interests and locations. This development may create new types of public services, but poses challenges for the government-subject relationship as well if people having bad intentions start organising themselves in this way.

Unity of place

Optimistic thoughts about the territorialising capabilities of LATs may be weakened when reading what the WRR Council already stated in the 'State without land' report: 'The fact that the persons involved may be located, doesn't diminish this problem, as long as laws and regulations are so much tied to the notion of territory' (1998: 55). So, according to the Council, the problem remains that actor, action and consequence are still not in one place.

Indeed, LATs do not appear to reinstate the unity of place which is lost in the physical world. However, these technologies do reconnect the virtual and the physical world. Information in virtual databases may increasingly be linked to people's locations in the physical world, thereby creating a virtual unity of places. Information about where a particular person or group of persons is or was can be combined with previously non-shared information from different organisations. From the citizen-subject perspective this may create new ways to detect deviant behaviour and even prevent unwanted behaviour from happening. At the same time tailoring public services gets a new impulse, because registered personal preferences and other individual background information may be used to provide a client with the information he needs at his current location. As a citizen, the citizen would only be involved in the democratic projects he's interested in based on unifying information about for example the places he regularly visits and personal characteristics like age and occupation.

VI Institutional innovation through reterritorialisation?

LATs appear to have characteristics which potentially reterritorialise society and generate new meanings in the citizen-government relationship. However, not all aspects of deterritorialisation as caused by ICTs are countered by LATs. This may not come as a surprise, since Snellen (2000: 138) already pointed out that GISs have territorialising effects in other domains than those which are affected by deterritorialisation.

The power government has over a place, which is affected by ICTs as a result of changing scales, can be partly restored when using LATs in government-subject interactions. LATs provide government with new methods to extend its power within traditional territorial boundaries. This regained power over the traditional place may be challenged, however, by the other territorialising capabilities LATs offer. Place as an organising principle is likely to get a new meaning as a result of LATs. Dynamic places rather than static places may provide a basis for groups of citizens to organise themselves, requiring an adequate response from government in its interactions with citizens. These new territorialised communities may exist alongside deterritorialised online communities. The physical unity of place, which has become problematic because of ICTs, is getting a virtual sister out of the hands of LATs. This new virtual unity of places doesn't solve the problems with its deterritorialised counterpart, but does open up innovative ways for government to interact with citizens.

It appears that ICTs can cause deterritorialisation and territorialisation at the same time. These developments can be understood as a paradox rather than a contradiction. Only when looking at the aspect of power over a place a contradiction can be found. The territorialising capabilities of LATs regarding place as an organising principle and unity of place pose a paradox. They don't counter the deterritorialising effects of ICTs, but do create new meanings of place in citizen-government interactions. Therefore, institutional innovation is expected to take place as a result of these types of applications of LATs. In this time, where most citizens and public institutions have finally familiarised themselves with their identities and activities in cyberspace alongside those in the 'real' world, they will have to get used to a new surprising mix of both.

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