National Center for Digital Government

ICTs and Political Accountability:
An Assessment of the Impact of Digitization in Government on Political Accountability in Connecticut, Massachusetts and New York State

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ICTs and Political Accountability

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This research was made possible by a TALENT Grant from the Netherlands Organisation for Scientific Research. The research was conducted during a visit at the National Center for Digital Government located at the University of Massachusetts in Amherst. I would like to thank the Netherlands Organisation for Scientific Research and the National Center for Digital Government for supporting this research.

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This report presents a first analysis of the results of empirical research into the impact of digitization on political accountability in Connecticut, Massachusetts and New York State. The report focuses on presenting the empirical findings and these data still require further analysis. Comments on the findings are welcome and can be sent to Albert Meijer (A.J.Meijer@uu.nl).

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Preface

This report presents the results of on of the two research projects I have been working on during my stay at the National Center for Digital Government bases at the University of Massachusetts in Amherst. The research is a replication of research I had previously done in the Netherlands and aims to test whether the findings of that research apply to a larger domain ((i.e. not only the Netherlands but also the United States).

It has given me great pleasure to be able to investigate the impact of information and communication technologies in American government and political institutions. I found it fascinating to obtain information about the workings of Public records Departments, State Auditors and Legislative Committees. I would like to thank all the persons that granted me an interview and helped me in my research. Lists of respondents can be found in the appendices A, B and C.

The research was conducted in the stimulating environment of the Center for Public Policy and Administration of the University of Massachusetts in Amherst. I would like to thank the director of the NCDG and, since recently, also the chair of the CPPA for having given me the chance to work in this environment and for stimulating my research with interesting conversations. I would also like to thank the faculty and staff of the CPPA for supporting me in my work.

The Netherlands Organisation for Scientific Research has financially supported this research through a TALENT grant. I would like to thank them very much for enabling this research project.

This report does not present a final analysis of the research but is mainly written to present an overview of the empirical findings. A thorough analysis of these results will require more time and will be conducted after my return to the Netherlands. Comments on this report are very welcome and will help me to enhance our understanding of political accountability in an information age.

Albert Meijer
Amherst, June 2006/Utrecht, July 2006

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Executive Summary

Introduction

Democratic government institutions were developed in the age of the steam engine but are now challenged by new technologies. ICTs induce change of the mechanisms and arrangements for political accountability and tend to influence arrangements for popular control over government. Political forums may be able to get a more comprehensive view of government decision-making and these increased opportunities may counteract the alleged difficulties that arise in public scrutiny because of the growing complexity of government. This development, however, also raises the issue of dealing with the resulting information overload.

Previous research in the Netherlands showed that digitization facilitates fact-finding by political accountability forums. The findings indicated that more information is registered, the preservation of this data is threatened but only to a limited extent and the retrieval of data is greatly enhanced. Although government is becoming more transparent, the available digital information is not used much in accountability. Accountability forums still heavily rely on paper documents for fact-finding. Lack of information processing capacities seems to be the dominant explanation for the failure to use digital information for fact-finding.

The aim of the research in the United States is to explore whether the domain of the findings of the Dutch research can be extended to different institutional contexts. The United States was chosen because the presidential systems that exist at the state level differ significantly from the parliamentary system in the Netherlands. I conducted research at the state level and investigated the impact of digitization in three states (Connecticut, Massachusetts and New York). These states are comparable to the Netherlands in size and level of technological sophistication.

I have formulated the following question for this research:

> *What is the impact of the digitization of government on political accountability in the States of Connecticut, Massachusetts and New York and how and why does this impact differ from each other and from the Netherlands?*

This question indicates that the research contains four comparisons: (1) comparing political accountability before and after the introduction of ICTs in government, (2) comparing the impact of digitization on political accountability by State Auditors and Legislative Committees, (3) comparing the impact of digitization on political accountability in the U.S. States of Connecticut, Massachusetts and New York and (4) comparing the impact of digitization on political accountability in the United States and the Netherlands. The first three comparisons will be the focus of the empirical research in the United States, the third comparison will be the result of an analysis of the findings in the USA and the Netherlands. The comparison with the Netherlands contains the problem that there is a variation along two dimensions: institutional differences and time

differences. This double variation presents no problems when there are no differences. That would mean that the impact is constant across different institutions and over time. If there are differences the nature of these differences will be investigated through a qualitative analysis of the answers.

Structuration theory is used to study the relation between ICTs, organizational recordkeeping and political accountability. Shaping of ICTs in government organizations is regarded as a process of structuration (Orlikowski, 1991) or technology enactment (Fountain, 2001). Information technologies are developed outside organizations (in corporations or by research communities) and are made available for use in the organization. The use of the technology is influenced by institutional characteristics (power relations, value patterns, cognitive patterns) but characteristics of the technology influence further shaping. The relations between internal processes and external relations – in this case relations with political accountability forums – will be approached along the same lines of structuration or enactment: formal institutional rules influence the behavior of both accountees and accountability forums but do not determine the outcome since accountability forums are actors within these institutions and create these institutions through their actions.

The research was quantitative and consisted of interviews and document studies. The research focused on Legislative Committees and Offices of the State Auditor in Connecticut, Massachusetts and New York. The impact of digitization on organizational recordkeeping was studied through interviews with respondents at state recordkeeping departments. Document studies included general documents about accountability forums and recordkeeping practices and specific documents about investigations by accountability forums.

The answers to the research question and the overall conclusions on the basis of the empirical research can be formulated in terms of the four comparisons ((1) comparing political accountability before and after the introduction of ICTs in government, (2) comparing the impact of digitization on political accountability by State Auditors and Legislative Committees, (3) comparing the impact of digitization on political accountability in the U.S. States of Connecticut, Massachusetts and New York and (4) comparing the impact of digitization on political accountability in the United States and the Netherlands).

Findings (1): Political accountability before and after the introduction of ICTs in government

Digitization has a positive effect on short term recordkeeping but may have a negative effect on long term recordkeeping. The specific findings for the four most important technologies (e-mail, databases, office software and websites) are exactly in line with the findings of the previous research.

The effects of e-mail use on organizational recordkeeping are ambiguous. Much information is recorded and these messages may be preserved on computer tapes, paper

documents or in individual files. This information may be mostly irrelevant and there are no guarantees for adequate preservation. This means that accountability forums cannot rely on the availability of this information: they may be 'lucky' to find an e-mail. Recent examples in the private sector (e.g. Microsoft) provide an interesting example.

The effects of databases on organizational recordkeeping are also ambiguous: they improve the short-term memory of organizations but may create difficulties in the long term. The dynamic nature of databases creates, according to the respondents, problems specifically for GIS.

The effects of office software on organizational recordkeeping seem generally positive because paper documents are also preserved. The digital document is a back-up and more easily accessible. On the other hand, if the information is only preserved digitally there are no adequate guarantees for the reliability of the digital information. This makes the effect of office software on organizational recordkeeping ambiguous.

The effects of websites on databases runs parallel to the effects of e-mail and databases and are thus also ambiguous. Advantages are that much information is recorded and made available and this information is easy to access. This information, however, is often updated and may not be preserved.

The respondents of the three states indicated that overall digitization seems to facilitate accountability on the short-term but may hamper accountability in the long term: ICTs improve internal information management and, therefore, also facilitate short-term accountability. The non-intentional effects may only benefit the short term: as soon as the agency no longer needs the records it may not manage them well anymore. Long-term accountability may be hampered.

In practice, the failure to ensure long-term access to records has no negative effect on fact-finding by auditors and legislative committees. Digitization facilitates fact-finding since information from databases plays an important role in audits and reviews. Accountability forums make use of this information and certainly do not only rely on paper documents. They have sufficient information processing capacity to use the information available to them and this enables them to make reconstructions of facts which they could not have made without the availability of digital information.

Electronic networks enable unmediated access to electronic networks. Accountability forums obtain direct access to organizational data either through large statewide accounting systems or through agency websites. In either case the accountability forums can 'penetrate' in the organization without having to pass a 'gatekeeper'.

Digital information is not always regarded as reliable information: digital information requires checking. Only in a few specific situations did the lack of reliable digital information hamper fact-finding. Some accountability forums are better aware – and probably also better capable – of the need to check the reliability of digital information.

There are fundamental differences on the role of e-mail in fact-finding. What is the status of e-mail? Opinions differ considerably. A social construction of e-mail is taking place but without 'closure' there is much confusion. This confusion also existed among record keepers. Some record keepers argue that all e-mail messages are ephemeral whereas others emphasize that e-mail messages should be treated as organizational records.

Findings (2): Impact of digitization on political accountability by State Auditors and Legislative Committees

The general comparison of political accountability before and after the introduction of ICTs applies to both State Auditors and Legislative Committees. Between these two accountability forums there are also important differences:

- *Direct access to organizational information*. Auditors in all three states have direct access to accounting information of all government agencies through statewide accountability systems. Legislative committees do not make use of those systems for data collection.
- *Sophisticated analysis of organizational data*. All the auditors have sophisticated tools for analysis of data (most prominently: ACL). Legislative committees generally use simple office software (Excel, Access, Fox Pro). The legislative committee in Connecticut makes some use of SPSS.

The combination of these changes makes it possible for auditors to shorten their cycle of control. They may even be moving to forms of 'real-time auditing': digitization shortens cycles of control and may eventually result in instant accountability.

The differences can be attributed to the different approaches to fact-finding of State Auditors and Legislative Committees. Both accountability forums focus on organizations and policies and generally take an active role in the review. Differences are the norms applied (Auditors: professional norms, Legislative Committees: political norms) and the information processing capacity (Auditors: large, Legislative Committees: small). The combination of professional norms and greater information processing capacity can explain the differences between the two accountability forums.

Findings (3): Impact of digitization on political accountability in three different States

Although there are interesting institutional differences between the three states, these differences did not lead to differences between the states. All the findings presented above apply to these three states. The difference between auditors and legislative committees was much more important than the difference between the states.

Findings (4): Impact of digitization on political accountability in the United States and the Netherlands

The impact of digitization on organizational recordkeeping is in line with findings of the research in the Netherlands (Meijer, 2002). Digitization has a positive effect on short

term recordkeeping but may have a negative effect on long term recordkeeping. The specific findings for the four most important technologies (e-mail, databases, office software and websites) are exactly in line with the findings of the previous research.

The effects of digitization on organizational recordkeeping are not limited to the Netherlands. Identical effects are identified in another institutional context: government agencies in Connecticut, Massachusetts and New York. This seems to indicate that these technologies have characteristics that determine their use and support a so-called deterministic perspective on technology. The main characteristics are individual autonomy (e-mail and office documents) and focus on timely information (databases and websites). These characteristics create problems for the public and long-term availability of information. Evidence from other studies shows that there are organizations that have dealt with these technologies in another way – an argument against strict technological determinism – but this is a surprisingly small minority of government organizations in the Netherlands and the USA.

One difference between the research in the Netherlands and the research in the USA is the increased importance of websites. Websites have become more important for communication between government agencies and citizens and even within government agencies. This raises new issues for recordkeeping.

Both the research in the Netherlands and in the USA indicates that digitization facilitates fact-finding. The research in the Netherlands pointed both at the fact that more information is recorded and that this information is more easily accessible. The research in the USA only showed that the enhanced access is important for fact-finding. A specific analysis of the Dutch cases shows that in most cases the advantages of digitization related to access to information. These systems did also record more information but these extra recordings were generally not used in fact-finding. The exceptions were an automated telephone system (recordings of telephone use) and e-mail. The American answers mainly related to databases.

On the basis of research in the Netherlands (Meijer, 2002: 212, 213) I concluded that there is little reason to doubt the reliability of the reconstructions based on digital information. In some cases the reliability even increased. Although accountability forums in the USA emphasize the importance of checking controls there are no significant differences. Digital information is widely used and generally does not lead to doubts concerning the reliability of reconstructions.

The unmediated access to information was an important finding of the research in the USA. The central government databases in Massachusetts, New York and Connecticut are interesting. These databases enhance the transparency of agencies and also limit the control they have over their own information. These databases enable the auditors to penetrate more deeply into the state agencies. These databases have existed for quite some time in the USA, in New York since the 1980s. Unmediated access was not found in the Netherlands. Auditors have to approach agencies to get access to information. This type of arrangement does not exist in the Netherlands.

On the basis of research in the Netherlands (Meijer, 2002: 211) I concluded that all forums make very limited use of digital information for fact-finding. Accountability forums in the US make extensive use of digital information to reconstruct facts. Differences in focus of accountability forums may explain differences in use of digital information. Accountability forums in the Netherlands may rely more on internal evaluations whereas accountability forums in the USA want access to source records. Another explanation would concern the stages of development. The research in the USA is conducted later than in the Netherlands. The increased use may be attributed to a time difference in the studies.

Reflections and policy issues

In a reflection on these results I would like to highlight the following points:

- *Institutional differences between countries make no difference in the use of ICT*. This research does not provide any support for the importance of institutional differences. There are few differences between the USA and the Netherlands. Technologies follow very similar trajectories in different countries.
- *Technology does matter*. This research indicates that technology does matter. Organizational technologies have a different impact on recordkeeping and therefore on fact-finding by political accountability forum than personal technologies.
- *Auditors step up to the technology run*. Auditors in all three states are adopting new technologies to deal with the enormous availability of digital information. Technological developments in government find their equivalent in developments in auditors. Representatives are not yet stepping up to that level and are lagging in the use of technology.
- *Networks form the next level of transparency*. On the basis of my research in the Netherlands I emphasized that government is becoming more transparent because more information is recorded and this information can easily be analyzed. The research in the USA shows that coupling of organizational recordkeeping systems to networks provide the next level of transparency. It enables accountability forums to penetrate in these organizations and conduct 'surgical audits'.
- *Social construction of e-mail is taking place*. Both in government agencies and in accountability forums, both in the USA and the Netherlands, there is much confusion about e-mail. How should we perceive this technology? The social construction of e-mail is taking place and has not yet reached a closure.

This confronts policymakers in government agencies and accountability forums with a number of issues:

- *Putting pressure on government agencies to organize their electronic records*. Government agencies are still not organizing their electronic records in such a professional way as they do with their paper records. External pressure seems to

be the only way to stimulate agencies to organize their electronic records. Accountability forums could play an important role.

- *Creating clarity about the position of e-mail*. Both government agencies and accountability forums and grappling with the status of e-mail. Government should make an effort to make clear that e-mail messages are indeed government records and thus need to be managed accordingly.
- *Creating trust in electronic records*. Accountability forums have expressed that they have more trust in paper records than in electronic records. Government agencies should set up adequate electronic recordkeeping facilities to install trust in these electronic records.
- *Representatives should start using more sophisticated technologies*. The use of technology by representatives is still limited. They mainly rely on office software. Better use of technology would enable them to make more efficient use of their limited staff capacities.

Looking into the future, a dangerous thing for a scientist to do, I see the following changes in accountability:

- *Cycles of accountability shorten*. Real time access to state accounting systems enables auditors to shorten the cycle of audits and thus make the results of their audits readily useable to agencies. ICTs same to enable to shorten these cycle and they could also do that for legislative committees. Oversight might increasingly have the character of overseeing what government agencies do instead of calling them to account post-hoc. This would be a fundamental change to the way systems of accountability function and would also diminish the gap between the executive and legislative branches of government. Permanent oversight could pull legislature into the execution of government tasks.
- *Accountability forums penetrate into agencies*. The informational barriers between accountability forums and government agencies are fading away. Traditionally, gatekeepers at government agencies could control the flow of information between agencies and accountability forums. New information and communication technologies are undermining this control and enable forums to directly access the information. This seems to be another element in breaking down the traditional barrier between the executive and legislative branches of government.
- *Informal communication is opened up for review*. E-mail messages will increasingly be used by accountability forums for fact-finding. This will enable them to reconstruct not only formal communications but also informal communications. E-mail messages will play a role in reconstructions of specific decisions and actions. Opening up the informal circuits of government agencies will eventually be a next step in an ongoing process of formalization and standardization of these organizations.

I would like to end this report by stressing that it is the result of a first analysis. This rich empirical material deserves further analysis. I hope to elicit feedback on these findings and I will use this feedback to make a more elaborate and thought-through analysis.

1. Introduction and research question

Use of information and communication technologies (ICTs) in government triggers fundamental change the state is partly losing its territorial basis, systems of checks and balances are being gradually eroded and policymaking processes are being rationalized (Bellamy & Taylor, 1998; Snellen & Van de Donk, 1998). ICTs also induce change of the mechanisms and arrangements for political accountability and tend to influence arrangements for popular control over government. Will citizens and their representatives be able to call government officials to account when the state becomes a 'virtual state' (Fountain, 2001)?

Democratic government institutions were developed in the age of the steam engine but are now challenged by new technologies. Do arrangements for political accountability still work adequately in the information age? Both in the USA and in Europe, accountability arrangements are investigated and interest in their effects has increased (Bovens, 1998, Behn, 2001). In this research, however, there is little attention for the influence of ICTs on political accountability. ICTs change informational relations between governments and accountability forums and therefore have a direct impact on arrangements for political accountability.

Political forums may be able to get a more comprehensive view of government decision-making. These increased opportunities may counteract the alleged difficulties that arise in public scrutiny because of the growing complexity of government. This development, however, also raises another issue: how can accountability forums deal with the resulting information overload (Idenburg, 1985; Van Thijn & Cardoso Ribeiro, 2004)? Political forums may drown in information and, as a result, political accountability may be hampered.

In the fields of Information Science and Archival Science there is a debate on preserving digital information and digital records in government (Bearman, 1994; Duranti, 2001). How can these records be preserved in an authentic way? How can long-term access to these records be guaranteed? Most researchers have a strong instrumental focus on this issue and pay little attention to psychological, organizational and institutional aspects of technology. This research will specifically enhance our understanding of the influence of institutional contexts on the use and implementation of technology in government.

Previously, I have investigated the influence of digitization on political accountability in the Netherlands. The basis conclusion was that digitization facilitates fact-finding by political accountability forums. The aim of the research in the United States is to explore whether the domain of those findings can be extended to different institutional contexts. The United States was chosen because the presidential systems that exist at the state level differ significantly from the parliamentary system in the Netherlands.

I conducted research at the state level and investigated the impact of digitization in three states (Connecticut, Massachusetts and New York). These states are comparable to the Netherlands in size and level of technological sophistication. The selection was limited to

these three North-Eastern States for practical reasons. Findings related to states within a nation (the USA) and findings in a separate nation (the Netherlands) are compared. In view of the independence of political forums in American states this comparison does a priori not lead to complications.

I have formulated the following question for this research:

RESEARCH QUESTION
What is the impact of the digitization of government on political accountability in the States of Connecticut, Massachusetts and New York and how and why does this impact differ from each other and from the Netherlands?

The two key concepts in this question need to be defined:

- *Digitization of government*. This concept refers to the use of information and communication technologies by government organizations to execute their business and management processes. This means that the concept is much broader than specific transitions such as scanning paper documents or putting information on government websites.
- *Political accountability*. This concept refers to accountability by government bodies, agencies and functionaries to formal political forums such as Parliament, Senate, House and State Auditors. These political forums all warrant that the executive branch of government has to (indirectly) account for its actions and decisions to the people.

