When e-Government is Opposed by Unwilling Clients; Case Studies on e-Enforcement

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Abstract: e-Enforcement is the use of electronic tools in law enforcement. We examined the consequences of using two forms of e-Enforcement for several aspects in the relation between government and inspectees: weigh-in-motion and the digital tachograph. Inspectees are 'obligated clients' of enforcement. They usually do not appreciate government enforcement and have strong incentives for 'strategic behaviour' or 'game playing'. Our research shows that, contrary to our expectations, e-Enforcement does not reduce all strategic behaviour and in fact even stimulates some new forms of it. However, e-Enforcement turns out to be successful when embedded in interaction processes and when providing added value for the inspectees.

Keywords: digital/electronic/e- government, automated/electronic/e- enforcement, customer, client, strategic behaviour, public sector, transport, weigh-in-motion, tachograph

1. Introduction

The past years have shown the rise of 'e-Enforcement'. e-Enforcement is the use of electronic tools in law enforcement. In some sectors, the use of such tools has been common for some time, such as the use of cameras to prevent red light running and speeding offences. Recently, however, several new initiatives have been developed, such as tools to combat truck overloading and enforce driving and rest hours for drivers.

In this paper, we pay attention to these new developments, focussing on the special position of the clients of the enforcement. These clients are the offenders or potential offenders, whom we will refer to as 'inspectees' for the purposes of this article. What characterizes these clients is that they do not want the service and generally show uncooperative behaviour. They may, for example, actively evade the 'service' of enforcement, or commit information fraud. What do these client characteristics imply for the use of e-Enforcement? Can modern technologies force inspectees to comply? Our answers to these questions are based on two case studies, carried out at the Netherlands Transport and Water Inspectorate in 2003. They provide an insight into the social aspects of e-Enforcement and explain why merely implementing a technical solution is insufficient to make enforcement work.

The structure of this paper is as follows. In the next section, we present a state-of-the-art overview of e-Enforcement, based on literature. We will then introduce typologies of e-Government and its clients and explore the implications for e-Enforcement. Given these typologies, we will formulate research questions. We will present the two case studies and derive answers to the research questions, resulting in conclusions.

2. e-Enforcement: State of the art

e-Enforcement is the use of electronic tools in law enforcement. It is a form of e-Government. 'E-Enforcement' is an abbreviation for 'electronic enforcement' [Smith *et al.* 2000] and is synonymous with 'automated enforcement' [Ruby and Hobeika 2003; Smith *et al.* 2000; Wissinger *et al.* 2000; Wilmot and Khanal 1999; Bochner 1998; Turner and Polk 1998; Glauz 1998; Meadow 1998; Perone 1998; Retting and Williams 1996].

Some e-Government and digital government publications mention the area of regulation and law enforcement. Chen [2002a] mentions that the National Science Foundation in the U.S. has funded a number of digital government projects[1] aimed at, among others, law enforcement. Chen refers to new databases and data mining technologies,

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[1] In 1998, the National Science Foundation in the US initiated its first program in Digital Government.

which 'could become the catalyst for encouraging information-sharing and supporting collaboration and investigation among police departments, corrections offices, social services and courts' [Chen 2002a]. Strejcek and Theil [2002] mention that bilateral and national treaties between E.U. member states are providing electronic government measures such as the exchange of data in the field of interstate cooperation in penal law and law enforcement. Chen *et al.* [2002b] have analysed Coplink Connect, an information and knowledge management system, for law enforcement.

All examples and studies concerning e-Government in law enforcement mentioned above concern government-to-government interaction [Hiller and Belanger 2001]. In this paper, however, we are interested in government relating to businesses or citizens. Critical publications on this type of e-Government are found in the literature on automated traffic enforcement.

The literature about automated traffic enforcement[2] discusses the use of electronic tools for the enforcement of laws against speeding [Wilmot and Khanal 1999, Glauz 1998, Perone 1998], running red signal indications [Ruby and Hobeika 2003, Walter 1998], entering railroad crossings when gates are down [Meadow 1998], failing to pay tolls and high-occupancy vehicle lane violations, electronic toll collection systems, vehicle inspection, weigh-in-motion stations and remote emission sensing [Bartoskewitz *et al.* 1999, Bochner 1998, Turner and Polk 1998]. Bochner [1998] reports that automated enforcement is used in over 75 countries throughout the world.