This question indicates that the research contains four comparisons:

- Comparing political accountability before and after the introduction of ICTs in government.
- Comparing the impact of digitization on political accountability by State Auditors and Legislative Committees.
- Comparing the impact of digitization on political accountability in the U.S. States of Connecticut, Massachusetts and New York.
- Comparing the impact of digitization on political accountability in the United States and the Netherlands.

The first three comparisons will be the focus of the empirical research in the United States, the third comparison will be the result of an analysis of the findings in the USA and the Netherlands.

The comparison with the Netherlands contains the problem that there is a variation along two dimensions:

- *Institutional differences*. The institutional context is different in the United States than in the Netherlands. These institutional differences could account for a different impact of digitization on political accountability.

- *Time differences*. The empirical research in the Netherlands was conducted between 1999 and 2001, the empirical research in the USA in 2006. This time difference could account for a different impact of digitization on political accountability.

This double variation presents no problems when there are no differences. That would mean that the impact is constant across different institutions and over time. If there are differences the nature of these differences will be investigated through a qualitative analysis of the answers. This will give indications about the nature of the difference.

2. Theoretical framework

2.1. Theoretical perspective

This research focuses on the effects of the use of ICTs in government organizations on the relation with actors outside that organization. This means that the theoretical perspective has to focus on two elements:

- Shaping of ICTs in government organizations
- Relations between internal processes and external (accountability) relations

Shaping of ICTs in government organizations is regarded as a process of structuration (Orlikowski, 1991) or technology enactment (Fountain, 2001). Information technologies are developed outside organizations (in corporations or by research communities) and are made available for use in the organization. The use of the technology is influenced by institutional characteristics (power relations, value patterns, cognitive patterns) but characteristics of the technology influence further shaping. In earlier work (Meijer, 2002) I have highlighted the difference between organizational ICTs and personal ICTs. Organizational ICTs have been developed to enable cooperation within organizations whereas personal technologies have primarily been created to support individual work processes. However, the characteristics of these ICTs do not determine their use: the enactment of the technologies in organizational settings determines the effects of ICTs on organizations. This means that the interaction between institutional characteristics of governments agencies and the technological characteristics of the ICTs used by these organizations will determine the impact of ICTs on organizational recordkeeping.

The relations between internal processes and external relations – in this case relations with political accountability forums – will be approached along the same lines of structuration or enactment. Formal institutional rules influence the behavior of both accountees and accountability forums but do not determine the outcome. Accountability forums are actors within these institutions and create these institutions through their actions. This means that the changes in organizational recordkeeping through the use of ICTs will influence but not determine political accountability. Accountability forums will act upon these changes within their existing institutional frameworks and will change these frameworks through their actions. The final goal of this research project is to track these institutional changes in accountability arrangements.

2.2. Previous findings

Research in the Netherlands indicates that opportunities for public scrutiny are enhanced since ICTs render government organizations more transparent but accountability is not enhanced because of the resulting 'information overload' (Meijer, 2002 & 2003).[1]

[1] In other research (Meijer, 2005) I have shown that this problem can be partly overcome by putting the information on the Internet and getting citizens involved ('given enough eyeballs, all bugs are shallow'). This research is limited to formal political forums and their number of 'eyeballs' is limited.

Political forums have insufficient capacities for processing all the available digital information. One may wonder whether this outcome is specific to the Dutch institutional context in which parliament has limited monitoring capacities: this calls for research in another institutional context to extend the domain of the conclusions. The United States is an interesting context to investigate since this country is at the forefront of technology application in government[2] and its institutional context differs considerably from the Netherlands. Most important is the difference between parliamentary and presidential democracy. Strøm (2000) indicates that parliamentary systems de-emphasize ex-post oversight and have insufficient monitoring capacities necessary to determine when sanctions may be appropriate.

Presidential systems tend to feature institutions that facilitate active legislative oversight. This could mean that these systems have more information processing capacities and would be capable of making better use of the increased transparency of government to enhance political accountability.

In the USA the research will be limited to three states: Connecticut, Massachusetts and New York. The states of Connecticut and Massachusetts are smaller than the Netherlands in size (population: Netherlands: 16.3 million in 2006[3]; population: Connecticut 3.4 million and Massachusetts 6.4 million in 2000[4]), the State of New York is bigger with a population of 18.9 million.[5] These three states are known for their technologically advanced position. The political system in these states can also be characterized as 'presidential' since the executive and legislative powers have separate voter mandates. By comparing the findings of the research in the Netherlands to these three American states our scientific understanding of political accountability in an information age can be enhanced considerably. A comparative analysis will indicate to what extent conclusions can be generalized over different institutional contexts.

The findings of previous research in the Netherlands can be summarized as follows (see figure 1). Political accountability is affected by digitization since organizational record keeping is crucial to provide for evidence of government decision-making (Meijer, 2002 & 2003). Use of ICTs creates both *opportunities* – such as enhanced search and storage capacities – and *risks* – such as failures to capture records and keeping them readable over time – for organizational record keeping (Meijer, 2001a). Research in the Netherlands indicates that the opportunities dominate: government is becoming more transparent and political accountability is facilitated (Meijer, 2002 & 2003). The findings indicated that more information is registered, the preservation of this data is threatened but only to a limited extent and the retrieval of data is greatly enhanced. Although government is becoming more transparent, the available digital information is not used much in accountability. Accountability forums still heavily rely on paper documents for

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2 Over 2004, the USA ranks first in the UN E-Government Report (www.unpan.org), second (after Canada) in Accenture's e-government ranking (www.accenture.com) and third (after Taiwan and Singapore) in Brown University's e-government study (www.brown.edu).

3 Centraal Bureau voor de Statistiek (www.cbs.nl).

4 Lonely Planet, 2005, New England, Lonely Planet, Footscray, p. 33.

5 Lonely Planet, 2004, New York State, Lonely Planet, Footscray, p. 27.

fact-finding. Lack of information processing capacities seems to be the dominant explanation for the failure to use digital information for fact-finding.

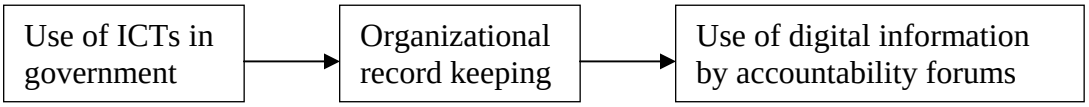

Figure 1. Research Model

The research in the Netherlands focused on two political accountability forums: the National Court of Audit and Parliamentary Enquiry Committees. The research showed that there were differences in the way digital information was used by these forums. The research indicated that forums that actively look for information, investigate organizations and policies (as opposed to single decisions) and have sufficient information processing capacity are most likely to make use of the enhanced transparency of government agencies. The National Court of Audit made better use of the information than Parliamentary Enquiry Committees.

The level of technological sophistication in American governments makes it probable that government organizations are also becoming more transparent. The Dutch research did not give indications that institutional differences would influence this relation between ICTs and transparency. Therefore the conclusions of the Dutch research will form the hypotheses for the research in the USA. These conclusions can be specified in the following hypotheses:

Hypothesis 1. The use of ICTs enhances the transparency of government organizations since more data is recorded and data can be retrieved more easily.

Hypothesis 2. The use of ICTs has no influence on the reliability of digital information: digital information is at least as reliable as paper information.[6]

Hypothesis 3. Accountability forums make little use of digital information: they mostly rely on information in paper documents.

Hypothesis 4. Accountability forums have insufficient information processing capacity to adequately process all the digital information available to them.

Hypothesis 5. Information from organizational ICTs is most important for fact-finding by accountability forums.

Hypothesis 6. Accountability forums that assess organizations and policies on the basis of professional standards are more likely to use digital information than those that use political standards.

[6] Reliability refers to the fit between the information and reality in terms of external realism: reliable information can be used for creating an adequate image of reality (Searle, 1996: 150).

Hypothesis 7. Accountability forums that are active in the reviews are more likely to use digital information than those that take a more passive attitude.

Hypothesis 8. Accountability forums with more information processing capacity are more likely to use digital information than those with less capacity.

This empirical research aims to test these hypotheses.

3. Research methodology

3.1. Research focus

3.1.1. Government agencies

The research focuses on all government agencies in Connecticut, Massachusetts and New York that can be called to account by State Legislative Committees or State Auditors. This is a broad set of organizations. For practical reasons, the focus was translated into those agencies that fall under the jurisdiction of the State Public Records Department.

3.1.2. Accountability forums

In Connecticut, Massachusetts and New York the following accountability forums are selected which can be assumed to be similar to the parliamentary forums in the Netherlands:

- *Legislative Committees*. The research will focus on 'special reports' and 'Senate post-audit reports' and the use of digital information in these investigations. These special reports can be compared to parliamentary investigations in the Netherlands. In some states there may be separate committees in the Senate and the House. I will focus on the committee that is most visible on the state's website.
- *The Office of the State Auditor*. The research will focus on audit operations and the use of digital information in these investigations. Audit operations can be compared to the investigations conducted by the Algemene Rekenkamer in the Netherlands.

These accountability forums can be characterized in terms of their approaches to fact-finding (see Meijer, 2002: 37) in terms of their object of review, the norms they use to evaluate organizations and policies and the typical role they assume in the investigation:

	Object	Norms	Typical role	Information processing capacity
Legislative Committees	Organizations and policies	Professional norms	Active	Substantial
State Auditors	Organizations and policies	Political norms	Passive	Limited

Table 1. Basic approaches to fact-finding of accountability forums

These characterizations are bases on general descriptions of the role of the Legislature and of State Auditors. In the empirical research these characterizations will be tested and attuned to empirical realities. These accountability forums will be studied to identify similarities and differences in constitutional position and approach to fact-finding (in

terms of object, norms and ideal-typical role, Meijer, 2002: 37). This analysis will give further insight in crucial differences in institutional contexts.

3.2. Operationalization[7]

The research question I formulated in section 1 was:

> What is the impact of the digitization of government on political accountability in the States of Connecticut, Massachusetts and New York and how and why does this impact differ from each other and from the Netherlands?

This question can be divided up into three specific questions for the empirical research and for each indicator various indicators can be listed:

1. What is the impact of the digitization of government on organizational recordkeeping?

Indicators:

- Influence of specific ICTs on organizational recordkeeping
- General influences of digitization on organizational recordkeeping[8]
- Overall impact of digitization on organization recordkeeping
    - Impact of digitization on recording information
    - Impact of digitization on preserving information
    - Impact of digitization on accessing information

2. How do the political accountability forums use organizational records for fact-finding?

Indicators:

- Object of the review
    - Type of reconstruction (aggregate or single)
- Norms to evaluate organizations and policies
    - Procedures for conducting an audit or review
    - Level of politicization
    - Method of agenda-setting
- Typical role in the review process
    - Method of agenda-setting
    - Method of data collection
- Information processing capacity
    - Staff
    - Budget

[7] These questions are based on Meijer (2002: 73 – 77).

[8] General influences are influences that are not related to a specific ICT-application. These influences may for example be related to hardware or network infrastructure.

- Number of audits
- Use of technology

3. What is the impact of changes in organizational recordkeeping on fact-finding by political accountability forums?

Indicators:

- Completeness of reconstructions of facts
  - More information recorded → reconstruction more complete
  - More information preserved → reconstruction more complete
  - Information better accessible → reconstruction more complete
- Reliability of reconstructions of facts
  - Subjective reliability: do accountability forums see the reconstructions as reliable?
  - Objective reliability: could accountability forums give examples of unreliable digital information?

3.3. Research Design

Levels of research. Information was gathered from accountees and from accountability forum. Information gathering through accountees focused on the relation between ICTs and memory systems whereas information gathering through accountability forums focused on the relation between memory systems and fact-finding (see figures 1 and 2). Accountees provided information about the behavior of government agencies and accountability forums provided information about these forums.

Types of data collection. Another difference refers to the type of information that was gathered from accountees and accountability forums. The group of accountees is very large and therefore I could not collect information from them directly. Interviews with key informers were used to obtain information about the behavior of government agencies. Key informers do not provide information about themselves but about other organizations and thus create a bias in the measurement. Interviews with respondents were used to obtain information from accountability forums. Their answers related to their own behavior. Answers of accountability forums were checked by studying the reports they referred to in their answers.

Interviews (1). To obtain information from accountees I have interviewed people involved in State recordkeeping departments in Connecticut, Massachusetts and New York. A thorough investigation of this relation would require extensive research into a number of government agencies in every state. Civil servants in Public records Department can be considered to be knowledgeable informers since they have contact with all agencies about their records. The opinions of respondents in recordkeeping provide an approximation since they are in contact with a broad variety of organizations. Informers at these recordkeeping departments were selected that had most knowledge about recordkeeping practices by State agencies (see appendices A, B and C for list of

respondents). The questions related to the management of electronic records (see appendix D). The questions focused on measuring the impact of the digitization of government on organizational recordkeeping.

Interviews (2). Information from accountability forum was gathered by interviewing staff at State auditors' offices and staff of legislative committees. The selection of respondents focused on the people who had most knowledge about actual processes of fact-fining (see appendices A, B and C for a list of respondents). The interviews aimed at measuring (1) how the political accountability forums use organizational records for fact-finding and (2) the impact of changes in organizational recordkeeping on fact-finding by political accountability forums. A list of statements was used to measure the impact of digitization on political accountability (see appendix E). These statements enabled respondents to evaluate the effects of digitization in a focused way. An overview of respondents is shown in the following table (details are found in de appendices A, B and C).

	Connecticut	Massachusetts	New York State
Recordkeeping	Connecticut Public Records and State Archives	Massachusetts State Archives	New York State Archives.
Auditor	The Connecticut State Auditor of Public Accounts	Auditor of the Commonwealth of Massachusetts	New York State Audit Bureau
Legislature	Connecticut Legislative Program Review and Investigations Committee	Massachusetts Senate Committee on Post Audit and Oversight	New York State Assembly's Oversight, Analysis and Investigation Committee

Table 2. Overview of respondents

Document study. In addition, relevant documents were analyzed to find answers to the research questions. For both recordkeeping departments and accountability forums documents were studied that provided background information about these organizations:

- Documents concerning specific processes of fact-finding by accountability fora (Legislature, State Auditor).
- Documents concerning the orientation, staffing, procedures and functioning of the accountability fora.

The document study supporting the interviews with accountees additionally focused on general documents about recordkeeping policies. Documents were selected on the basis of a review of websites and were mentioned by respondents.
The document study supporting the interviews with accountability forums had a focused character. All recent reports were studied for indications of the use of digital information. Recent reports were selected through website listings or year reports. Lists of documents are presented in appendices A, B and C.

Data analysis. The data obtained from the interviews and document study was analyzed in two ways:

- Quantitatively. Scores for the different positions were identified and differences in positions were highlighted.
- Qualitatively. Arguments for the different positions were analyzed and types of arguments were categorized.

Since the interviews with the accountability forums focused on the statements, that analysis had a more quantitative character than the analysis of the informers in recordkeeping departments.

	Level	Type of data collection	Interviews	Document study	Data analysis
1. Impact of ICTs on organizational recordkeeping	Government agencies	Informers reporting about agencies	Recordkeeping, open questions	General review of documents	Qualitative and some quantitative analysis
2. Impact of organizational recordkeeping on fact-finding	Accountability forums (State Auditors and Legislative Committees)	Accountability forums reporting about themselves	Accountability forums, statements	Specific analysis of recent reports	Qualitative and quantitative analysis

Table 2. Overview of the research methology

3.5. Description of the organizations involved

Recordkeeping

- *Connecticut Public Records and State Archives*. 'The Office of the Public Records Administrator is responsible for designing and implementing the Public Records Program for local government agencies and for state agencies within the executive department of government. It also has administrative responsibility for the State Archives and the State Records Center.'[9] Public Records and State Archives fall within the executive branch under the State Librarian. The State Librarian is not a political position.
- *Massachusetts State Archives*. 'The Massachusetts Archives serves the Commonwealth and its citizens by preserving and making accessible the records documenting government action and by assisting government agencies in managing their permanent records.'[10] The Secretary of State of the Commonwealth of Massachusetts, an independently elected official, is responsible for the State Archives. The Record Management Unit falls within the State Archives and supports recordkeeping by State agencies.

[9] http://www.cslib.org/publicrecords/ (retrieved: June 6, 2006).
[10] http://www.sec.state.ma.us/arc/arcmis/misidx.htm (retrieved: June 6, 2006).

- *New York State Archives*. 'The New York State Archives leads efforts, on behalf of all New Yorkers, to manage, preserve, ensure open access to, and promote the wide use of, records that support information needs and document the history, governments, events and peoples of our State.'[11] The State Archives form part of the State Education Department. The Board of Regents of this department is elected by the State Legislature.

Political struggle over digital recordkeeping
In one of the states there is a political struggle over responsibilities for digital recordkeeping. The Information Technology Division, a huge organization with 2,000 employees and part of the Governor's Office, aims to create these standards. The State Archivist, working for the independently elected Secretary of State, emphasizes that the State Archives should set this standard. The State Archivist emphasizes that IT people can give valuable technical support but they are not experts in record management. This has led to a conflict between the Secretary of State and the Governor. The State Archives wants to develop standards based on the well-established guidelines of the Department of Defense. The IT Division wants to do its own thing based on Open Office and Open Documents.[12]

Auditors

- *The Connecticut State Auditor of Public Accounts*. 'The goal of the Office of the Auditors of Public Accounts (APA) is to serve the public interest regarding fiscal and compliance matters related to the State of Connecticut. To accomplish this goal the APA provides independent, unbiased and objective opinions and recommendations on the operation of the State government and the State's effectiveness in safeguarding resources.'[13] The Connecticut State Auditor of Public Accounts has two directors who are appointed by the appointed by the Legislature: one from the Democratic Party and one from the Republican Party. They are former politicians that have generally served as senators or representatives. The Deputy State Auditor is the highest professional auditor at the office.
- *Auditor of the Commonwealth of Massachusetts*. 'The Office of the State Auditor (OSA) audits the agencies of state government to ensure that funds are spent in an appropriate manner. In so doing, the State Auditor provides the Governor, Legislature, auditees, and the public with an independent financial, managerial, and technical assessment of the state's agencies, activities, contracts, and programs.'[14] The OSA operates under the direction of State Auditor, an

[11] http://www.archives.nysed.gov/a/aboutnysa/aboutnysa_mission.shtml (retrieved: June 6, 2006)
[12] This box illustrates an interesting difference with the Netherlands. In the Netherlands cooperation between the department responsible for IT (internal affairs) and the State Archives is also not easy but it is a *bureaucratic struggle*: the conflict is not politicized. In the USA this leads to a *political conflict* between two elected officials.
[13] http://www.state.ct.us/apa/goals.htm (retrieved: June 6, 2006).
[14] http://www.mass.gov/sao/authority.htm (retrieved: June 6, 2006).

independently elected constitutional officer. The name of the State Auditor dominates the OSA website.

- *New York State Audit Bureau*. The State Comptroller, an elected official is New York State's chief fiscal officer and is also charged with auditing government operations.[15] The State Audit Bureau is part of the Office of the State Comptroller of the State of New York and audits State Agencies, Public Authorities and the City of New York. The State Comptroller explicitly aims to strengthen public accountability: 'Our audit reports also promote accountability in New York State government. They publicize the results of our Office's independent audits of State agencies and public authorities, include the full text of the audited officials' written response to the audit findings, and require the officials to provide a written description of the actions they have planned or taken to implement the audit recommendations. The findings, explanations and plans for improvement thus constitute a public conversation about public services, and such conversations are one of the prerequisites for an open, democratic society.'[16]

This overview and the descriptions of formal positions of State Auditors show the different arrangements: the State Auditor's office is a legislative agency in Connecticut and an independent agency in Massachusetts and part of the executive branch of government New York. This is summarized in table 1.

	Independently elected official	Auditor's office separate from executive responsibilities
Connecticut	NO	YES
Massachusetts	YES	YES
New York	YES	NO

Table 4. Overview of arrangements for State Auditor

Legislative Committees

- *Connecticut Legislative Program Review and Investigations Committee*. The Legislative Program Review and Investigations Committee is a joint, bipartisan, statutory committee of the Connecticut General Assembly established to evaluate the efficiency, effectiveness, and statutory compliance of selected state agencies and programs. The Committee conducts performance audits, management reviews, and policy studies of State Agencies and programs. 'The Program Review Committee is composed of 12 legislators. The President Pro Tempore of the Senate, the Senate Minority Leader, the Speaker of the House, and the House Minority Leader each appoint three members. The Committee is served by a 12 person nonpartisan staff office.' [17] The Committee is chosen for a term (two

[15] http://www.osc.state.ny.us/about/response.htm (retrieved: June 6, 2006).

[16] Alan G. Hevesi, 2005, A Message From Comptroller Alan G. Hevesi. In: *New York State Comptroller's Annual Report. The Results of Audits at State Agencies and Public Authorities*, 2004 – 2005, Albany (NY), p. 1.

[17] Committee's website (http://www.cga.ct.gov/pri/index.htm, retrieved, May 11, 2006).

years). Every two years there is a switch: the Democrat chairman from the House is replaced by a Republic and vice versa for the chairman from the Senate.

- *Massachusetts Senate Committee on Post Audit and Oversight*. The duty of the Senate Committee on Post Audit and Oversight is to oversee the development and implementation of legislative auditing programs conducted by the Legislative Post Audit and Oversight Bureau with particular emphasis on performance auditing.[18] Every term the members are appointed by the President of the Senate. In every committee there has to be at least one minority member. In the Senate Committee on Post Audit and Oversight there are 7 members, 6 Democrats and 1 Republican.[19] The power of the chairman is considerable: he can, but does not have to, call meetings of the committee, he has the discretion to initiate investigations. A report is usually signed by all members but only requires a majority: members can either sign a report or not.
- *New York State Assembly's Oversight, Analysis and Investigation Committee.* This committee plays four roles in the Assembly's oversight activities:[20]

  - The Committee reviews implementation and adequacy of laws and programs
  - The Committee conducts program and budget reviews
  - The Committee helps create a climate for change
  - The Committee acts as a resource to other Assembly standing committees

  These roles serve the following goals: 'Legislative oversight is the most effective means of enforcing legislative intent, ensuring that a program actually works, and promoting sound policy decisions.' [21] The number of members in the Committee parallels the relations in the Assembly. This means that the 6 majority members (chair and five members) are appointed by the Speaker of the Assembly. 1 minority member is appointed by the Minority Leader. The power of the chairman is considerable: he decides to call meetings and to initiate reviews. Reports are published as reports by the chairman: members do not have to sign for the report.

This overview also shows different institutional and political arrangements: the oversight committee in Connecticut is bipartisan and reports have to be endorsed by both parties. The majority party dominates the oversight committees in Massachusetts and New York. In New York the minority member does not even sign for reports. Connecticut is the only state with a joint House-Senate committee. This analysis is summarized in table 2.

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[18] Section 63 of Chapter 3 of the Massachusetts General Laws (available at: www.mass.gov/legis/laws/mgl/index.htm).

[19] These numbers form a fair representation of the state of affairs in the State Senate (34 Democrats and 6 Republicans).

[20] The New York State Assembly Committee on Oversight, Analysis and Investigations, 31 December 2004, The 2004 Annual Report, Albany, p. 2.

[21] The New York State Assembly Committee on Oversight, Analysis and Investigations, 31 December 2004, The 2004 Annual Report, Albany, p. 1.

	Bipartisan	Committee or chair signs for report	Joint House-Senate Committee
Connecticut	YES	COMMITTEE	YES
Massachusetts	NO	COMMITTEE	NO
New York	NO	CHAIR	NO

Table 5. Arrangements for legislative committees

This ends the overview of the research design and the description of the research domain. The next chapter presents the findings of the empirical research.

4. Findings

4.1. The impact of ICTs on organizational recordkeeping

The first research question was: what is the impact of the digitization of government on organizational recordkeeping? The results of the empirical research are presented in this section according to the key variables (see 3.2).

4.1.1. Influence of specific ICTs on organizational recordkeeping

The answers of the respondents referred to five categories of ICTs:

- E-mail (all three)
- Databases (all three)
- Office software (all three)
- Websites (CON and NY)

Workflow systems were seen as a specific type of database. Smart systems (i.e. systems with 'intelligence' encoded into them such as expert systems and simluation software) were not considered to be very important.

E-mail

The respondents from all the agencies emphasized that e-mail is used much by agencies but e-mail messages are not managed adequately. The respondents from the Records Department in Connecticut: 'Even the State Archives does not manage its e-mail well. No. I can't point to one agency that is preserving e-mail well for accountability. Individuals may do it correctly but there is no organizational control.' The State of Connecticut has published guidelines but does not enforce these. [22]

The following practices were mentioned by the respondents:

- *Preserve nothing*. The respondents from the Records Department in New York: 'Some agencies purge the e-mail boxes every 90 days. They're saying: e-mail messages are not records. An example is the Attorney-General's Office. They only allow a certain size of e-mail box. That was against our recommendation. In such a policy space determines preservation and not the value of records.'
- *Preservation on tapes*. The respondents from the Records Department in Connecticut: 'Some organizations just maintain them on tapes. The Department of Information keeps the messages on back-up tapes.' The respondents from the Records Department in New York: 'Some agencies preserve all e-mail messages. This leads to huge backlogs of messages and problems in retrieving messages.'

[22] Connecticut State Library, June 1st 1998, Electronic And Voice Mail. A Management And Retention Guide For State And Municipal Government Agencies (http://www.cslib.org/email.htm; retrieved: May 24th, 2006). See also: State of Connecticut, March 1, 1999, Records Management Manual.

- *Preserving in individual files or PCs*. The respondents from the Records Department in Connecticut: 'They may also keep the e-mails on their computers.' The respondents from the Records Department in New York: 'Some colleagues preserve e-mail in their Groupwise Archive. I don't do that. If I want to preserve e-mails, I do that on the LAN in the appropriate folder.' 'Within these agencies individuals make decisions about preserving e-mails in digital or paper form. Since e-mails are not regarded as records, individuals are free to preserve these messages in their own way (within the limitations of mailbox size and purging of files).
- *Printing out messages*. The respondents from the Records Department in Connecticut: 'Some agencies may print certain messages out.' The respondent from the Records Department in Massachusetts: 'Some employees may preserve e-mails with their correspondence.' The respondents from the Records Department in New York: 'Some agencies print out messages and preserve them in a paper form. Our Grant Unit is an example. They print out e-mail and put them in a file.'

The respondents held different opinions about the need to preserve e-mail.

- *Connecticut*: 'We can't do what private companies do. We can't destroy records after six months. No agency does that. They would be too afraid. Destruction of records needs to be approved. There are laws for that. Agencies are not destroying records but they don't manage them well either.
- *Massachusetts*: 'Our rule is that e-mails are maintained somewhere between six months and a year. Most agencies preserve e-mail messages on back-up tapes and overwrite these tapes after six months to a year.'
- *New York*. The respondents argued that the nature of the message should dtermine whether e-mails should be preserved. According to them this means that some e-mails need to be preserved whereas others can be deleted. This opinion is similar to the one held by the respondents in Connecticut.

The lack of adequate management leads to the following problems:

- *Failure to identify records for preservation*. The respondents from the Records Department in Connecticut: 'E-mail is not properly identified. There is no distinction made between transitory and permanent records.'
- *Deleting records*. The respondents from the Records Department in Connecticut: 'They don't know how to delete them in a structured manner. Appraisal would require a classification scheme and agencies don't have that.'
- *Problems in accessing records*. The respondents from the Records Department in Connecticut: 'There may be a lack of context data. People confide in full text search options.'[23] The respondents from the Records Department in New York:

[23] The State Archivist of Connecticut provided an interesting example of inadequate access to e-mail. The former Governor's office – the Governor was impeached – communicated mostly through e-mail. They communicated much with the constituency. They bought the software package ProView to manage it.

‘Recently the Attorney-General was confronted with a FOIA request regarding certain e-mail correspondence. This led to major problems. They did not have a good system for filtering and searching e-mail messages.’

- *Failure to transfer e-mail to the State Archives*. The respondents from the Records Department in New York: ‘Eventually the e-mails will come to the State Archives. We don’t know how to do that yet. There should be more management of e-mail at the agencies.’
- *High costs*. The respondents from the Records Department in New York: ‘Preserving all these messages leads to high costs for agencies.’

The respondents held different opinions on the severity of these problems:

- *Connecticut*: The respondents indicated that the lack of a proper identification and distinction between permanent and transitory records is a problem.
- *Massachusetts*: ‘E-mail messages are not managed well but these are mostly ephemeral messages.’
- *New York*: ‘Some e-mails – not all of them – are records. Increasingly more e-mails are records. More and more business is done by e-mail and then there is no paper record. Many agencies do not know how to handle these records. It’s the next big issue. The question we get the most in terms of assistance concerns e-mail. Many agencies have huge backlogs and don’t know how to deal with that.’

New York State is the only state that is already in the process of developing solutions for managing e-mail: ‘We did a lot of research on preserving e-mail. We need experts and vendors to help agencies to solve this problem. (…)We are starting to look at Electronic Document Management Systems.’

These answers clearly show the confusion that exists about the management of e-mail. There is a broad range of practices but not of these is satisfactory. There is confusion about the question whether e-mail messages need to be improved or whether they are (nearly) all ephemeral.

None of the respondents could mention an example of problems in fact-finding for accountability forums due to inadequate e-mail management: The respondents from the Records Department in New York: ‘We don’t know of any problems for public accountability caused by e-mail. These problems haven’t surfaced yet. It’s just that nobody has been caught yet. The lack of problems cannot be attributed to the fact that most relevant information is still available in paper form. Some information is only

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At the same time they printed all messages out and brought them to the State Archives. These messages were not accessible. The software had created an automatic number for the sender and the subject heading was lacking on the prints. The State Archives needed a list of numbers to make these messages accessible. Rich Subject Files used to be created and these files contained information about files and metadata. These Rich Subject Files are no longer created. ‘We are loosing a lot of functionality.’ AM: This example shows the consequences of new ways of thinking. In the paper word, archivists and librarians emphasized could access to records. They created classifications and descriptions of records. Now people assume they can retrieve information easily with full text search tools. And fail to make classifications. Problems arise when documents are printed and full text search options are lost.

available in e-mail. The problems may not have surfaced yet because nobody knows which information is not available for accountability. You don't know what you are missing. There have been important uses of e-mail in cases against private companies such as Microsoft and Reynolds. Sooner or later something important is also going to happen in government.'

The effects of these practices on organizational recordkeeping are ambiguous. The respondents all highlighted that much information is recorded and these messages may be preserved on computer tapes, paper documents or in individual files. This information may be mostly irrelevant and there are no guarantees for adequate preservation. This means that accountability forums cannot rely on the availability of this information: they may be 'lucky' to find an e-mail. Recent examples in the private sector (e.g. Microsoft) provide an interesting example.

Databases

The respondents expressed differences in the effects of databases on organizational recordkeeping:

- *Connecticut*: 'There is a lack of knowledge in the agencies that databases need to be treated as records. They manage them for their own needs. They are not aware of the interests of accountability and historical research.'
- *Massachusetts*: 'Databases are generally well managed and facilitate fact-finding: that's what they're meant to do.'
- *New York*: 'Databases are managed as records by most agencies. They have to be managed properly because they are essential to daily practices.'

A closer look at the answers, however, showed that they were not that different. The respondents all emphasized that records are managed well on the short term but there are no adequate guarantees for long-term retention:

- *Connecticut*: 'These information systems are great for managing *current* records but not for non-current records.'
- *Massachusetts*. 'Long-term retention is a problem.'
- *New York*: 'Long-term preservation is a problem. The Division of Human Rights migrated to a new system but did not migrate the data. They maintained the old data. These records may no longer be accessible.'

The respondents from New York also mentioned other problems:

- *Accessibility of government databases to the public*. 'Databases are preserved but not very accessible to the public. There may be political reasons for not making them accessible. The Legislature's 'Pork Projects' (the money they dough out in their own districts) are an example. Another reason why databases may not be accessible to the public is for reasons of privacy. When databases are combined in certain ways data that are not directly related to persons can still be private. The

use of a social security number in the Land Registration in Suffolk County is an example.'

- *The dynamic nature of these databases.* 'This relates to GIS. We don't know what snapshots were made on a given day.'

The respondents from New York emphasized that databases – especially financial databases – facilitate investigation by legislative committees and auditors: 'Financial databases are mainly used for public accountability. We hear a lot about financial stuff. There is a focus on financial accountability.'

The effects of databases on organizational recordkeeping are also ambiguous: they improve the short-term memory of organizations but may create difficulties in the long term. The dynamic nature of databases creates, according to the respondents, problems specifically for GIS.

Office documents

Office documents are also used much by government agencies and, again, there is a variety of practices to preserve office documents:

- *Printing out documents*. The respondents from the Records Department in Connecticut: 'Let's face it: if anything is important, I print it out. (…) I haven't seen a decrease in the amount of paper.' The respondents from the Records Department in New York: 'They are generally printed out and preserved in a paper form.'
- *Preservation on a file server*. The respondents from the Records Department in New York: 'At the State Archives we preserve them digitally on a LAN. Documents are also distributed electronically. It is still possible to change and delete documents. The real necessary safeguards aren't there.'
- *Electronic Document Management*. The respondents from the Records Department in New York: 'There are agencies with an Electronic Document Management System to preserve digital documents authentically. They maintain a trail of changes. The Public Works Department of a local government is an example.'

One of the respondents from New York indicated that she thought digital preservation was on the increase: 'I get the sense that more and more agencies are moving away from paper documents. The new generation is more accustomed to digital information.'

In Connecticut there was even confusion among the respondents: one respondent said that everyone does it differently but another respondent stressed that they have to print it out and preserve documents in a paper form. In New York there was also some confusion: the respondents had different opinions concerning the question whether digital documents have to be retained.

The Massachusetts' State Archivist indicated that he does not know whether these digital documents are managed well. The respondent from Massachusetts indicated that there are good systems for document management available but they are very expensive. 'I haven't seen too many of them.'

The effects of office software on organizational recordkeeping seem generally positive because paper documents are also preserved. The digital document is a back-up and more easily accessible. On the other hand, if the information is only preserved digitally there are no adequate guarantees for the reliability of the digital information. This makes the effect of office software on organizational recordkeeping ambiguous.

Websites

The respondents from Connecticut and New York emphasized that websites are becoming more important for communication within government and between government and citizens. Again, they emphasized that websites are not managed well. The following problems were mentioned:

- *Identifying records for preservation*. The respondents from the Records Department in Connecticut: 'Websites are not properly identified. There is no distinction made between transitory and permanent records.' The respondents from the Records Department in New York: 'They're too ephemeral. They are not preserved well.'
- *The dynamic nature of these websites*. The respondents from the Records Department in Connecticut: 'Reports are sometimes published on the Internet and not preserved. Constant changes to reports make preservation difficult.' One of the respondents from Connecticut indicated that she writes retention schedules for agencies. Every so often they ask her to make changes to these schedules and she does that. Recently she asked herself whether she was preserving old versions of the retention schedules. She decided to cut back on the updates to make preservation easier. 'You loose track of old copies.' Situations in other agencies could be similar.
- *The line between a publication and a record becomes blurred*.[24] The respondents from the Records Department in Connecticut agencies post more on the Web but they may not preserve it as they do with records.. 'We are not keeping that report: we put it on the Web.' The public gets more information in the short term but we are loosing it in the long term. There are no systems in place to manage and archive this information.[25]

[24] In the past an agency would issue a report and publish that the report was issued. People could then request copies of the report. The original report was maintained in the agency's files. Now agencies publish the report directly on the Internet. But then it no longer ends up in the agency's records.

[25] The traditional route for agency publications goes to the State Repository. They should get copies of all state publications. They probably never got everything that is published in a paper form but seem to get less now everything is published on a website.

Solutions to the preservation of websites are being developed in Connecticut. 'We are digitally archiving publications that are only published on the Web. We use certain criteria. We catalogue the publications and archive them. We use On-line Computer Library Corporation. They have a digital archive component. The publications are stored on a server in Ohio. We preserve thousands of publications per year. That is still a small percentage of the total amount of publications. We are limited by resources and the amount of staff. Websites are now evaluated item by item. In the future they should have software to automatically capture content.

The effects of websites on organizational recordkeeping runs parallel to the effects of e-mail and databases and are thus also ambiguous. Advantages are that much information is recorded and made available and this information is easy to access. This information, however, is often updated and may not be preserved.[26]

4.1.2. General influences of digitization on organizational recordkeeping

Additional to their comments on specific ICTs, respondents highlighted general influences of digitization on organizational recordkeeping:

- *Data are not accessible*. The respondents from the Records Department in Connecticut: 'We have problems with the old floppies. We don't maintain hardware and software to access data.'
- *Deleting data*. The respondent from the Records Department in Massachusetts: 'In managing digital records the question how you get rid of these records is just as important as how to preserve the records.'
- *Individualization of recordkeeping*. A respondent from Connecticut indicated that digital preservation is sometimes left to individual employees. 'We have that document on Joe's C-drive. But what happens when Joe is laid off?' The democratization of information management creates problems.

4.1.3. Overall impact of digitization on organization recordkeeping

Recording information

The general opinion of the respondents was that more information is recorded. A respondent from Connecticut: 'More information is recorded. In e-mails more information is recorded but also in voice mail.' A respondent from New York: 'There are new ways of getting information that didn't exist before. There is almost more information than people can handle.' A respondent from Connecticut highlighted that these new recording may create problems for government agencies: 'You are creating all kinds of stuff that can come back and bite you.'

[26] Databases are sometimes made available through websites. They then generally maintain their characteristics as databases and thus the findings for databases also apply to databases coupled to websites.