Automated traffic enforcement is found to be very effective in reducing violations and eventually in reducing accidents [Ruby and Hobeika 2003, Glauz 1998, Meadow 1998, Perone 1998]. Some authors mention that motorists may oppose the introduction of automated traffic enforcement by influencing politicians [Bartoskewitz 1998, Turner and Polk 1998]. None of the authors, however, mentions or investigates opposition of

inspectees after the definitive introduction of the systems, which is the focus of this paper.

3. Clients of e-Government

Many definitions describe e-Government in terms of service delivery. [O'Donell *et al.* 2003; Finger and Pécaud 2003; Marchionini *et al.* 2003; Chen 2002a; Ho 2002; Devadoss *et al.* 2002, Gartner Group 2000 in Hiller and Belanger 2001, Moon 2002, UN and ASPA 2001]. The descriptions contain the concept of customer focus [Finger and Pécaud 2003; Devadoss *et al.* 2002; Ho 2002]. e-Government should satisfy the customers, both citizens and the private sector [Finger and Pécaud 2003].

A government delivering services deals with several types of service recipients or clients. Alford [2002] distinguishes the clients as being paying customers, beneficiaries or 'obligatees'. In addition to clients, he introduces 'the citizenry', because, in some cases, society in general rather than the service recipient or client benefits from the service.

Paying customers exchange money for products or services they want. An example is commuters paying for public transport. The clients express their preference and pay for the value they receive. Examples of e-Government dealing with a paying customer are agencies selling passports to its citizens online [Tian and Tianfield 2003].

Beneficiaries receive services without paying for them directly, for example pupils at publicly funded schools. The client benefits from the service and is generally happy receiving it. The public or 'citizenry' express preferences for the service through a democratic process and pay for the service through taxes. Examples of e-Government to beneficiaries are social security requests online [Bovens and Zouridis 2002, Hiller and Belanger 2001] and electronic medical files [Szende 2003].

Obligatees do not want the product or service and may even oppose it, as is most obvious in law enforcement. Obligatees usually receive something they would rather not have, such as checks and inspections, possibly resulting in coercion,

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[2] In our paper we consider only scientific publications. Business Journal publications on automated / electronic traffic enforcement can be found in: Traffic Technology International, ITS world, ITS quarterly.

imprisonment and penalties. The citizenry profit from the service, however. By restricting the client, society receives value, for example law and order, public goods and functioning markets [Alford 2002, Sparrow 2000]. Examples of e-Government dealing with obligatees are automated enforcement of speed restrictions by means of cameras [Bovens and Zouridis 2002] and tax transactions over the Internet [Hiller and Belanger 2001].

e-Enforcement is an e-Government service to obligatees. However, the image of customer focus that is often used in e-Government does not seem to apply to e-Enforcement, at first sight. After all, receiving this 'service' cannot satisfy the clients of e-Enforcement.

Still, at a closer look, the concept of customer focus does apply even to obligatees, as Alford argues. We will show this is also true for the clients of e-Enforcement. We even argue that the customer focus is an effective strategy when inspectees oppose e-Enforcement.

4. e-Enforcement, inspectors and obligatees

4.1 Strategic behaviour - First question

An important characteristic of obligatees is that they display strategic behaviour or game playing. This means that in the process of interaction with the inspector they continuously try to strengthen their own position. Patterns of strategic behaviour of inspectees might be one of the following choices [de Bruijn and ten Heuvelhof 2000, Hawkins 1984]:

- Promising future improvements to ensure that the inspector will adopt a cooperative attitude;
- Asserting that improvement of behaviour is technically unfeasible, or not yet feasible, to ensure that strict enforcement seems unreasonable;
- Continuing to violate the rules, even after sanctions are imposed;
- Threatening to start legal proceedings, which might embarrass the inspector;
- Using political networks to stress alleged unfairness of certain regulations, to ensure that the

inspector lacks political support for his actions.
- An important aspect of strategic behaviour concerns the supply of information from the obligatee to the inspector. Obligatees tend not to cooperate and provide requested information voluntarily, as this might disadvantage them.

These observations lead to the first question addressed in this paper. How does the introduction of e-Enforcement affect the strategic behaviour of the obligatee?