Voice Mail
In Connecticut there an investigation by the State FOIA Commission into the status of voice mail. First the Commission argued that the rules the State Public Records Department had developed for e-mail should also apply to voice mail. The Commission got much opposition and finally ruled that voice mails are public records but they are all transitory and can thus be destroyed. 'The ruling was pragmatic. How can you manage all this information? If preservation of voice mail would be easy, it should be preserved.'

Preserving information

All respondents expressed a negative opinion about the effects of digitization on preserving information. A quote from the interview in Connecticut illustrates this 'Preserving digital information is not more durable neither more reliable. (…) Digital information may be subject to alteration if there is no publication date. New tools enable to track changes but these tools are expensive.'

Accessing information

Opinions about access to information differed:

- *Positive effects*. The respondents from New York saw positive effects. 'Electronic records allow for a wealth of analysis that you couldn't do on paper or you would devote your whole life to it.' And also: 'I think there's a lot more information publicly accessible on the Internet. I am amazed about all the information about agencies on the Internet.'
- *Both positive and negative effects*. The respondents from Connecticut saw both positive and negative effects: 'Digitization is a double edged sword. Full text search makes access easy and much information is available through the Internet but sometimes good catalogues are lacking. It may be difficult to find specific e-mails'.

Overall effects

The respondents of the three states indicated that overall digitization seems to facilitate accountability on the short-term but may hamper accountability in the long term:

- *Digitization facilitates accountability in the short term*. The increases can mainly be attributed to what I have called non-intentional effects of digitization (Meijer, 2002): ICTs generally improve internal information management and, therefore, also facilitates accountability. The respondents from the Records Department in New York: 'Digitization facilitates accountability since there are more ways to analyze data.' The respondent from the Records Department in Connecticut: 'The records that are required for internal use are preserved well.'
- *Digitization may hamper accountability in the long term*. The non-intentional effects may only benefit the short term: as soon as the agency no longer needs the

records it may not manage them well anymore. The respondents from the Records Department in Connecticut: 'They don't realize that these records may be used in public accountability. They think the State Archives do that. They don't realize they have to find ways to store permanent records.' The respondent from the Records Department in Massachusetts: 'People who work with digital records mainly use them for the short term and often do not realize they may be needed later.'

The negative effects are attributed to IT-people's lack of knowledge about permanent records.[27] The respondents from the Records Department in Connecticut indicated that the cooperation with IT-people is a problem. They don't understand records. The respondents from the Records Department in New York: 'Many IT staff don't realize they should preserve the information as records for accountability. In most agencies the records manager is not involved in electronic records. He only works with paper records.'

The negative effects have not yet led to problems: none of the respondents could mention in which the absence of digital records had created difficulties for fact-finding by Auditors or Legislative Committees.

The respondents from the Records Department in New York argued that the problems are being tackled now: 'There has been a long period, 15 to 20 years, in which state agencies have implemented digital systems to meet daily needs. Record keeping was not an issue. Now there's a huge backlog. We are working on that with new practices and new systems. Only in the past five years we have offered workshops, site visits and consultations. There are all kinds of industry standards which require specific compatibility. Now standards are being developed. In 10 to 15 years we will be in better shape. Staff training is crucial since digital records are created by individuals on PC's.'

Accountability to citizens (FOIA)
The respondents from the Records Department in Connecticut: 'We don't know to what extent digital information is used for public accountability to legislative committees and auditors. When public accountability is used as a broader term – accountability to the public – FOIA is important. A lot of FIOA requests relate to e-mail. Applicants (mainly journalists) also ask for other digital information. They have asked for Internet usage records and these showed that many civil servants were buying at e-mail or even visited pornographic websites. The State of Connecticut has no presumption of privacy at work for state employees. A man wanted to see my telephone records because he felt I was not handling his question well. He got these records. Digital calendars can also be requested.'[28]

[27] The respondents from Connecticut presented the example of the redesign of the Tumor Registry at the Department of Health. Hospitals report cases of cancer to this registry. The registry is very important for research purposes. Recently they had to renovate their IT-system. The IT-people focused on limiting the paper work but did not think about long-term preservation. 'They did not understand that these were permanent records.'

[28] Computer enable monitoring at the individual level and therefore create public records about individuals. There was a FOIA request for the former governor's calendar. However, they put personal information in his calendar – e.g. dinner with friends – to make the information confidential.

4.2. Orientation of accountability forums

The second research question was: how do the political accountability forums use organizational records for fact-finding? The results of the empirical research are shown in the table below (see indicators in 3.2).

	Object	Norms			Role	Information processing capacity
Accountabilty forums	Type of reconstruction	Procedures	Politicization	Agenda	Data collection	Capacity
State Auditor Connecticut	Predominantly aggregate	Precisely defined	Low	Multiple triggers, legal requirements	Document requests and site visits	Large (but smaller than other auditors)
State Auditor Massachusetts	Predominantly aggregate	Precisely defined	Low (but formal arrangement is politicized)	Multiple triggers, legal requirements	Document requests and site visits	Large
State Auditor New York State	Predominantly aggregate	Precisely defined	Low (but formal arrangement is politicized)	Multiple triggers, legal requirements	Document requests and site visits	Large
Legislative Committee Connecticut	Predominantly aggregate	Not defined	Low	Multiple triggers, no legal requirements	Document requests and site visits	Small (but larger than other Legislative Committees)
Legislative Committee Massachusetts	Predominantly aggregate	Not defined	Medium	Multiple triggers, no legal requirements	Document request and telephone calls	Small
Legislative Committee New York State	Predominantly aggregate	Not defined	High	Multiple triggers, no legal requirements	Document requests and site visits	Small

Table 6. Empirical approaches to fact-finding of accountability forums

Object: type of reconstruction

This variable measures whether accountability forums reconstruct aggregate events (the execution of policies) or single events (one specific decision or action). All the accountability forums are primarily interested in aggregate constructions. A quote from the respondent from Connecticut's Legislative Committee illustrates this position: 'Our reviews are more related to government programs and how they are working. What we are most interested in is how things work most of the times.' They may also look at individual cases but these are often large cases (such as the Big Dig in Massachusetts and the construction of Rochester Central Station in New York). The focus on aggregate

events means that the object of the review is generally the functioning of organizations and the execution of policies and not individual decisions or actions.

Norms

Procedures

The auditors in all states follow the GAO Yellow Book[29], generally because State law implies they should follow these standards. Additionally they develop specific procedures. Respondent from Connecticut: 'There are Standard Audit Procedures relating to payroll, personnel, purchasing, receiving, etc. There are a few hundred different procedures. Auditors can customize these procedures since there are important differences in the size of agencies.'
Legislative Committees in Connecticut, Massachusetts and New York do not follow strict procedures. The respondent from New York: 'We do not follow Yellow Book Standards. An example can illustrate the differences between us and the Comptroller's Office. The Comptroller shares a draft report with the agency under review. The agency can comment on it and the Comptroller will only finalize the report after that. We do not share our drafts reports. We did this before, but then the agency ran with their own version of the issue, before the report was released, preempting the report's findings.'

Politicization

To evaluate the degree of politicization I looked both at the formal arrangement of the accountability forum and the actual practice. The formal arrangements for State Auditors differ. The State Auditor's office is a legislative agency in Connecticut and an independent agency in Massachusetts and part of the executive branch of government New York. This is summarized in table 1.

	Independently elected official	Auditor's office separate from executive responsibilities
Connecticut	NO	YES
Massachusetts	YES	YES
New York	YES	NO

Table 7. Overview of arrangements for State Auditor

These formal arrangements indicate that the State Auditor's Office could be more politicized in Massachusetts and New York than in Connecticut. This is emphasized by the respondent from the Connecticut Auditor's Office: 'The set-up in our state guarantees checks and balances and an independent, non-partisan auditor. Our approach leads to a less politicized office.' The respondents in the other states argue that their offices are not politicized but above all independent. The respondent from Massachusetts Auditor's Office: 'Politics does not have much influence on the day-to-day operations. We are a

[29] US General Accounting Office, 2003, Government Auditing Standards. 2003 Revision (available at: http://www.gao.gov/govaud/yb2003.pdf, retrieved: May 30, 2006).

separate constitutional office. That's crucial. It's a card we play all the time.' The respondent from New York Auditor's Office indicates that politics do not influence day-to-day operations but also argued that the fact that the Comptroller and the Governor do not belong to the same party creates a 'healthy conflict'.

Legislative Committees could be expected to be more politicized but the research shows that there are substantial differences between the three states. The oversight committee in Connecticut is bipartisan and reports have to be endorsed by both parties. The majority party dominates the oversight committees in Massachusetts and New York. In New York the minority member does not even sign for reports. Connecticut is the only state with a joint House-Senate committee. This analysis is summarized in table 2.

	Bipartisan	Committee of chair signs for report	Joint House-Senate Committee
Connecticut	YES	COMMITTEE	YES
Massachusetts	NO	COMMITTEE	NO
New York	NO	CHAIR	NO

Table 8. Arrangements for legislative committees

These formal arrangements do influence politics in these committees although the respondents highlighted that many reviews are not politicized. The respondent from Massachusetts' Legislative Committee: 'The investigations are not politicized. We have taken on issues that weren't in the public eye at all. We often do investigations because we think there might be efficiencies and not in response to public pressure. We also do investigations into public issues such as the Big Dig.'
Politics are present in all committees but are dealt with in different ways. Connecticut: 'The members know that the process is not going anywhere if it is politicized. One member always has to vote with the other party. A division along party lines leads to a stalemate. To prevent problems, political differences are dealt with informally and before audits are selected. This happens before the formal voting. The differences will have been worked out before the voting takes place.' In Massachusetts committees try to get all members to sign for a report: 'There is generally bipartisan support for our reports. We haven't had minority members withholding signatures.' New York has the highest level of politicization: minority members do not even have the option of not signing for a report: 'The choice of subjects is steered by the chair. (…) We will look at subjects that are important for us as the majority party. (…) It has never happened that the minority member protested against a report but, then, the committee is not heavily involved and does not have to sign for the report.' [30]
There is also an interesting difference in the orientation of the staff. In Connecticut the staff has to be non-partisan: 'The committee staff is required to be non-partisan. You are not supposed to be politically active.' In Massachusetts and New York the staff is partisan and supports the majority party.

[30] Note: the respondent says 'we of the majority party'. In Connecticut the staff must be non-partisan.

Agenda

All these accountability forums have multiple triggers that define their agenda. A quote from the respondent from New York Auditor's Office illustrates this: 'Every year there is an annual plan for audits. 10% of these audits are legally required, 50% are audits that are considered to be necessary by the State Audit Bureau and 40% are audits that are requested by taxpayer complaints, the governor or the legislature.'
These triggers are both bases on wishes or requirements within the accountability forum and on external demands. The internal wishes are more professional in nature for auditors and more political in nature for legislative committees.
All accountability forums gave a list of external triggers and these lists are similar. They all emphasize (formal and informal) requests from the Legislature and from citizens and all indicate that current media attention may form a trigger for a review. The respondent from Massachusetts Auditor's Office: 'The annual plan is based on our own list (agencies they haven't visited for a while, follow-ups required), request by the Legislature (formal through an act (e.g. the Big Dig) or informal requests) and current events.' The respondent from New York's Legislative Committee: 'The agenda is set in different ways: the Committee chair chooses subjects, other members ask the chair or the staff to do certain investigations, other Assembly Committees may ask for joint projects, the Speaker of the Assembly may ask for a review, staff may suggest projects, tips from citizens, we may see something in the paper, we may do a review of a sunset law before the end of its term (this is not mandated unlike some other states). Our agenda may change rapidly when something new comes up.'
A difference between auditors and legislative committees is that auditors also face legal requirements for doing certain audits. 'We do not decide which audits to conduct. The audits that we must conduct are included as part of audit requirements that are codified in State law (i.e. Chapter 23 CT General Statutes).'

Conclusion: norms

This overview shows that the norms that accountability forums use in selecting reviews and assessing organizations are more professional for State Auditors and more political for Legislative Committees. In the group of Legislative Committees, the committee of the Connecticut legislature is less politicized and more professional than the other committees.

Typical role: data collection

All accountability forums use a combination of methods. Interviews and document study always forms crucial elements of the data collection. When it comes to organizational memory, two methods for assessing this can be discerned: document requests and on-site visits.
All auditors indicated that they both request documents and do on site visits. An answer from the respondent from the Connecticut Auditor's Office illustrates this: 'The Audit Team always asks the agency for information. We will also visit the agency. We'll go in

and ask for relevant information from the business people. We'll ask them to set up an office for us.'
The Legislative Committees in Connecticut and New York also do both request and on-site visits. The respondent from the Legislative Committee in New York: 'We sometimes do that. Agencies set aside a room with documents and we can go through it.' The respondent from the Legislative Committee in Connecticut even indicated that they do that very often: 'Very often. We are looking for information that has not be compiled by the agency. We go through individual cases. To do this we need to look at records.' The respondent from the Legislative Committee in Massachusetts indicated that they don't do on-site visits due to scarce resources.
For the role of accountability forums in fact-finding this means that all the State Auditors and the Legislative Committees in Connecticut and New York have an active role: they actively seek information relevant to their investigation and go to agencies to find this information. The Legislative Committee in Massachusetts has a less active role: it does not go to agencies but awaits the information sent to the Committee. It does actively search on agencies' websites.

Information processing capacity

The information processing capacity of the various accountability forums is shown in the table below.

	Staff (involved in reviews)	Budget	Number of review per year	Use of technology
State Auditor Connecticut	99	$ 10.5 million	60	Notebooks, office software, ACL
State Auditor Massachusetts	225	$ 17 million	200	Notebooks, office software, ACL
State Auditor New York State	230	$ 18 – 19 million	135 – 175	Notebooks, office software, ACL, Clementine
Legislative Committee Connecticut	12	$ 1.2 million	5 – 8	Office software, SPSS
Legislative Committee Massachusetts	3	?	5 – 6	Office software
Legislative Committee New York State	6	?	2 reports (and 13 projects and 3 public hearings)	Office software, Fox Pro

Table 9. Information processing capacity of accountability forums

The table shows a clear divide between auditors and legislative committees: auditors have more staff, more budget, do more reviews and have more advanced technology. A comparison of the three auditors shows that the Auditor's Office in Connecticut is substantially smaller than the Auditor's Offices in Massachusetts and New York. The Legislative Committee in Connecticut has more information processing capacity than the committees in Massachusetts and New York.

It is interesting to note that auditors make substantial use of technologies. A quote from the respondent from the Auditor's Office in Connecticut illustrates this: 'Each auditor is assigned a notebook computer and printer. The notebooks have Microsoft Office Professional productivity software (i.e. Word, Excel, Access, etc.) and ACL audit software (i.e. database analysis and transaction sampling) installed on their hard drives. Virtually all of our audit staff's computers are connected to agency computer networks in order to receive access to State e-mail servers, Internet gateways, and central administrative database servers.'
This assessment of information processing capacity shows that all the State Auditors have more information processing capacity than the Legislative Committees. Within the group of State Auditors, the State Auditors in Connecticut has less information processing capacity than the State Auditors in Massachusetts and New York. Within the group of Legislative Committees, the Committee in Connecticut has more information processing capacity than the committees in Massachusetts and New York.

4.3. Impact of digital recordkeeping on fact-finding

The third empirical research question was: What is the impact of changes in organizational recordkeeping on fact-finding by political accountability forums? These effects were measured by asked respondents to react to a list of statements and to explain their reaction. These statements were related to the hypotheses in section 2.2 and the indicators in section 3.2 (see appendix F). An overview of these scores is presented in the table below.

Statement	State Auditor Connecticut	State Auditor Massachusetts	State Auditor New York State	Legislative Committee Connecticut	Legislative Committee Massachusetts	Legislative Committee New York State
1. Digitization renders government organizations more transparent to scrutiny because more information is recorded and information can more easily be analyzed.	+	+	+	+	+	+
2. There is little reason to doubt the reliability of the reconstructions based on digital information: digital information is at least as reliable as paper information.	-	+	-	-	+	-
3. Accountability forums make little use of digital information: they mostly rely on information in paper documents.	-	-	-	-	-	-
4. Accountability forums have insufficient information processing capacity to adequately	-	-	-	-	-	-

process all the digital information available to them.						
5. The availability of digital information enables reconstructions which could not have been made without it.	+	+	+	+	+	+
6. The fact that certain digital information was not available hampered fact-finding.	+/-	-	+	-	-	+
7. E-mail messages play an important role in audits.	-	+	-	-	-	+
8. Information from databases plays an important role in audits.	+	+	+	+	+	+

Table 10. Respondents reactions to statements (+: agree, -: disagree)

1. Digitization renders government organizations more transparent to scrutiny because more information is recorded and information can more easily be analyzed.

All respondents agreed on this statement. They presented a range of different arguments in support of this statement.

- *Unmediated access (1).* Respondents from the Auditor's Office in Massachusetts 'We get a lot of resistance from agencies all the time. The warehouse helps us not to be at their mercy to give the information.' Statewide accounting systems give direct access to information.[31] The auditors in the three states had direct access to accounting information through a statewide accounting system with, among other things, information about accounts receivable and payrolls (see box). They all argued that these systems made it easier for them to obtain data required for their audits. The respondent from the Auditor's Office in Connecticut: 'We have almost unlimited access to the transactional information. We can pull a lot of the data we need out off this database. We get 95% of the digital records we need for the audits from this database.' The respondents from the Auditor's Office in Massachusetts indicated that they also use the statewide accounting systems for (1) preliminary analysis ('We first do a preliminary analysis based on data from the warehouse. We use ACL, Access, Excell.' and (2) explorative or surgical audits ('We think of something that might be interesting. We look at the warehouse and conduct a preliminary investigation. Is it worth pursuing or not? An example (from North Carolina) is that they matched ZIP-codes of State Benefits with ZIP-codes of the banks where the checks were cashed. Surgical audits make audits more useful because they can focus on issues.' Surgical audits are a form of datamining.

[31] The respondent from the Auditor's Office in Connecticut also mentioned a risk related to this development: 'Digitization may render government agencies less transparent to unauthorized users such as citizens and legislators since there seem to be less paper-based reports than before.'

- *Unmediated access (2)*. Agency websites also are a form of unmediated access to information. The respondent from the Auditor's Office in New York: 'The Internet has changed the work a lot. A lot of records are now available online.' The respondent from Connecticut's Legislative Committee: 'We use information from websites as background information. You do have to verify the information. The fact the information is available on websites is a real time-safer. It gets you farther when you have to start to talk to people. Another advantage is that agencies have to pull data together and present narrative explanations. That also makes it easier for us.' The respondent from Massachusetts' Legislative Committee: 'We can find information a lot easier when the information is online. Many things are documented on their websites. The fact that much information in available on a website is certainly helpful with a small staff.'[32] The respondent from New York's Legislative Committee: 'Certainly, digitization can facilitate preliminary background information gathering more easily. One can more easily search for information that may or may not be available. Most, but not all state agencies, have web sites. Ultimately, research will still require the need to go to an agency directly for certain information.'
- *Information easier to analyze*. The respondents from the Auditor's Office in Massachusetts mentioned that it is easier to analyze digital data than data in paper documents. They mentioned the example of construction companies involved in the Big Dig. We can extract the data and verify them easily.' The respondent from New York's Legislative Committee: 'The Committee utilizes digital information for conducting analysis and using it as a tool for further analysis (excel, access). It annually receives a CD of information from the State Comptroller regarding state contracts and uses that information for analysis and further investigation. It often requests or identifies information in digitized format to facilitate its own internal analysis (procurement reports required under law); zone-h (used for several Committee reports on security breaches); fire department response times.'
- *Information easier to find*. The respondent from Massachusetts' Legislative Committee: 'Legal briefs which contain many pages are send to us in digital form. You can search these documents easily.'

Unmediated access and easier analyses lead to time savings and, according to the respondents from the Massachusetts Auditor's Office that is crucial: 'Time savings are important because this makes the audits more valuable. If mistakes or errors are detected in time they can still be corrected. The organization can learn from the audit. The closer to the transaction the audit takes place, the more benefit there is.'

The respondent from the Auditor's Office in Connecticut added that new skills are needed to make use of the available digital information: 'Given the complexity of some databases it is not enough to be authorized to access digitized information you must have

[32] Document research confirms this statement. The use of websites for investigations shows in the list of references of the Massachusetts Legislative Committee's reports. In the report 'Broken Trust' 16 out of 78 references refer to a websites and only one of these references is not a 'gov' website. In 'Dollars and Sen$se' the use is even more prominent. 29 out of 51 references refer to a website. Of these 29, 15 references refer to a government website (.gov or .ma.us).

the training and skill levels necessary to accurately extract the data or reports of information that are desired.'

The respondent from Connecticut's Legislative Committee drew attention to the limitations of the use of digital information: 'I have observed that more often than not the information is not directly useable. Agencies record information for their own uses but this does not make the information directly useable for review purposes.'

The respondents provided a list of relevant examples. Most of the examples related to easy analysis:

- The respondent from the New York Auditor's Office: 'The press wanted to know how many people in all state agencies got paid in overtime. Years ago this information could only be retrieved at enormous cost. Now this information could easily be retrieved from information systems.'
- The respondent from the New York Auditor's Office: 'We audited the licensing of doctors in the State of New York. Digital records were assessed to see whether licensing was conducted effectively.'
- The respondent from Connecticut's Legislative Committee: 'Last year we reviewed labor contract for public school teachers. We needed information about the negotiations and deals with the unions. Twelve years ago I had done the same review. Then all the paper was available in paper documents. We had to input all this information in spreadsheet which was quite labor intensive. Now the Department of Education had all the information already in digital form. They could send us a spreadsheet and we could start analyzing the information. It is not like all the information was not available before but it was so hard to get to.'
- The respondent from Connecticut's Legislative Committee provided the example of the report mandatory Minimum Sentences:[33] 'For this review we looked into the functioning of several criminal justice agencies. They have a lot of databases. We analyzed them. We wanted to know how many people were in prison for a certain charge. And we wanted to know how many years they were in jail for. With the digital information available, this was much easier to analyze.'

One example related to unmediated access:

- The respondent from Massachusetts' Legislative Committee: 'We did an investigation into the development of a certain policy by the IT Division. We were concerned that they issued the policy in a non-collaborative manner. On their website I saw that they had cancelled 8 of the 9 previous meetings with CIOs of other agencies. This was an indication that they had indeed not been working in a collaborative way and made us ask questions to the IT Division. This information could have been requested but I probably would not have done that since you can not request all documents. The Internet enabled me to browse

[33] Legislative Program Review and Investigations Committee, December 2005, Mandatory Minimum Sentences.

through documents and discover relevant facts. I may not have asked this question on the basis of paper documents. I was just looking at the website and found the information.'

All respondents emphasized access to information as the advantage of digitization. None of these respondents indicated that more information was recorded. One of the respondents (from New York's Legislative Committee) argued the opposite: Agencies do not record more information. Often they only automate the paper process.'

Statewide Accounting Systems

All three states have statewide accounting systems.

Connecticut. Recently the State of Connecticut has implemented a new central database with all Financial and Human Resource information of State Agencies. The database is an Internet-based ERP application. It was developed by PeopleSoft(now: Oracle) and customized for the State's use. The financial package was implemented in July 2003. The system is called Core-CT.[34] Previously there were separate systems for financial (accounting and payroll) and HR functions.

Massachusetts. All agencies continually put their information in the Commonwealth Information Warehouse (CIW).[35] Some agencies directly use this system whereas other

[34] 'Core-CT is the system that has replaced Connecticut state government's core financial and administrative computer systems including central and agency accounting, accounts payable, payroll, time and attendance, worker's compensation, personnel, and other legacy systems. For years before Core-CT was implemented, these systems were plagued by poor integration, redundant data entry, and time-wasting reconciliation. They were written in a number of different languages, resided on many platforms, and included numerous databases. This older technology was not adaptable to workflow and e-commerce. The state's central administrative agencies - the Office of the State Comptroller, the Departments of Administrative Services and Information Technology, and the Office of Policy and Management - banded together to undertake the transition to a new, integrated system encompassing virtually all major administrative functions and all executive-branch state agencies. The system uses enterprise resource planning (ERP) software to tie together all functions, using an integrated suite of software applications, a common database, and a unified technical architecture.' State of Connecticut, No Date, Core-CT Website (http://www.core-ct.state.ct.us/, retrieved: April 25 2006).

[35] The Commonwealth Information Warehouse builds upon the Massachusetts Management Accounting and Reporting System (MMARS). This system is a centralized, financial database system specifically designed to support the financial functions performed by the Commonwealth. The system was installed in 1987. At the moment MMARS contains over 700 tables and documents that departments throughout the Commonwealth utilize via a computer. Employees in the State of Massachusetts complete budgeting and accounting tasks by entering information in MMARS using table and document screens. MMARS checks the entered information for errors and either rejects or accepts the information and records it the MMARS database. This information may be reviewed by departments to help make policy or planning decisions. Later an Information Warehouse was added to the system. This gives financial managers and auditors full access to the financial data contained in MMARS and they can create criteria-specific reports at their desktop. (Office of the Comptroller of Massachusetts, No date, The Massachusetts Management Accounting and Reporting System (MMARS), http://www.mass.gov/osc/Homeview/Lesson/mmars.htm (retrieved: 25 April 2006). Currently the Information Warehouse is used as a decision support and reporting tool by 1700 users statewide representing 110 departments.

agencies use their own systems and export their data periodically to the CIW. These systems have to be certified by the Comptroller. The CIW is managed by the comptroller. The comptroller uses the CIW for quality control analysis. The auditor has access to most information in the CIW.

New York. 'The Central Accounting System (CAS) for New York State is operated and maintained by the Office of the State Comptroller (OSC). The CAS serves a wide variety of stakeholders who rely on it to conduct the business of their agencies. CAS stakeholders include state agencies which use the CAS for budgetary controls, accounting, and reporting; vendors and municipalities which require payments and payment information; and the Legislature, the Division of the Budget and the financial community which require cash and accrual accounting information.'[36]

The State Auditor Massachusetts is developing further steps in getting unmediated access to information. They are preparing a system to give them direct access to information about Medicare (25% of the State Budget). 'We are building a system to extract information from the Medicaid system. Now we have to go through Medicaid to get the information. It would be much easier if we could get the information ourselves. Then we don't have to go through the bureaucracy. We can then get better and faster reports. Another benefit is that we have direct access and the agency can not intervene. We get the information unfiltered.'[37] When they audit Medicaid in a traditional way they have to start a meeting, tell them what information they want. There are follow-up meeting to refine request. This whole process costs time and leads to 'hurdles'. Access to the system can decrease the time needed for an audit because there is direct access to the data and the communication concerning the draft reports can be conducted electronically.

2. There is little reason to doubt the reliability of the reconstructions based on digital information: digital information is at least as reliable as paper information.

Respondents from the Auditor's Office and the legislative Committee in Massachusetts agreed with this statement, the other respondents disagreed.

The respondents gave the following arguments for disagreeing with the statement:

(http://www.mass.gov/?pageID=itdmodulechunk&&L=1&L0=Home&sid=Aitd&b=terminalcontent&f=_organization_information_warehouse&csid=Aitd, retrieved: May 15, 2006). The CIW contains data from the following systems (Information Technology Division, Executive Office for Administration & Finance, 2005, Commonwealth Information Warehouse (document available at Massachusetts Government Intranet): Massachusetts Management Accounting and Reporting System, Labor Cost Management, Human Resource/Compensation Management System, Payroll Cost Reporting System, Payroll Management Information System, Human Resource and Payroll related data from the University of Massachusetts, Payroll Management Information System/Commonwealth's Automated Payroll System.

[36] T.A. Pardo, H.J. Scholl, M.E. Cook, D.R. Connelly, S.S. Dawes, 2000, New York State Central Accounting System Stakeholder Needs Analysis, Albany: Center for Technology in Government.

[37] Information about this system is published in a leaflet: Office of the State Auditor, No Date, Office of the State Auditor Medicaid Initiative.

- *Higher level of control over information*. The respondent from the Massachusetts Auditor's Office: 'Digital information as a class is more reliable than paper information since the number of people that change the information is limited. The level of control is higher in digital systems. I have seen a lot of things happen on paper that could not happen in digital systems.'
- *No problems encountered*. The respondent from Massachusetts' Legislative Committee: 'It has not been a problem for us yet. We treat paper and digital information equally. We are conscious of possible risks.'

Some of them indicated that digital systems may also create problems for the reliability of information:

- *Databases may lack adequate controls*. The respondents from the Massachusetts Auditor's Office: 'This does not mean that all digital information is reliable. The reliability of the information needs to be checked. It depends on the system. Previously you had to check paper transactions, now you have to check how electronic signatures can be used and who has which rights to approve transactions. We extract the information digitally but you have to check the paper information behind it. FamilyNet is an example. A lot of digital information was inaccurate. You have to check the paper documents.'
- *Complexity of data may lead to inadequate analysis*. The respondents from the Massachusetts Auditor's Office indicated that the way the information is analyzed determines the reliability of reconstructions: 'The information is a s reliable as the people that analyze it.'

The respondents gave the following arguments for disagreeing with the statement:

- *Databases may lack adequate controls*. The respondent from the Connecticut Auditor's Office: 'The reliability of the data is problematic when the proper controls are not in place. The PeopleSoft System did not have reliable controls at the start. In the early days it happened that a query would give certain results on one day and other results the next day. People could post adjustments to a previous date. Somebody had then entered new data. Another reason why data may not be reliable is that people make coding mistakes.'[38] The respondent from the New York Auditor's Office: 'All the things that give you comfort with paper copies such as signatures, stamps, controls numbers, seals, paper trails are not there. If you want to check the authenticity of digital data, there is often just a user code. You don't know what controls have been in place. You need a skill-set to evaluate the control environment (firewalls, user authentication, etc.). These skills were not necessary in paper documents. You knew enough when they told you it was locked in file with a key. The good news is that there are still paper documents for many digital records. The bad news is that these paper documents are increasingly disappearing. In the past there have been questions about the

[38] The respondent from the Connecticut Auditor's Office added that the People Soft System was developed for the private market. 'It has the advantage that it is very flexible but the system was not designed for the public sector. There are still loopholes. They are still working on those loopholes.'

authenticity. This was a rare situation. There were anomalies in the data of a computerized system for Accounts Receivable of the Water Agency. There were too many anomalies and too many people had access to the data. We went back to the paper documents for our audit.' The respondent from Connecticut's Legislative Committee: 'Paper document also created problems – where did the information come from? – but this is worse with digital information. When we ask agencies about the checking of the veracity of the information, there is little control of the digital information. People may be sloppy with digital information. You have to check for odd numbers, look whether the information looks funny.' The respondent from New York's Legislative Committee provided the following example: 'We did a review of Industrial Development Authorities. There are hundreds of them at a local level and they provide funding for development activities. They send a report to the Comptroller every year about, among other things, their spending and how many jobs they have created. We looked at these reports and noticed that the numbers in some columns could not be correct. Something was wrong. Maybe someone did not know what the column meant? Maybe they had mistakes in transferring the data? We could not use these digital data.'

- *Complexity of data may lead to inadequate analysis*. The respondent from the Connecticut Auditor's Office: 'Auditors need to do adequate queries on complex databases. If you don't do it right, you may think you are pulling off good information but you may end up with incomplete data without being aware of it. The complexity of some databases of information is such that data extracts and ad-hoc reports risk being incomplete if data parameters for a given extract or report are not properly identified. As a result you may think you are looking at an entire universe of transactional data when in fact data could be missing.'
- *Source of information may be unclear*. The respondent from New York's Legislative Committee: 'One must be sure of source material and hence, whether it can be depended on as reliable. Internet access makes loads of information available, but the source and the legitimacy of the information must be scrutinized and verified.'

Some of them indicated that these problems may be overcome:

- *Adequate controls need to be created*. The respondent from the Connecticut Auditor's Office: 'Data in digital systems may be reliable when the accurate controls are in place. There is a learning curve. People need to learn how to code well. Adequate controls should be created. In theory it should be reliable.' The respondent from the New York Auditor's Office: 'If you do a good assessment of the control environment, the data can be considered reliable. Now auditors have to have the skills to assess whether a digital record is authentic. What makes it easier is that the assurance of the control environment for one system can often be used for various audits that depend on data from the same system.'

3. Accountability forums make little use of digital information: they mostly rely on information in paper documents.

All the respondents disagreed with this statement. Their comments:

- *Most information used is digital information*. Some respondents argued that most information used is digital information. They also indicated that the use of digital information is still increasing. The respondent from the Connecticut Auditor's Office: 'We are moving further and further ahead. Rights now the balance between digital and paper information is 50 – 50 but it will be 70 – 30 as time moves on. We are moving in the direction of relying more on the use of digital information and less on the use of paper-based information, although currently we need to utilize information in both formats depending on the type of information being sought.' The respondent from the Massachusetts Auditor's Office: 'In the past ten years we have made an effort to collect the information electronically. 80 – 90 % of everything we collect is electronic.' They gave the following example. 'Look at the year's end audit. 15 years ago there was a room full of boxes with paper. Now there are three floppies. And I can analyze the information on these floppies in any way I want.'
- *Both paper and digital information is important.* Other respondents stressed that both types of information are important. The respondent from the New York Auditor's Office: 'A significant amount depends on digital records. A payroll audit could only be conducted with digital records. Paper documents are also important but digital records as well.' The respondent from New York's Legislative Committee: 'The Committee uses both.' The respondent from the Connecticut Auditor's Office: 'I don't think we will entirely rely on digital information. Not in my lifetime! There are still many legal documents and contracts which have to be signed. The law demands this. (…) There are still paper documents at each agency we need to look at. The records in the database are generally based on paper documents. These papers often contain more information than the digital records. If you want to go to a higher level of detail you still have to go to the paper documents such as contracts.'
- *Digital information is used if available*. Some respondents stressed that they use digital information if the agency can provide the information is that format. The respondent from Connecticut's Legislative Committee: 'If it can assist us we will use information in a digital form. (…) We do use digital information in most reviews.' The respondent from Massachusetts' Legislative Committee: 'It depends on how agencies store the information. Some investigations have entirely been based on paper information others, such as the Big Dig, were based on paper documents. Recent investigations have mostly been based on digital information. As we move forward more investigations are based on digital information. We prefer receiving the information in digital form but it depends on what the agency can provide.'

4. Accountability forums have insufficient information processing capacity to adequately process all the digital information available to them.

All the respondents disagreed with this statement. The respondent from the Massachusetts Auditor's Office: 'I can't imagine an audit for which we would not have the capacity.' The respondent from the New York Auditor's Office: 'It's challenging but we deal with it.'

Their comments highlighted several points:

- *Adequate tools are used*. The respondent from the Connecticut Auditor's Office: 'We have adequate tools. ACL is important.' 'No most of our audit staff has the software tools to work with databases of almost any size.' The respondent from the Massachusetts Auditor's Office: 'We have worked very hard to keep our technology current. The auditor's has been willing to invest in IT.' The respondent from the New York Auditor's Office: 'All auditors use ACL (Audit Command Language) to analyze data. This application is installed on their laptops and also available on computers in the office. They ask agencies for downloads from agency systems in a certain format. We pull out the data we need for the audit. ACL enables auditors to combine data, put them in a spreadsheet and analyze them. Accountability cannot be established in these computerized environments unless you provide auditors with these tools. The State Audit Bureau is now moving to a next generation tool which enables auditors to build systems and analyze data. We are starting to use the application Clementine as a data-mining tool.' This respondent from the New York Auditor's Office also provided examples of the use of ACL:
    - 'We wanted to assess whether the State Health Insurance Program for Employers did not pay too much to certain providers such as dentists. We used ACL to identify a risk trend and found 10 dentists that did more extractions than could be done. The dentists thus inflated the program. This could be established with the ACL tool.'
    - 'The ACL tool is also used to assess goal attainment. We audited the program that aimed to establish homes for disadvantaged children en adults. The SAO went through the records and used ACL to assess whether enough homes had been built. They came to the conclusion that enough homes had been built.'
    - The following example was found in one of the reports that were evaluated: 'We used auditing software to analyze vendor transactions and anomalies in corporate expenditures and reviewed contracts, purchase orders, and procurement card purchases to determine whether appropriate documentation, authorization, and review were completed according to Corporate procedures.'[39]
- *Adequate training is required*. The respondent from the Connecticut Auditor's Office: 'The PeopleSoft System is a complex system. You need proper training to pull off data in a meaningful sense. That is the challenge. At the moment some are experts and other lag behind.'

[39] New York State Office of the State Comptroller, 2006, Internal Controls Over Procurement and Revenues [Issued 5/2/06], p. 6.

- *Analyzing digital data is time consuming but still leads to gains*. The respondent from Connecticut's Legislative Committee indicated that often analyzing digital information is a lot of work but it still saves time because before they would have had to retrieve the information from paper document first. The respondent from Massachusetts' Legislative Committee: 'Although analyzing the digital information is time consuming, I still think digitization helps us by making more information available. We deal with information overloads by narrowing the scope of investigations. Digitization has not caused us to narrow the scope more.'
- *Assistance is provided*. The respondent from Connecticut's Legislative Committee: 'Sometimes we need more capacity to analyze the digital information. We did not run into trouble with the Criminal Justice Databases but we did need assistance from people who could analyze these databases analytically.' [40] The respondent from New York's Legislative Committee: 'The Committee has a small staff. It works with digital information and databases which can facilitate analysis and sometimes allows staff to accomplish more, even with less staff. But, the Committee must also reach out to other staff to assist with in depth database work. We can ask other people in the Speaker's staff to assist us. We have asked people in the IT-unit to help us to develop databases. Other people have helped us with SPSS. We reach out to others.'
- *A good focus is needed*. The respondent from New York's Legislative Committee: 'There is a world on the Internet that is out there. The challenge is to scope out at the front end: what do we want to know? We have to stay focused to not get lost in everything that is out there.'