This question is interesting for two reasons. Firstly, the literature on enforcement predicts strategic behaviour of inspectees. Literature on e-Enforcement however, has not yet addressed this issue.

Secondly, although the literature on enforcement predicts strategic behaviour of inspectees, e-Enforcement could turn out to be different, because e-Enforcement seems to potentially enable zero-tolerance enforcement. Offences can be detected more easily, no discussion is possible between the inspector and the inspectee, and the scope of enforcement could be enlarged, while the ticketing could be automated. If this is true, the expectation that e-Enforcement will end strategic behaviour is justified.

4.2 Interdependence and the need for interaction - Second question

Much of the enforcement literature distinguishes between two styles of enforcement. The first style is based on compulsion and the unilateral coercion of compliance by a government. This style works when the relation between inspector and inspectee is hierarchical. The second is based on cooperation and interaction between inspector and obligatee. This style works when inspector and inspectee are mutually dependent [Hawkins 1984:3, Sparrow 2000:34].

If strategic behaviour remains after the use of e-Enforcement, the second style seems more appropriate to deal with it, as the strategic behaviour implies mutual dependency. Using a style of cooperation and interaction is in line with Alford, who advocates an approach of customer focus, even when dealing with obligatees.

Alford [2001] argues that governments should treat the obligatee as a customer, just like paying customers and beneficiaries. If obligatees have value to offer to the government, then the government has a reason to treat the obligatees as customers and offer value to them. Alford argues that obligatees indeed have value to offer. They may not pay for the 'service' of enforcement, but they may choose to provide other things the government agency needs, such as information, compliance or cooperation [Alford 2001, Hawkins 1984]. Furthermore, they may choose to refrain from strategic behaviour.

Using the other style, applying coercion, also enables government to achieve these values, according to Alford, but this is costly. The literature on enforcement confirms this view. Compulsion is expensive; dialogue tends to leads to an intrinsic commitment of the obligatee [Hawkins 1984].

The government is thus dependent on the inspectee to optimise enforcement. Alford states that government is likely to receive the value wanted from inspectees, by treating them as customers. The government of course cannot satisfy inspectees by completely refraining from all enforcement. It is possible, though, to provide value to inspectees within the borders of coercion. Acting in a way that inspectees consider fair and just and making it easier to comply can achieve this.

When the introduction of e-Enforcement does not end strategic behaviour of inspectees, we advocate an approach of value exchange, dialogue and negotiation between the government and the obligatee. Our second question for this paper is therefore: do the cases on e-Enforcement offer starting points for such an approach?

5. Two case studies[3]

5.1 Weigh in Motion with Video

Trucks can be overloaded either as a whole or on one axle. Both types of overloading are punishable. Weigh in Motion with Video is a system to conquer truck overloading. It was introduced in cooperation between various agencies within the Ministry of Transport and Water Management and the National Police Agency. The system consists of sensors in the road surface and overhead cameras for identification. Currently, there are six weighing points in the Netherlands. The case study is mainly based on the experiences with a pilot scheme lasting approximately one year.

The system has several applications. Applied 'repressively,' it is used for pre-selection purposes. A police team at the weighing point sees the images of overloaded trucks and pulls them over. The weight of the trucks is checked with a certified weighing system, sanctions imposed being based on these checks. Because inspectors know beforehand what vehicles are overloaded, all human inspection capacity can be spent dealing with offenders. In the future, the weighing system in the road surface may itself be certified, making weighing checks superfluous and allowing penalty notices to be sent automatically.

Applied 'preventively', the system gathers the data of all offences at all weighing points round the clock, turning them into company files based on registration plates automatically. Inspectors visit frequently offending companies, and solutions are worked out in cooperation with these companies. Unwilling companies may face a check offensive by inspectors at the company gate.

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[3] The research has been conducted between january and august 2003. For detailed results see Koopmans-van Berlo [2003] and de Bruijn and Koopmans-van Berlo [2003].
The cases are based on semi-structured interviews with Inspectorate employees, representatives of the inspectee groups, and the system developers. On average we interviewed for each case six respondents extensively, most of them twice: a second time based on insights from other interviews. In addition we spoke shortly to five people on average, to confirm or supplement the respondents information. We supplemented the interviews with written sources: we asked respondents for supporting documentation and we conducted internet- and literature reviews.