5. The availability of digital information enables reconstructions which could not have been made without it.

All respondents agreed with this statement. The respondent from the Connecticut Auditor's Office: 'If you are trained it is amazing what you can do.' The respondent from Connecticut's Legislative Committee: 'You skip the collection of the database process.'

They provided a list of interesting examples:

- *Selecting information*. The respondent from the Connecticut Auditor's Office: 'For the yearly audit of the State's transactions we wanted to look at all transactions greater than $ 100,000. It was easy to pull these off the database. Then we know where to start the audit. On the basis of paper records that would be impossible. That would be too manpower intensive.' The respondent from the Massachusetts Auditor's Office: 'We looked at the information for every winner of the Massachusetts State Lottery. We could never have done that kind of analysis by hand. We came with substantial findings. We found that some people were multiple winners. And we found winners that were dead. We could never have had the same results by hand.' The respondent from the Massachusetts Auditor's Office: 'Every year we have to look at the closing of accounts at the

[40] Legislative Program Review and Investigations Committee, December 2005, Mandatory Minimum Sentences.

end of the year. If an agency does transaction two days before the year's end, these transactions cannot be paid before the closing of the accounts. This creates problems. In total we are talking about 500,000 transactions. We could never select the transactions that may create problems without IT.' The respondent from the Massachusetts Auditor's Office: 'Some services are provided to people that have died. That happens every year. With IT is easy to find these cases.' The respondent from New York's Legislative Committee: 'One of our reviews of procurement provides an example. We looked at contract for IT-projects. We used two databases – one with year by year information and one with information about the full length of contracts – and this showed us how much the State had spent. We used the databases to pull out data. This would have been impossible without the databases. There are thousands of contracts in every given year and we looked at multiple years.'

- *Comparing information*. The respondent from the Massachusetts Auditor's Office: 'There are 140 agencies in the State. With digital information we can compare accounts receivable state wide.'
- *Calculating new information*. The respondent from the Massachusetts Auditor's Office: 'The collection time of the Department of Revenue can easily be calculated with IT. Without IT that would be very difficult.' The respondent from Massachusetts' Legislative Committee: 'The Procurement Report dealt with state government procurement. One agency does all the State Procurement in Massachusetts. However, many agencies did not buy through this agency. For our investigation we wanted all purchases by all agencies. The data were extracted from a database and send to us as an Excell spreadsheet. We could analyze the data. All items had object codes and we could sort the spreadsheet by object code and add them up. We for example found that Agency X and Y bought the same pencils but did not get the quantum discounts. 'I don't see how we could have done that report without the electronic information. There is no way we could have done this without digital information. It saved the State $ 50 million.' [41]
- *Analyzing information*. The respondent from the Massachusetts Auditor's Office: 'The law allowed towns to apply for the budget through the School Business Assistance Program. They received part of the budget ahead of time. We found that school put all kinds of costs in the budget.' The respondent from Connecticut's Legislative Committee: 'The Soldiers, Sailors and Marines Funds is a pot of money for assistance to veterans. In the last six years 1800 to 2000 veterans received assistance. The Agency is small – it consists of 13 people but has a budget of $ 81 million. Last year we did a review to find out how the budget was used. The staff had inputted the information but they did not know how to analyze it. Our analyst could analyze how many different people were getting something per year. This would not have been possible without the digital information. Otherwise we would have had to sample the group.' [42] The respondent from Massachusetts' Legislative Committee: 'Employers pay into a

[41] Senate Committee on Post Audit and Oversight, March 2004, Dollars and Sen$e. The Need for Procurement Reform in Massachusetts (available at: www.mass.gov/legis/senate/postaudrep.htm).

[42] Legislative Program Review and Investigations Committee, January 2006, Soldiers, Sailors, and Marines Funds.

fund which is meant to cover laid-of employees for a period of 16 to 20 weeks. The funds build up when the economy is doing well and goes down in times of economic recession. We were concerned that the fund was going to be depleted. I did an analysis of the fund. The State Agency of Employment and Training send me a lot of data in spreadsheets. I analyzed this and we came with suggestions for improving the fund. We passed legislation on the basis of this analysis and the fund is now stable.' [43] The respondent from the Massachusetts Auditor's Office: 'In a review at the Department of Social Services we used the database to get information about where children were to investigate whether they had found families. The information was then analyzed with ACL.'

All these examples point in the same direction: digital systems offer more opportunities to select, compare, calculate and analyze information and therefore complex reconstructions of facts are possible. These reconstructions would be too time-consuming on the basis of digital information.

The unavailability of digital information can also hamper a review. The respondent from Connecticut's Legislative Committee provided the following example:

- Connecticut's Tax System.[44] 'In this review the unavailability of digital information hampered the review. The Tax Department did not input all information from tax forms in a database. They only extracted the information they needed for their work. The Tax Department selectively pulled information out of databases. The information was not useful for reviews because it was incomplete. We could not look at the individual forms because these contained confidential information. Availability in a database would have made it easier to anonimize this information.

6. The fact that certain digital information was not available hampered fact-finding.

Two respondents agreed with this statement, one respondent neither agreed nor disagreed and three respondents disagreed with the statement.

The respondents provided the following arguments in favour of the statement:

- *It happens incidentally*. The respondent from the New York Auditor's Office: 'This has happened but it was a rare exception. Most agencies are savvy now and preserve their digital data adequately.' The respondents also provided examples. The respondent from the New York Auditor's Office: 'The State Audit Bureau audited the Labor Department. Public Authorities have to pay funds for labor investigators. The State Audit Bureau wanted to know whether they did this well and to this end they needed access to computerized data. Older data on a back-up

[43] Senate Committee on Post Audit and Oversight, April 2003, Broken Trust. Fixing the Unemployment Trust Fund in Massachusetts (available at: www.mass.gov/legis/senate/postaudrep.htm).

[44] Legislative Program Review and Investigations Committee, January 2006, Connecticut's Tax System.

tape were corrupted and not readable. Therefore they could not assess certain facts.' The respondent from New York's Legislative Committee: 'One Committee investigation examined the Governor's inaugural; that revealed on-line data that was alphabetized by first name, which obviously made analysis practically impossible.'

The respondent who neither agreed nor disagreed provided the following argument:

- *Digital information sometimes delays fact-finding*. The respondent from the Connecticut Auditor's Office: 'While in most cases it may have delayed fact finding it usually does not prevent fact finding. When the People Soft Database was just up there were problems with the two big audits due to coding errors. The two audits were delayed by 9 months and 12 months respectively.' He could not think of any instance in which it was not possible to find facts: 'Usually if there are problems with the data they can clean them up.'

The respondents who disagreed with the statement provided the following arguments:

- *These problems have been overcome*. The respondent from the Massachusetts Auditor's Office: 'We never had this problem. Ten years ago the answer would be different. The technology has improved. Now we have non-proprietary systems and software reads other systems now. This has reduced problems regarding access to digital information.'
- *These problems have never been experienced*. The respondent from Connecticut's Legislative Committee: 'I don't think so. I have never had this experience.' The respondent from Massachusetts' Legislative Committee: 'I haven't run into that yet.'

They did mention some minor problems. These problems either cannot be attributed to IT or could be solved:

- *Old DOS data migrated*. The respondent from the Massachusetts Auditor's Office: 'The Department of Transitional Assistance had an old DOS system. We needed to clean it up and migrate it.'

Two respondents stressed the opposite: a failure to digitize could cause problems:

- *In a database data would have been accessible*. The respondent from Connecticut's Legislative Committee indicated that the Tax Department study showed that failure to digitize information may hamper fact-finding:[45] 'The Tax Department did not input all information from tax forms in a database. They only extracted the information they needed for their work. The Tax Department selectively pulled information out of databases. The information was not useful

[45] Legislative Program Review and Investigations Committee, January 2006, Connecticut's Tax System, p. 114.

for reviews because it was incomplete. She added that they could not look at the individual forms because these contained confidential information. Availability in a database would have made it easier to anonimize this information.'

- *Forum had to input data from hard copy*. The respondent from New York's Legislative Committee: 'The lack of digital data is more a problem. We received many procurement reports as hard copies. Many agencies could or would ot send them to us as digital files. This made the review difficult. We wanted to do a review of NCLB but certain data were not available. The data we needed for our review of drug prices were sent to us in hardcopy. We had to input the data in spreadsheets.'

These answers indicate that there are some incidents in which digital information has hampered fact-finding but these are few and they have not had an important impact. The examples that show that a failure to digitize could cause problems for fact-finding are more numerous and convincing. The statement could thus be reformulated: A failure to digitize information causes problems for fact-finding.

7. E-mail messages play an important role in audits.

Two respondents agreed with this statement, four respondents did not agree. The proponents and opponents of the statement were divided over legislative committees and state auditor's office.

The respondents in favour of the statement presented the following arguments:

- *E-mail is accepted as evidence of transactions*. The respondent from the Massachusetts Auditor's Office: 'We do look at e-mail. We don't say: let me look at all your e-mail. We ask for documentation. If we ask someone: 'how did you notify him?', and the answer is: 'Through e-mail', we say: 'Show us the e-mail.' We accept e-mail as evidence, as documentation, as support for a transaction. 'Theoretically it is a relatively secure way of communication.' The respondent from New York's Legislative Committee: 'E-mail messages have played an important role in reviews. In a procurement record an agency must record all the steps taken when contracting a vendor. These records contain e-mail messages between agencies and vendors and between agencies and the comptroller's office. We wanted to check whether agencies had made the right decisions and had a look at these e-mail messages.'
- *E-mails play a role in criminal investigations*. The respondent from the Massachusetts Auditor's Office: 'E-mail can also play an important role in criminal investigations.' They mentioned two cases of theft and in both cases the e-mail messages were analyzed.

Respondent opposed to the statement provided the following arguments:

- *E-mail is not accepted as evidence of transactions*. The respondent from the New York Auditor's Office: 'No audit is based on e-mail. Here is the e-mail that

supports this transaction? I haven't seen it. I can't think of cases where e-mail messages formed the source records. Most official records are paper memos or computerized data from official systems.'

- *E-mail is not needed for the investigations we do*. The respondent from Connecticut's Legislative Committee: 'We generally don't use e-mail. We don't need e-mail access. I can imagine that e-mails could be used to study incidents but we haven't studied incidents lately.'
- *Agencies only provide e-mails selectively*. The respondent from Massachusetts' Legislative Committee: 'I have agencies sent e-mails to me supporting their arguments. They generally forward only positive information. I have never seen an e-mail that indicates that the agency has made mistakes. Request for paper documents are always very clear. Send us all X reports in a time period. They then have to send all these reports, whether they are favorable to them or not. If we make a request for all communications they may not go through all their e-mails. And we have not made specific request for e-mail. Agencies may selectively send e-mails but do send every required report.'

The last remark highlights an interesting point. The informal nature of e-mail communication – in the sense that there are no clear rules about the preservation of e-mail and the status of messages – forms a problematic base for accountability. Agencies can decide which e-mails they will send to the Senate Committee.

The other opponents indicated that e-mail is used but argued that it is not important:

- *E-mail is presented as evidence of transactions*. The respondent from the Connecticut Auditor's Office: 'The auditors do not specifically ask for e-mail but they may get print-outs from e-mails when they ask the agency for back-up documentation for a transaction. Generally e-mails can be part of a paper document file. They'll put e-mails in a file.'
- *E-mail is used in investigations of whistleblower complaints*. The respondent from the Connecticut Auditor's Office: 'In whistleblower investigations they sometimes ask for e-mails. Then they usually ask the agency to give them the relevant e-mail messages.'
- *E-mail is presented as information about the implementation of decision*. The respondent from Connecticut's Legislative Committee: 'Agencies have sometimes complied with our requests by sending an e-mail. These message contained information about implementing a decision.'

Some respondents indicated that e-mail is becoming more important:

- The respondent from Connecticut's Legislative Committee: 'E-mail is becoming an issue in the State. Should agencies preserve e-mail? Should we get them?'
- The respondent from Massachusetts' Legislative Committee: 'I suspect they will play an important role in the future.'

Additionally, all respondents emphasized that e-mail plays an important role in the communication within their offices and with the auditees. The respondent from New York's Legislative Committee: 'It is a useful tool. It facilitates communications. People can e-mail spreadsheets and data more quickly.'

8. Information from databases plays an important role in audits.

All respondents agreed with this statement and many referred to arguments and examples they had already provided. The following quotes illustrate the importance of databases for fact-finding: The respondent from the Connecticut Auditor's Office: 'Increasingly so. With each passing year more so.' The respondent from the Massachusetts Auditor's Office: 'It's essential. In a lot of cases you don't have to sample anymore. You can look at all the cases.' The respondent from the New York Auditor's Office: 'See all the previous examples.' The respondent from Connecticut's Legislative Committee: 'See the previous examples.' The respondent from Massachusetts' Legislative Committee: 'If the information is relevant to our investigation, digital information plays an enormous part. It is indispensable.' The respondent from New York's Legislative Committee: 'They certainly play a role.'

This ends the presentation of results of the research. In the next chapter I will answer the research questions and present the conclusions.

5. Conclusions

5.1. Empirical questions

In this section the empirical questions are answered and a comparison is made with findings in the Netherlands.

1. What is the impact of the digitization of government on organizational recordkeeping?

The interviews with employees in recordkeeping departments led to the following findings:

- *E-mail*. The effects of the use of e-mail on organizational recordkeeping are ambiguous. The respondents all highlighted that much information is recorded and these messages may be preserved on computer tapes, paper documents or in individual files. This information may be mostly irrelevant and there are no guarantees for adequate preservation. This means that accountability forums cannot rely on the availability of this information: they may be 'lucky' to find an e-mail.
- *Databases*. The effects of databases on organizational recordkeeping are also ambiguous: they improve the short-term memory of organizations but may create difficulties in the long term. The dynamic nature of databases creates, according to the respondents, problems specifically for GIS.
- *Office software*. The effects of office software on organizational recordkeeping seem generally positive because paper documents are also preserved. The digital document is a back-up and more easily accessible. On the other hand, if the information is only preserved digitally there are no adequate guarantees for the reliability of the digital information. This makes the effect of office software on organizational recordkeeping ambiguous.
- *Websites*. The effects of websites on databases runs parallel to the effects of e-mail and databases and are thus also ambiguous. Advantages are that much information is recorded and made available and this information is easy to access. This information, however, is often updated and may not be preserved.
- *General influences*. Additional to their comments on specific ICTs, respondents highlighted general influences of digitization on organizational recordkeeping: sometimes data may not be accessible to old floppies and individualization of recordkeeping hinders organizational control. It was also argued that deleting digital records is just as much an issue as preserving them.
- *Recording information.* The general opinion of the respondents was that more information is recorded. They specifically referred to e-mail. It was also argued that these extra recordings can create problems for agencies since citizens can request recordings through the FOIA.
- *Preserving information*. The respondents expressed a negative opinion about the effects of digitization on preserving information. They argued that digital information is not more durable neither more reliable.

- *Accessing information*. Opinions about access to information differed: Some respondents highlighted the direct access to information, others emphasized the problems in ensuring long-term access to digital information.

The data gathered through interviews with officials in Public Records Departments are in line with findings of the research in the Netherlands (Meijer, 2002). The respondents concluded that overall digitization has a positive effect on short term recordkeeping but may have a negative effect on long term recordkeeping. The specific findings for the four most important technologies (e-mail, databases, office software and websites) are exactly in line with the findings of the previous research.

This leads to the following conclusions:

- *No institutional differences*. Institutional differences between the USA and the Netherlands and also between the different states have no influence on the relation between digitization and organizational recordkeeping. One may argue that all the organizations studied are bureaucratic government organizations and, thus, there are no institutional differences. It must be noted that acknowledged differences such as the increased level of politicization in the top of American agencies and the stronger focus on professional civil servants in Dutch agencies do not influence the impact of digitization on organizational recordkeeping.
- *No time difference*. Just like in the Netherlands, the general finding of the research in Connecticut, Massachusetts and New York is that digitization improves recording and accessing information whereas there may be difficulties in preserving data. Solutions for the problems related to managing digital records have not yet been developed. The empirical work in the Netherlands was conducted between 1998 and 2001 and the empirical work in the United States in 2006. Problems have been mentioned for some time but government agencies have not yet tackled these problems. The problems related to the preservation of e-mail are well known but no agency has found a solution for these problems. Document management systems are available for managing documents (e-mail, office documents) but few agencies use these systems. The problems related to the dynamic nature of databases and websites have received little recognition. If there are different stages in the use of ICTs, the agencies in the USA have not yet moved to the next stage.
- *Personal versus organizational technologies*. The research in the Netherlands pointed at a difference between organizational technologies (databases, websites) and personal technologies (e-mail, office software). The same difference was identified in the USA. Organizational technologies may not be managed well for the long term but they do have a positive effect on short term memory. Personal technologies are not managed well and may also have a negative effect on short term memory.
- *Technological determinism?* The effects of digitization on organizational recordkeeping are not limited to the Netherlands. Identical effects are identified in another institutional context: government agencies in Connecticut, Massachusetts and New York. This seems to indicate that these technologies have characteristics

that determine their use and support a so-called deterministic perspective on technology. The main characteristics are individual autonomy (e-mail and office documents) and focus on timely information (databases and websites). These characteristics create problems for the public and long-term availability of information. Evidence from other studies shows that there are organizations that have dealt with these technologies in another way – an argument against strict technological determinism – but this is a surprisingly small minority of government organizations in the Netherlands and the USA. [46]

- *No drivers for finding solutions*. One of the reasons why these problems have not yet been tackled is that there do not seem to be strong examples of problems with digital recordkeeping. Examples from the private sector (Microsoft, ENRON) have not yet provided an incentive to improve electronic recordkeeping in government. There has not been external pressure on government organizations to develop adequate means for digital recordkeeping. ICTs are generally used to support internal work processes and internal control. This is, again, in line with the findings in the Netherlands (Meijer, 2002).

One difference between the research in the Netherlands and the research in the USA is the increased importance of websites. Websites have become more important for communication between government agencies and citizens and even within government agencies. This raises new issues for recordkeeping.

2. How do the political accountability forums use organizational records for fact-finding?

On the basis of the research I can present a detailed overview of the approaches to fact-finding of the six accountability forums:

	Object	Norms	Typical role	Information processing capacity
Legislative Committee Connecticut	Organizations and policies	Political norms with professional influence	Active	Small (but larger than other Legislative Committees)
Legislative Committee Massachusetts	Organizations and policies	Political norms	Passive	Small
Legislative Committee New York	Organizations and policies	Political norms	Active	Small
State Auditors Connecticut	Organizations and policies	Professional norms	Active	Large (but smaller than other auditors)
State Auditors Massachusetts	Organizations and policies	Professional norms	Active	Large
State Auditors New York	Organizations and policies	Professional norms	Active	Large

[46] The National Bank in the Netherlands does a good job in managing its digital documents. This organization is an exception (forerunner) (Meijer, 2005, unpublished report).