5.2 The digital tachograph

Driving and rest hours for truck drivers are subject to regulation. A tachograph is a device in a vehicle that records drivers' driving and rest hours. There is a statutory obligation for each truck or coach within the EU to have a tachograph on board. Inspectors can read on drivers' tachograph charts whether they have taken enough breaks and rests. Inspectors can perform roadside checks, but they can also visit companies. Companies are obliged to retain their drivers' tachograph charts and inspectors can impose sanctions for offences committed earlier, based on company visits paid later.

So far, a tachograph has always been an analogue device with paper charts. Fraud with analogue tachographs was the reason for the EU decision to introduce compulsory digital tachographs. Not only was tampering with digital tachographs believed to become more difficult, but also it was thought that enforcement would become more efficient and companies would be able to link the data from digital tachographs to their company records.

The future digital tachograph will measure the speed of a truck in the same way as the analogue tachograph but store the data digitally. The driver has a personal driver's smart card, on which the data is also stored. A roadside inspector can read the device. When visiting a company, inspectors can check the whole company file, which can be analysed much faster than the pile of paper charts. In the future, companies may be obliged to send their data to the Inspectorate, which would make enforcement even more efficient.

It will be clear that these two case studies concern government-obligatee interaction. The obligatee does not want to be 'served' by enforcement. Both the rules for truck loading and for driving and rest hours conflict fundamentally with the primary processes of the road haulage firms. Some examples:

- Imagine a company receiving an order that involves the shipping of four concrete pillars. One truck can carry three pillars according to law, but has a technical capacity of carrying four pillars. By law, two trucks are needed to carry out the order, but the company that offers to take them on one truck has the lowest price and wins the bid.
- Delivering goods on time is a central value in transport. Driving and rest time regulations may conflict with that value. An example is a driver who may be too late to deliver his freight that day, if he takes his compulsory rest. Another example is a driver who may see his cargo of fresh flowers wither, if he is forced to spend the night at the truck park. Putting two drivers on one truck can solve these problems, but this doubles the costs. One company competing by driving longer than allowed puts pressure on all other companies to do the same.
- A driver may also choose to neglect driving and rest hours in order to be home the same day, instead of spending the night at a truck park. Drivers may get paid for doing overtime and thus be willing to exceed driving and rest hours.

Enforcement may be a service to the market as a whole–which is the reason for transport trade associations to favour enforcement–but not the inspectee who is breaching the law.

5.3 e-Enforcement and strategic behaviour

What does the introduction of these forms of e-Enforcement mean for the strategic behaviour of the obligatee? The following are some of the patterns.

Less strategic behaviour…. In the first place, that strategic behaviour is found to diminish. It is practically impossible to pass a Weigh in Motion point without being registered. It does not pay to behave strategically by taking another lane, as the sensors are present in the entire width of the road. It does not pay to tamper with the license plate, as the cameras photograph the entire truck, which is always recognisable.

Weigh in Motion even seems to be an incentive for non-strategic behaviour, as there are many positive developments in the sector: constructive dialogue with enforcers, information sessions about solutions for overloading problems, technological innovations and adaptations to the fleets of vehicles are all examples. Inspectors can give many examples of companies having mended their ways

after a preventive visit. The explanation is simple. Weigh in Motion will offer less room for strategic behaviour, thus creating an incentive for compliance.

An ex ante analysis of the digital tachograph presents the following picture. The current analogue tachograph is subject to fraud. Drivers throw away or manipulate charts; they tamper with the device, or pay workshops to tamper with it. The aim is to get rid of records that demonstrate infringements, or to prevent the creation of such records. The digital tachograph is designed to be fraud-proof. There are far fewer possibilities to tamper with digital tachograph devices. Every attempt to tamper with the device is recorded in its memory and will be visible to inspectors.

….but some strategic behaviour stays the same. E-Enforcement does not solve some of the strategic behaviour that already occurred in the days of traditional law enforcement. A simple example is that the proportion of overloads in the transport flow drops to almost zero shortly after an inspection team has taken up a position at a weighing point. Drivers are believed to use their on-board communication equipment to inform each other of the presence of inspection teams. Those who know or suspect that their vehicles are too heavy wait at a truck stop till the team goes home, or choose a different route. The inspectorate can react by placing inspectors at the circuitous routes. However, this makes the enforcement process more labour-intensive and thus more expensive. Exactly the same behaviour occurred in the days that inspectors stood by the road and selected and weighed trucks manually.