Table 11. Approaches to fact-finding of accountability forums

Differences between Auditors and Legislative Committees. The research showed a clear difference between State Auditors and Legislative Committees over the three states. State Auditors follow stricter procedures, have more information processing capacity for reviews and are less politicized. Some differences were smaller than could be expected: both forums visit organizations (with the exception of the Legislative Committee in Massachusetts) and both forums primarily focus on reconstructions of aggregated facts.

Differences between the three states. There were also significant differences between the states. The auditor has different institutional positions in the three states.[47] The information processing capacity of the Auditor's Offices in Massachusetts and New York is substantially greater than in Connecticut. The Legislative Committees are also different across the states. The Committee in Connecticut is less politicized and has more information processing capacity than the committees in the other two countries. This means that the comparison of institutional arrangements is not a simple comparison of the USA and the Netherlands.

Differences between the USA and the Netherlands. In the Netherlands Parliamentary enquiry committees do not do on-site visits and focus more on specific events. These differences between the USA and the Netherlands can probably be attributed to the fact that Parliamentary Enquiry Committees do not have a permanent existence such as the standing committees in the USA. The Legislative Committees in the three States continue to function and create annual working plans. Parliamentary Enquiry Committees in the Netherlands are ad-hoc committees that are created to investigate specific situations.

Thus far, I have indicated how organizational recordkeeping changes through the use of ICTs and what the approaches to fact-finding of the different accountability forums are. This leaves us with the question how these changes impact fact-finding by these different accountability forums.

3. What is the impact of changes in organizational recordkeeping on fact-finding by political accountability forums?

Digitization facilitates fact-finding. There is much agreement among the respondents concerning the impact of electronic recordkeeping on fact-finding. The empirical research shows that digitization facilitates fact-finding for all six accountability forums (statement 1). Information from databases plays an important role in audits and reviews (statement 8). Accountability forums make use of this information and certainly do not only rely on paper documents (statement 3). They do have sufficient information processing capacity to use the information available to them (statement 4) and this enables them to make reconstructions of facts which they could not have made without the availability of digital information (statement 5).

[47] The President of the GAO is appointed by the American president. This is again another arrangement.

Auditors can make better use of digital opportunities. This agreement also hides important differences between auditors and legislative committees that submerged in a qualitative analysis of the answers:

- Direct access to organizational information. Auditors in all three states have direct access to accounting information of all government agencies through statewide accountability systems. Legislative committees do not make use of those systems for data collection.
- Sophisticated analysis of organizational data. All the auditors have sophisticated tools for analysis of data (most prominently: ACL). Legislative committees generally use simple office software (Excel, Access, Fox Pro). The legislative committee in Connecticut makes some use of SPSS.

The combination of these changes makes it possible for auditors to shorten their cycle of control. They may even be moving to forms of 'real-time auditing': digitization shortens cycles of control and may eventually result in instant accountability.

Accountability forums penetrate in government agencies. The qualitative analysis also showed an interesting similarity among all respondents. All respondents indicated that they get direct access to organizational data either through large statewide accounting systems or through agency websites. In either case the accountability forums can access the information directly and can thus 'penetrate' in the organization without having to pass a 'gatekeeper'.

Disagreement? There is disagreement about three subjects. None of these differences can be attributed to the distinction between auditors and legislative committees.

- *The reliability of digital information (statement 2*). There are differences in the assessments of the reliability of information but these seem to converge in the direction that digital information requires checking. Some respondents are better aware – and probably also better capable – of the need to check the reliability of digital information.
- *Negative effects of digitization on fact-finding (statement 6)*. These differences only relate to specific incidents. Some respondents can call specific incidents in which the lack of reliable digital information hampered fact-finding. These are always incidents and thus there are no substantial differences.
- *The role of e-mail in fact-finding (statement 8).* There are fundamental differences on this issue. What is the status of e-mail? Opinions differ considerably. A social construction of e-mail is taking place but without 'closure' there is much confusion. This confusion also existed among recordkeepers.

There were significant differences between state auditors on the one hand and legislative committees on the other hand. The central role of statewide accounting systems and thus the level of penetration in government agencies is the main difference. These differences, however, did not lead to different patterns in the answers to the statements. Notably, the

disagreements about the three statements were never separated along lines of auditors and legislative committees.

Differences with the Netherlands. When comparing these findings with the Netherlands the following points can be noted:

- *Does digital recording or digital access facilitate fact-finding?* Both the research in the Netherlands and in the USA indicates that digitization facilitates fact-finding. The research in the Netherlands pointed both at the fact that more information is recorded and that this information is more easily accessible. The research in the USA only showed that the enhanced access is important for fact-finding. A specific analysis of the Dutch cases shows that in most cases the advantages of digitization related to access to information. These systems did also record more information but these extra recordings were generally not used in fact-finding. The exceptions were an automated telephone system (recordings of telephone use) and e-mail. The American answers mainly related to databases. Another explanation for the difference may be that the value of extra recordings may not always be recognized by respondents. They may not realize that certain data was not recorded in paper-based systems.
- *Reliability of digital information needs to be checked.* On the basis of research in the Netherlands (Meijer, 2002: 212, 213) I concluded that there is little reason to doubt the reliability of the reconstructions based on digital information. In some cases the reliability even increased. Although accountability forums in the USA emphasize the importance of checking controls there are no significant differences. Digital information is widely used and generally does not lead to doubts concerning the reliability of reconstructions. When it comes to reliability of digital data, the auditors emphasize that reliability can be achieved when adequate controls are in place. A lack of adequate controls produces unreliable information. This means that reliability can be produced through technical systems (see my paper on authenticity for Archival Science).
- *Unmediated access to information.* The unmediated access to information was an important finding of the research in the USA. The central government databases in Massachusetts, New York and Connecticut are interesting. These databases enhance the transparency of agencies and also limit the control they have over their own information. These databases enable the auditors to penetrate more deeply into the state agencies. These databases have existed for quite some time in the USA, in New York since the 1980s. Unmediated access was not found in the Netherlands. Auditors have to approach agencies to get access to information. I cannot give an explanation of this difference. There seems to be a relation with the institutional context but I can’t fathom how the relation works.
- *Limited use of digital information?* On the basis of research in the Netherlands (Meijer, 2002: 211) I concluded that all forums make very limited use of digital information for fact-finding. Accountability forums in the US make extensive use of digital information to reconstruct facts. There are two possible explanations. A first explanation focuses on institutional differences. Differences in focus of accountability forums may explain differences in use of digital information.

Accountability forums in the Netherlands may rely more on internal evaluations whereas accountability forums in the USA want access to source records. A second explanation focus on stages of development. The research in the USA is conducted later than in the Netherlands. The increased use may be attributed to a time difference in the studies.

- *Proactive forums or focus on financial information?* On the basis of the research in the Netherlands I conclude that proactive forums, such as the National Court of Audit, make better use of the opportunities than the others. The American research also indicated that State Auditors make more use of this information but in the USA there was no reason to label State Auditors as more active than legislative committees. This leads to the question whether the explanation of the forum being more pro-active was the right explanation for the difference. Another explanation could be the strong focus on financial information.

5.2. General hypotheses

I will reflect on the hypotheses I have formulated. An overview of the results of testing the hypotheses is presented in the following table:

Hypothesis	Results of the test	Alternative hypothesis
1. The use of ICTs enhances the transparency of government organizations since more data is recorded and data can be retrieved more easily.	Moderately supported	The use of ICTs enhances the transparency of government organizations since data can be retrieved more easily.
2. The use of ICTs has no influence on the reliability of digital information: digital information is at least as reliable as paper information.	Moderately supported	Digital information is at least as reliable as paper information when proper controls have been created in information systems and analysts have the ability to make proper use of the information.
3. Accountability forums make little use of digital information: they mostly rely on information in paper documents.	Rejected	Accountability forums make extensive use of digital information: the relevance of paper documents is declining.
4. Accountability forums have insufficient information processing capacity to adequately process all the digital information available to them.	Rejected	Accountability forums react to digitization in government by increasing their use of ICTs for fact-finding.
5. Information from organizational ICTs is most important for fact-finding by accountability forums.	Supported	-
6. Accountability forums that assess organizations and policies on the basis of professional standards are more likely to use digital information than those that use political	Inconclusive	-

standards.		
7. Accountability forums that are active in the reviews are more likely to use digital information than those that take a more passive attitude.	Inconclusive	-
8. Accountability forums with more information processing capacity are more likely to use digital information than those with less capacity.	Supported	-

Table 12. Testing the hypotheses

Hypothesis 1
The use of ICTs enhances the transparency of government organizations since more data is recorded and data can be retrieved more easily.

Moderately supported. The use of ICTs certainly increases the transparency of government organizations both in the USA and the Netherlands but this is mainly due to increases in opportunities for analysis and unmediated access to information. Extra recordings are taking place but do not (yet) play an important role in fact-finding. The following hypothesis is certainly supported:

Hypothesis 1a The use of ICTs enhances the transparency of government organizations since data can be retrieved more easily.

Hypothesis 2
The use of ICTs has no influence on the reliability of digital information: digital information is at least as reliable as paper information.

Moderately supported. Accountability forums in the USA do make use of the digital information but emphasize that controls need to be checked. The adequacy of the use of information was also emphasized by some respondents. The following hypothesis may get more support:

Hypothesis 2a. Digital information is at least as reliable as paper information when proper controls have been created in information systems and analysts have the ability to make proper use of the information.

Hypothesis 3
Accountability forums make little use of digital information: they mostly rely on information in paper documents.

Rejected. Accountability forums in the US make extensive use of digital information to reconstruct facts. There are clear indications that the use of digital information is rising.

Many fact-findings could not have been carried out without access to digital information. I would like to propose an alternative hypothesis:

Hypothesis 3.1. Accountability forums make extensive use of digital information: the relevance of paper documents is declining.

Hypothesis 4
Accountability forums have insufficient information processing capacity to adequately process all the digital information available to them.

Rejected. Accountability forums in the USA all have sufficient information processing capacity to adequately process the digital information available to them. They increasingly use digital tools to analyze the digital information presented to them by government agencies. These tools require a sufficient level of technological sophistication on the side of accountability forums. I would like to propose an alternative hypothesis:

Hypothesis 4.1. Accountability forums react to digitization in government by increasing their use of ICTs for fact-finding.

Hypothesis 5
Information from organizational ICTs is most important for fact-finding by accountability forums.

Supported. Databases were also the most important technology in the USA. All the examples that were mentioned to illustrate that digital information enabled new forms of fact-finding related to information from databases. E-mail may be gaining importance but has certainly not approached the level of importance of databases. The focus on organizational performance and policy execution makes it unlikely that e-mail will become as important as structured technologies.

Hypothesis 6
Accountability forums that assess organizations and policies on the basis of professional standards are more likely to use digital information than those that use political standards.

Inconclusive. This expectation held true for the difference between State Auditors (professional standards) and Legislative Committees (professional standards). State Auditors made more use of digital information than Legislative Committees. A qualitative analysis, however, seemed to indicate that this difference can be attributed to other factors such as capacity and focus on financial information.

Hypothesis 7
Accountability forums that are active in the reviews are more likely to use digital information than those that take a more passive attitude.

Inconclusive. The evidence here is not convincing. The important change is that increasingly digital information becomes available through online networks (websites and statewide accountability systems). On-line visits may no longer be a good indicator of an active role of accountability forums: forums may be very active from their own offices.

Hypothesis 8
Accountability forums with more information processing capacity are more likely to use digital information than those with less capacity.

Supported. State Auditors have more information processing capacity in terms of staff, budget and technology and make more use of digital information than Legislative Committees do. Within these groups there also seems to be support: the auditors in Massachusetts and New York seem to make more use of digital information than the auditors in Connecticut and the legislative committee in Connecticut seems to make more use of the digital information than the committees in Massachusetts and New York.

Strom's hypothesis
Strom's (2000) hypothesis stated:

Presidential systems have more information processing capacities and are capable of making better use of the increased transparency of government to enhance political accountability than parliamentary systems.

A comparison of the United States and the Netherlands leads to the following reflections on this hypothesis:

- Strom's hypothesis is confirmed in the fact that all three states have oversight committees that are continuously involved in oversight. A permanent oversight committee does not exist in the Netherlands.
- The findings show, however, that the information processing capacity of these oversight committees is small. Connecticut was the only state with a substantial staff working for the oversight committee.
- Another observation is that Parliament in the Netherlands conducts a growing number of Parliamentary enquiries and investigations. There may not be a permanent oversight committee but oversight certainly takes place.

On the basis of these observations I conclude that there is little support for Strom's hypothesis. I should add, however, that testing this hypothesis was not the aim of this research and that the research design was not adequate for thorough testing of the hypothesis.

5.3. Research question

I formulated the following question for this research:

What is the impact of the digitization of government on political accountability in the States of Connecticut, Massachusetts and New York and how and why does this impact differ from each other and from the Netherlands?

This question indicates that the research contains four comparisons:

1. Comparing political accountability before and after the introduction of ICTs in government.
2. Comparing the impact of digitization on political accountability by State Auditors and Legislative Committees.
3. Comparing the impact of digitization on political accountability in the States of Connecticut, Massachusetts and New York.
4. Comparing the impact of digitization on political accountability in the United States and the Netherlands.

These four comparisons will discussed to answer the research question.

Political accountability before and after the introduction of ICTs in government

Digitization has a positive effect on short term recordkeeping but may have a negative effect on long term recordkeeping. The specific findings for the four most important technologies (e-mail, databases, office software and websites) are exactly in line with the findings of the previous research.

The effects of e-mail use on organizational recordkeeping are ambiguous. Much information is recorded and these messages may be preserved on computer tapes, paper documents or in individual files. This information may be mostly irrelevant and there are no guarantees for adequate preservation. This means that accountability forums cannot rely on the availability of this information: they may be 'lucky' to find an e-mail. Recent examples in the private sector (e.g. Microsoft) provide an interesting example.

The effects of databases on organizational recordkeeping are also ambiguous: they improve the short-term memory of organizations but may create difficulties in the long term. The dynamic nature of databases creates, according to the respondents, problems specifically for GIS.

The effects of office software on organizational recordkeeping seem generally positive because paper documents are also preserved. The digital document is a back-up and more easily accessible. On the other hand, if the information is only preserved digitally there are no adequate guarantees for the reliability of the digital information. This makes the effect of office software on organizational recordkeeping ambiguous.

The effects of websites on databases runs parallel to the effects of e-mail and databases and are thus also ambiguous. Advantages are that much information is recorded and made available and this information is easy to access. This information, however, is often updated and may not be preserved.

The respondents of the three states indicated that overall digitization seems to facilitate accountability on the short-term but may hamper accountability in the long term: ICTs improve internal information management and, therefore, also facilitate short-term accountability. The non-intentional effects may only benefit the short term: as soon as the agency no longer needs the records it may not manage them well anymore. Long-term accountability may be hampered.

In practice, the failure to ensure long-term access to records has no negative effect on fact-finding by auditors and legislative committees. Digitization facilitates fact-finding since information from databases plays an important role in audits and reviews. Accountability forums make use of this information and certainly do not only rely on paper documents. They have sufficient information processing capacity to use the information available to them and this enables them to make reconstructions of facts which they could not have made without the availability of digital information.

Electronic networks enable unmediated access to electronic networks. Accountability forums obtain direct access to organizational data either through large statewide accounting systems or through agency websites. In either case the accountability forums can 'penetrate' in the organization without having to pass a 'gatekeeper'.

Digital information is not always regarded as reliable information: digital information requires checking. Only in a few specific situations did the lack of reliable digital information hamper fact-finding. Some accountability forums are better aware – and probably also better capable – of the need to check the reliability of digital information.

There are fundamental differences on the role of e-mail in fact-finding. What is the status of e-mail? Opinions differ considerably. A social construction of e-mail is taking place but without 'closure' there is much confusion. This confusion also existed among record keepers. Some record keepers argue that all e-mail messages are ephemeral whereas others emphasize that e-mail messages should be treated as organizational records.

Impact of digitization on political accountability by State Auditors and Legislative Committees

The general comparison of political accountability before and after the introduction of ICTs applies to both State Auditors and Legislative Committees. Between these two accountability forums there are also important differences:

- *Direct access to organizational information*. Auditors in all three states have direct access to accounting information of all government agencies through statewide accountability systems. Legislative committees do not make use of those systems for data collection.
- *Sophisticated analysis of organizational data*. All the auditors have sophisticated tools for analysis of data (most prominently: ACL). Legislative committees

generally use simple office software (Excel, Access, Fox Pro). The legislative committee in Connecticut makes some use of SPSS.

The combination of these changes makes it possible for auditors to shorten their cycle of control. They may even be moving to forms of 'real-time auditing': digitization shortens cycles of control and may eventually result in instant accountability.

The differences can be attributed to the different approaches to fact-finding of State Auditors and Legislative Committees. Both accountability forums focus on organizations and policies and generally take an active role in the review. Differences are the norms applied (Auditors: professional norms, Legislative Committees: political norms) and the information processing capacity (Auditors: large, Legislative Committees: small). The combination of professional norms and greater information processing capacity can explain the differences between the two accountability forums.

Impact of digitization on political accountability in three different States

Although there are interesting institutional differences between the three states, these differences did not lead to differences between the states. All the findings presented above apply to these three states. The difference between auditors and legislative committees was much more important than the difference between the states.

Impact of digitization on political accountability in the United States and the Netherlands

The impact of digitization on organizational recordkeeping is in line with findings of the research in the Netherlands (Meijer, 2002). Digitization has a positive effect on short term recordkeeping but may have a negative effect on long term recordkeeping. The specific findings for the four most important technologies (e-mail, databases, office software and websites) are exactly in line with the findings of the previous research.

The effects of digitization on organizational recordkeeping are not limited to the Netherlands. Identical effects are identified in another institutional context: government agencies in Connecticut, Massachusetts and New York. This seems to indicate that these technologies have characteristics that determine their use and support a so-called deterministic perspective on technology. The main characteristics are individual autonomy (e-mail and office documents) and focus on timely information (databases and websites). These characteristics create problems for the public and long-term availability of information. Evidence from other studies shows that there are organizations that have dealt with these technologies in another way – an argument against strict technological determinism – but this is a surprisingly small minority of government organizations in the Netherlands and the USA. [48]

One difference between the research in the Netherlands and the research in the USA is the increased importance of websites. Websites have become more important for

[48] The National Bank in the Netherlands does a good job in managing its digital documents. This organization is an exception (forerunner).

communication between government agencies and citizens and even within government agencies. This raises new issues for recordkeeping.

Both the research in the Netherlands and in the USA indicates that digitization facilitates fact-finding. The research in the Netherlands pointed both at the fact that more information is recorded and that this information is more easily accessible. The research in the USA only showed that the enhanced access is important for fact-finding. A specific analysis of the Dutch cases shows that in most cases the advantages of digitization related to access to information. These systems did also record more information but these extra recordings were generally not used in fact-finding. The exceptions were an automated telephone system (recordings of telephone use) and e-mail. The American answers mainly related to databases.

On the basis of research in the Netherlands (Meijer, 2002: 212, 213) I concluded that there is little reason to doubt the reliability of the reconstructions based on digital information. In some cases the reliability even increased. Although accountability forums in the USA emphasize the importance of checking controls there are no significant differences. Digital information is widely used and generally does not lead to doubts concerning the reliability of reconstructions.