Drivers using the analogue tachograph can hold back intermediate charts. The digital tachograph no longer has any charts, but carries the risk of 'loss' of or sabotage to the driver's smart card. Drivers are allowed to drive without a smart card for a week while waiting for a new one. The fallback option in case the driver drives without a smart card has the same disadvantages as the analogue system.

There is a risk of strategic behaviour on a collective level. Our analysis of Weigh in Motion shows that Weigh in Motion is not only relevant for the relation between individual obligatees and the government, but that the tool also offers possibilities for intelligence at a collective level. Inspectors can gain insight into specific companies or types of transport where overloading occurs relatively often and subsequently focus on them.

We also find that e-Enforcement can cause strategic behaviour to shift from the individual inspector-inspectee relation to the collective level. As regards digital tachographs, Anderson [1998, 2001: 234-242] warns against the misuse of workshop smart cards. These are special smart cards, which workshops can use to change the settings of the device when they install or repair the digital tachograph. Past practice has shown that truck companies bribe the workshops to tamper with analogue tachographs [Anderson 1998]. Bribing the workshops to misuse or circulate the workshop smart cards would make large-scale fraud with digital tachographs possible. Inspectors confirm this risk. Large-scale fraud would also be possible if inspectees succeeded in cracking the security measures on downloaded data. The risk of the 'crack' being spread is greater for digital technologies than it is for analogue technologies. It is not clear yet whether these events will indeed take place. However, what is clear is that strategic behaviour on the individual level will become less simple and hence incentives and possibilities may arise for strategic behaviour on a collective level.

5.4 e-Enforcement and the value inspectors and obligatees can offer

The case studies show that e-Enforcement does not solve strategic behaviour just like that. The relation between the inspector and the inspectee is a relation of mutual dependency. E-Enforcement should be embedded in an interaction approach rather than a compulsion approach. Both the obligatee and the government have value to offer to each other. We found a surprisingly large number of issues, which the government and the obligatee can offer each other as value. We expect that exchange and interaction processes facilitate the introduction of e-Enforcement.

The inspectee can offer value to the government in the following ways.

1. *Not behaving strategically.* The government agency would want the inspectees not to evade the weighing points. Guarding the circuitous routes is labour-intensive for the agency. Inspectees refraining from evading the weighing points would enable the agency to take a much fairer view of overloading. Inspectees would offer value by refraining from fraud with tachographs. The agency could then base enforcement on true information about driving and rest times.

2. *Abandoning negative criticism of the new systems.* Inspectees label the electronic enforcement as 'big brother'. They perceive a loss of privacy and fear future applications of the system. For example, a large network of weighing points might enable government to track and trace all trucks. Another point of criticism is the supposed unfairness of the systems. The systems allegedly focus on specific regions or groups only. Negative criticism attacks the legitimacy of e-Enforcement and may influence politicians' attitude towards e-Enforcement. This is why inspectees offer value by abstaining from criticism.

3. *Offering technical support on the identification of bugs.* As regards the digital tachograph, inspectees can offer value to the government by revealing the weak points in the security of the system.

4. *Quickly adopting the new systems.* Another value inspectees could offer the inspectorate is switching over to the digital tachograph early. The digital tachograph is only compulsory for new trucks. Considering the write-down term for trucks, there will be a transition period of about ten years in which analogue and digital tachographs will exist side by side. This is a disadvantage for the inspectorate, as it cannot change over to a new enforcement process completely and will only achieve limited efficiency gain. The more inspectees make a quick switch to the digital system, the more efficiency the inspectorate gains.

The government can offer value to the inspectee in the following ways.

1. *Providing equal enforcement intensities.* Inspectees feel that if rules against overloading are enforced, they have to be enforced equally for all companies. They want the government to place weighing points everywhere in the country, not only in the crowded western part. Focusing enforcement on a specific region does not prevent competitors elsewhere in the country from competing unfairly.

2. *Tolerating offences temporarily.* Inspectees argue that overloading has become an issue in enforcement only since the introduction of Weigh in Motion. Only since then have they been making efforts to prevent it. As this is hard, the government should provide a transitional arrangement.

   It is true that overloading of the entire truck can easily be prevented by taking less freight. However, one-axle overloading, without necessarily the truck as a whole being overloaded, is a technical problem. The overloading is related to the way the truck is loaded and unloaded during the day. Preventing axle overloading implies investing in either technical devices or new trucks. Companies prefer to wait making new investments until it is time to buy a new truck. Inspectees thus argue time is needed for adjustments towards compliance. They feel the government should allow this time, for example by tolerating small offences on one-axle overloading for a limited period of time.

3. *Focussing on the bad guys.* Well-disposed inspectees want the inspectorate to focus on the bad guys and to be lenient to the good guys. This means distinguishing between total truck overloading, which is unfair competition, and one-axle overloading, which is a technical issue. Inspectees feel the penalties for one-axle overloading are too high. One-axle overloading is classified as an economic offence and therefore as a criminal-law offence. Inspectees argue that total overloading is an economic offence indeed, but one-axle overloading is not. They want the government to lower the penalties to the level of administrative offences.

4. *Adding functions to enforcement tools.* As regards the digital tachograph, inspectees would value a digital tachograph tailored to the needs of their companies. This would be the case if they could use the system for the management of personnel, administration of working hours, fuel management, route planning, congestion information, and so on.

5. *Not disturbing internal work processes.* Inspectees do not want the process of enforcement to conflict with their own working processes. Unfortunately, they think the opposite is the case with the digital tachograph. Drivers personally have to collect their smart cards, which takes working time. Companies may need to offer drivers education on the operation of the new device. Downloading data from the single devices to a central company computer may require drivers abroad to return periodically.

6. *Involving inspectees in decision-making processes:* Road haulage firms want to be involved in the decision-making on the design of the digital tachograph and on the processes of operation, especially in decisions that bring on costs that are eventually shifted on to the road haulage firms.

7. *Helping inspectees to find solutions to comply:* Inspectees want the government to be involved in the process of finding and implementing feasible solutions for one-axle overloading. To prevent overloading, government could, for example, reduce the tax on trucks with extra axles. Inspectees complain that driving and rest hour regulations conflict with working hours. Adapting the scheme could increase compliance.

The issues mentioned can lead to processes of interaction and exchange, which benefit the introduction of e-Enforcement.

- If inspectors temporarily tolerate minor offences or if they add functions to enforcement tools, inspectees have fewer incentives to behave strategically. Government might further reduce strategic behaviour by helping inspectees to find solutions that will make them comply.
- By offering technical support in identifying bugs, inspectees can classify themselves as well disposed. The government may consequently be more willing to distinguish between good guys and bad guys among inspectees and focus on the bad guys.
- Increasing the perceived fairness of e-Enforcement, can reduce criticism from inspectees.
- If inspectors design enforcement processes that are compatible with companies' working processes, thereby involving inspectees in decision-making, inspectees would be more inclined to quickly adopt the new systems. The same is true when tools contain added functions for the inspectee.

6. Conclusions

e-Enforcement does not solve the problem of strategic behaviour completely. It is true that e-Enforcement makes it easier for the inspector to collect information about the inspectee and use it intelligently, thus reducing some strategic behaviour. It seems also true that modern technology is more resistant to evasion and fraud at the level of one inspectee and one tool. It is hardly possible to pass a weighing point without being registered and a driver cannot easily manipulate a digital tachograph device.

However, using technology does not seem to prevent strategic behaviour at a system level. Drivers can still evade weighing points by taking another route. Furthermore, at a system level we see the risk of strategic behaviour shifting to collective forms, involving more than one inspectee. These risks are tachograph fraud by manipulating downloaded data, or by the illegal distribution of workshop smart cards.

If the government wants to prevent strategic behaviour, especially the more threatening collective forms, merely implementing e-Enforcement will not suffice. At a system level, the technology does not prevent strategic behaviour. Strategic behaviour at a system level can even be inherent to the technology, as the nature of digital systems makes fraud reproducible. Thus, governments should seek the solution neither in technology, nor in coercion and compulsion, but in interaction. Inspectors and inspectees

have value to offer to each other concerning e-Enforcement.

Therefore, although inspectees are generally not pleased with receiving the 'service' of e-Enforcement and thus differ from other government clients, the government can still treat them as customers. By paying attention to the interests of inspectees, governments will promote the success of e-Enforcement.

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