The unmediated access to information was an important finding of the research in the USA. The central government databases in Massachusetts, New York and Connecticut are interesting. These databases enhance the transparency of agencies and also limit the control they have over their own information. These databases enable the auditors to penetrate more deeply into the state agencies. These databases have existed for quite some time in the USA, in New York since the 1980s. Unmediated access was not found in the Netherlands. Auditors have to approach agencies to get access to information. This type of arrangement does not exist in the Netherlands.

On the basis of research in the Netherlands (Meijer, 2002: 211) I concluded that all forums make very limited use of digital information for fact-finding. Accountability forums in the US make extensive use of digital information to reconstruct facts. Differences in focus of accountability forums may explain differences in use of digital information. Accountability forums in the Netherlands may rely more on internal evaluations whereas accountability forums in the USA want access to source records. Another explanation would concern the stages of development. The research in the USA is conducted later than in the Netherlands. The increased use may be attributed to a time difference in the studies.

6. Reflections

6.1. Main trends

In a reflection on these results I would like to highlight the following points:

- *Institutional differences between countries make no difference in the use of ICT*. This research does not provide any support for the importance of institutional differences. There are few differences between the USA and the Netherlands. Technologies follow very similar trajectories in different countries.
- *Technology does matter*. This research indicates that technology does matter. Organizational technologies have a different impact on recordkeeping and therefore on fact-finding by political accountability forum than personal technologies.
- *Auditors step up to the technology run*. Auditors in all three states are adopting new technologies to deal with the enormous availability of digital information. Technological developments in government find their equivalent in developments in auditors. Representatives are not yet stepping up to that level and are lagging in the use of technology.
- *Networks form the next level of transparency*. On the basis of my research in the Netherlands I emphasized that government is becoming more transparent because more information is recorded and this information can easily be analyzed. The research in the USA shows that coupling of organizational recordkeeping systems to networks provide the next level of transparency. It enables accountability forums to penetrate in these organizations and conduct 'surgical audits'.
- *Social construction of e-mail is taking place*. Both in government agencies and in accountability forums, both in the USA and the Netherlands, there is much confusion about e-mail. How should we perceive this technology? The social construction of e-mail is taking place and has not yet reached a closure.

6.2. Policy issues

This confronts policymakers in government agencies and accountability forums with a number of issues:

- *Putting pressure on government agencies to organize their electronic records*. Government agencies are still not organizing their electronic records in such a professional way as they do with their paper records. External pressure seems to be the only way to stimulate agencies to organize their electronic records. Accountability forums could play an important role.
- *Creating clarity about the position of e-mail*. Both government agencies and accountability forums and grappling with the status of e-mail. Government should make an effort to make clear that e-mail messages are indeed government records and thus need to be managed accordingly.
- *Creating trust in electronic records*. Accountability forums have expressed that they have more trust in paper records than in electronic records. Government

agencies should set up adequate electronic recordkeeping facilities to install trust in these electronic records.

- *Representatives should start using more sophisticated technologies*. The use of technology by representatives is still limited. They mainly rely on office software. Better use of technology would enable them to make more efficient use of their limited staff capacities.

6.3. Future of political accountability

Looking into the future, a dangerous thing for a scientist to do, I see the following changes in accountability:

- *Cycles of accountability shorten*. Real time access to state accounting systems enables auditors to shorten the cycle of audits and thus make the results of their audits readily useable to agencies. ICTs same to enable to shorten these cycle and they could also do that for legislative committees. Oversight might increasingly have the character of overseeing what government agencies do instead of calling them to account post-hoc. This would be a fundamental change to the way systems of accountability function and would also diminish the gap between the executive and legislative branches of government. Permanent oversight could pull legislature into the execution of government tasks.
- *Accountability forums penetrate into agencies*. The informational barriers between accountability forums and government agencies are fading away. Traditionally, gatekeepers at government agencies could control the flow of information between agencies and accountability forums. New information and communication technologies are undermining this control and enable forums to directly access the information. This seems to be another element in breaking down the traditional barrier between the executive and legislative branches of government.
- *Informal communication is opened up for review*. E-mail messages will increasingly be used by accountability forums for fact-finding. This will enable them to reconstruct not only formal communications but also informal communications. E-mail messages will play a role in reconstructions of specific decisions and actions. Opening up the informal circuits of government agencies will eventually be a next step in an ongoing process of formalization and standardization of these organizations.

I would like to end this report by stressing that it is the result of a first analysis. This rich empirical material deserves further analysis. I hope to elicit feedback on these findings and I will use this feedback to make a more elaborate and thought-through analysis.

References

D. Bearman, *Electronic Evidence. Strategies for Managing Records in Contemporary Organizations* (Pittsburgh: Archives and Museum Informatics, 1994);

R.D. Behn, *Rethinking Democratic Accountability* (Washington DC: Brookings Institution Press, 2001).

C.A. Bellamy & J.A. Taylor, *Governing in the Information Age* (Milton Keynes: Open University Press, 1998)

M. Bovens, *The quest for responsibility: accountability and citizenship in complex organisations* (Cambridge: Cambridge University Press, 1998).

L. Duranti, Concepts, Principles, and Methods for the Management of Electronic Records, *The Information Society*, 17, 4 (2001): pp. 271-279;

J.E. Fountain, *Building the Virtual State. Information technology and institutional change* (Washington, DC: Brookings Institution, 2001).

P.A. Idenburg, *Informatie-overlast* ('s-Gravenhage: VUGA, 1985);

A. Meijer, Accountability in an Information Age. Opportunities and Risks for Records Management, *Archival Science*, 1, 4 (2001a): pp. 361 – 372.

A. Meijer, Electronic Records Management and Public Accountability: Beyond an Instrumental Approach, *The Information Society*, 17, 4, (2001b): pp. 259 – 270.

A. Meijer, *De doorzichtige overheid. Parlementaire en juridische controle in het informatietijdperk* (Delft: Eburon. 2002).

A.J. Meijer, Transparent government: Political and legal accountability in an information age, *Information Polity*, 8, 1 & 2 (2003): pp. 67 – 78.

A.J. Meijer, 2005, 'Public eyes': Direct accountability in an information age, *First Monday*, Vol. 10, Nr. 4 (firstmonday.org).

J.R. Searle, 1996, *The construction of social reality*, Penguin Books, London.

I.Th.M. Snellen & W.H.B.J. van de Donk, *Public Administration in an Information Age. A Handbook* (Amsterdam: IOS Press, 1998).

K. Strøm, 2000, Delegation and accountability in parliamentary democracies, *European Journal of Political Research*, Vol. 37, Nr. 3, pp. 261 – 289.

E. van Thijn & T. Cardoso Ribeiro, *De informatieparadox: een blinde vlek in het openbaar bestuur* (Utrecht: LEMMA, 2004).

Appendix A. Case Study Connecticut

Recordkeeping

Interview

- Eunice DiBella, Public Records Administrator (May 22, 2006)
- Mark Jones, State Archivist (May 22, 2006)
- Julie Schwartz, Unit Head of Government Information Services (May 22, 2006)

Other sources

- Connecticut State Library, June 1st 1998, Electronic And Voice Mail. A Management And Retention Guide For State And Municipal Government Agencies (http://www.cslib.org/email.htm; retrieved: May 24th, 2006).
- State of Connecticut, March 1, 1999, Records Management Manual.

State Auditor

Interview

- Stephen Eckels, Deputy Auditor (April 24, 2006, by telephone)
- Mr. Eckels sent written answers to the question to me by e-mail (April 24, 2006)

Audit Reports

- Auditors of Public Accounts, October 6, 2005, Auditor's Report Department of Children and Families. Special review of the Adolescent Services Unit.
- Auditors of Public Accounts, October 25, 2004, Department of Transportation, Special Review of the Bureau of Public Transportation.
- Auditors of Public Accounts, February 5, 2003, Information System Project Audit Report - Review of Dual Employment, Employee Numbers, Invalid or Questionable Social Security Numbers, and Minimum Fair Wage.
- Auditors of Public Accounts, November 26, 2003, Office of Policy and Management and Rentschler Field Stadium - Review of Internal Controls.

All these reports are available at the State Auditor's website (www.state.ct.us/apa/).

Other sources

- State of Connecticut, No Date, Core-CT Website (http://www.core-ct.state.ct.us/, retrieved: April 25 2006).
- The website of the Auditors of Public Accounts (http://www.state.ct.us/apa/) was studied for general information about the State Auditor (April 24, 2006).

Legislature

Interview

- Carrie E. Vibert, Director of the Office of Program Review Legislative Program Review and Investigations Committee (May 11, 2006)

Committee Reports

The six most recent reports were analyzed for indications of the use of digital information:

- Legislative Program Review and Investigations Committee, December 2005, Mandatory Minimum Sentences.
- Legislative Program Review and Investigations Committee, December 2005, Mental Health Parity: Insurance Coverage and Utilization.
- Legislative Program Review and Investigations Committee, January 2006, Binding Arbitration. Municipal and School Employees.
- Legislative Program Review and Investigations Committee, January 2006, Connecticut's Tax System.
- Legislative Program Review and Investigations Committee, January 2006, Soldiers, Sailors, and Marines Funds.
- Legislative Program Review and Investigations Committee, January 2006, Connecticut Probate Court System.

These reports will be made available at the Committee's website (www.cga.ct.gov/pri/Publications.hm).

Other sources

- Legislative Program Review and Investigations Committee, Spring 2005, 2003 – 2004 Biennial Report of the Committee. This report will also be made available at the Committee's website (www.cga.ct.gov/pri/AnnualRep.htm).
- The Committee's website (www.cga.ct.gov/pri/index.htm) was studied for general information about the Committee (May 10, 2006).
- US General Accounting Office, 2003, Government Auditing Standards. 2003 Revision (available at: http://www.gao.gov/govaud/yb2003.pdf, retrieved: May 30, 2006).

Appendix B. Case Study Massachusetts

Recordkeeping

Interview

- John Warner, State Archivist (April 13, 2006)

Other sources

- William Francis Galvin Secretary of the Commonwealth, 8 June 2005, Employee Handbook (unpublished document).
- Massachusetts Statewide Records Retention Schedule (05-05), A publication of the Records Conservation Board produced in conjunction with the Massachusetts Archives and the Supervisor of Public Records Office, Approval Date: February 2, 2005, Expiration Date: December 31, 2005.

State Auditor

Interview

- Paul McLaughlin, Director of Information Technology (April 19, 2006)
- Howard Olsher, Director of State Audits (April 19, 2006)

Audit reports

In addition to the interview the most recent reports were analyzed for indications of the use of digital information:

- Auditor of the Commonwealth of Massachusetts, 2006, VALLEY EDUCATIONAL SERVICES, Inc., D/B/A VALLEY WEST DAY SCHOOL (May 1, 2006)
- Auditor of the Commonwealth of Massachusetts, 2006, MASSACHUSETTS PORT AUTHORITY (April 19, 2006)
- Auditor of the Commonwealth of Massachusetts, 2006, DEPARTMENT OF SOCIAL SERVICES (March 30, 2006)
- Auditor of the Commonwealth of Massachusetts, 2006, ROXBURY COMMUNITY COLLEGE (March 24, 2006)
- Auditor of the Commonwealth of Massachusetts, 2006, TUITION REMISSION POLICIES AT MASSACHUSETTS. PUBLIC INSTITUTIONS OF HIGHER EDUCATION (February 21, 2006)

These reports are available at the Auditor's website: www.mass.gov/sao/auditingpage.htm.

Other sources

- PriceWaterhouseCoopers, No date, TeamMate (www.pwc.com/extweb/service.nsf/docid/443881f8a1da32d0852568b6001a514e, retrieved: May 15, 2006).
- ACL website, No date, Business website (www.acl.com; retrieved: May 15, 2006).
- Office of the Comptroller of Massachusetts, No date, The Massachusetts Management Accounting and Reporting System (MMARS), http://www.mass.gov/osc/Homeview/Lesson/mmars.htm (retrieved: 25 April 2006).
- Information Technology Division, 2006, Information Warehouse (http://www.mass.gov/?pageID=itdmodulechunk&&L=1&L0=Home&sid=Aitd&b=terminalcontent&f=_organization_information_warehouse&csid=Aitd, retrieved: May 15, 2006
- Office of the State Auditor, No Date, Office of the State Auditor Medicaid Initiative.
- The Auditor's website was studied for general information: www.mass.gov/sao/auditingpage.htm.

Legislature

Interview

- Jesse Stanesa, director of the Senate Committee on Post Audit and Oversight (May 3, 2006)

Committee Reports

The five most recent reports were analyzed for indications of the use of digital information:

- Senate Committee on Post Audit and Oversight, January 2005, A Renewed Call to Citizen Service. Reforming Community Service, Community Service-Learning and Volunteerism Throughout Massachusetts (available at: www.mass.gov/legis/senate/postaudrep.htm).
- Senate Committee on Post Audit and Oversight, December 2004, Road Blocks to Cost Recovery. Key Findings and Recommendations on the Big Dig Cost Recovery Process (available at: www.mass.gov/legis/senate/postaudrep.htm).
- Senate Committee on Post Audit and Oversight, March 2004, Dollars and Sen$e. The Need for Procurement Reform in Massachusetts (available at: www.mass.gov/legis/senate/postaudrep.htm).
- Senate Committee on Post Audit and Oversight, June 2003, Crisis at Home. The Impact of Massachusetts' Nursing Home Closures (available at: www.mass.gov/legis/senate/postaudrep.htm).
- Senate Committee on Post Audit and Oversight, April 2003, Broken Trust. Fixing the Unemployment Trust Fund in Massachusetts (available at: www.mass.gov/legis/senate/postaudrep.htm).

Other sources

- Section 63 of Chapter 3 of the Massachusetts General Laws (available at: www.mass.gov/legis/laws/mgl/index.htm).

Appendix C. Case Study New York State

Recordkeeping

Interview

- Ann Marie Przybyla, Manager of the Record Service Department (April 12, 2006)
- Dennis Meadow, State Agency Advising Officer at the Record Service Department (April 12, 2006)

Other sources

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State Auditor

Interview

- Jerry Barber, Assistant Comptroller (April 5, 2006)

Audit Reports

In addition to the interview the most recent reports were analyzed for indications of the use of digital information:

- New York State Office of the State Comptroller, 2006, Reporting of Violent and Disruptive Incidents by Public Schools [Issued 5/22/06]
- New York State Office of the State Comptroller, 2006, Oversight of Subsidiary Operations [Issued 5/15/06]
- New York State Office of the State Comptroller, 2006, Internal Controls Over Procurement and Revenues [Issued 5/2/06]
- New York State Office of the State Comptroller, 2006, Division of Water: Use of Non-State Staff to Accomplish Certain Program Requirements [Issued 4/27/06]
- New York State Office of the State Comptroller, 2006, Controls Over State Aid Processing (Follow-Up Report) [Issued 4/24/06]
- New York State Office of the State Comptroller, 2006, Education Programs at Residential Facilities [Issued 4/24/06]

These reports are available at the Auditor's website www.osc.state.ny.us.

Other sources

- New York State Comptroller's Annual Report. The Results of Audits at State Agencies and Public Authorities, 2004 – 2005, Albany (NY).
- The websites of the New York State Office of the State Comptroller (www.osc.state.ny.us; retrieved: April 6 2006) was used for general information.

Legislature

Interview

- Andrea Zaretzki, Director of the Oversight, Analysis and Investigation Committee (June 1, 2006)
- Written answers to the eight statements were provided in an e-mail from Andrea Zaretzki (May 8, 2006).

Committee Reports

In addition to the interview the following recent reports were analyzed for indications of the use of digital information:

- Assembly Standing Committees on Children and Families and Oversight, Analysis and Investigation, Notice of Public Hearing on Oversight and Accountability of the Child Welfare System, 2006.
- Assembly Chair of the Committee on Oversight, Analysis and Investigation James Brennan & Assembly Chair of the Administrative regulations Review Commission, August 2005, FOIL's Subject Matter List requirement: Are Agencies Complying?
- Former Assemblyman Jeff Klein, Chair of the Committee on Oversight, Analysis and Investigation, February 2005, Tip of the Iceberg. New York State's Losing Battle against Hackers.
- Assemblyman Jeff Klein, Chair of the Committee on Oversight, Analysis and Investigation, June 2003, For the Sake of Security. An Assessment of New York State Government Cyber Security.
- New York State Assembly Committee On Oversight, Analysis and Investigation, June 2003, For the Sake of Security. An Assessment of New York State Government Security

Other sources

- The New York State Assembly Committee on Oversight, Analysis and Investigations, 31 December 2004, The 2004 Annual Report, Albany
- A Guide to legislative Oversight, A report from James F. Brennan, Chair New York State Assembly Standing Committee On Oversight, Analysis and Investigation, Albany, February 2005.
- The Committee's website (http://assembly.state.ny.us/comm/?sec=post&id=30) was studied for general information about the Committee.

Appendix D. Questionnaire Recordkeeping

1. What kind of digital records are being created by the State government? [49]
    a. Are e-mail messages managed as digital records?
    b. Are databases managed as digital records?
    c. Are office documents managed as digital records?
    d. Are records from workflow systems managed as digital records?
    e. Are smart systems managed as digital records?
    f. Is other digital information managed as digital records?
2. Are these digital records managed well by State government organization?
    a. Are they registered appropriately?
    b. Are they preserved appropriately?
    c. Can they be retrieved?
3. Does the State government face problems in managing digital records?
    a. Are certain records not preserved?
    b. Are they not preserved in a reliable manner?
    c. Is it impossible to read certain digital records?
    d. Have government organizations found ways to adequately preserve e-mail for political accountability?
4. Do State government organizations realize they have to manage digital records well to enable public accountability?
    a. Do they see digital information as only relevant to their own organization?
    b. Do they realize that these records may be used in public accountability?
    c. Do databases (and other structured technologies) have a positive but not-intended effect on memory systems?
5. In which way are digital memory systems different from (previous) paper memory systems?
    a. What are the differences in recording information?
    b. What are the differences in preserving information?
        i. Is preservation durable?
        ii. Is it reliable?
    c. What are differences in accessing information?
6. Are digital records used for public accountability?
    a. What type of digital records is used for public accountability?
        i. Are e-mail messages used?
        ii. Are text documents used?
        iii. Are databases used?
        iv. Are other digital records used?
    b. To what type of work processes are they related?
        i. Implementation of policies?
        ii. Development of policies?
        iii. Decision-making?
    c. Who uses the records (Senate Committee, State Comptroller, etc.)?
    d. What is the relative importance of these ICT-applications for accountability?.
    e. How does digitization influence public accountability”

[49] Digital information is information which is used in the work process in a digital form. A paper document which was created with a computer but sent through the organization in a paper form is not digital information. A digital document which was sent through the organization in a digital form and then printed out and preserved in a paper form is digital information.

Appendix E. Questionnaire Accountability Forums

A. General Questions

Organizational set-up

1. How is the committee organized?
    a. How are members of the committee elected?
    b. How often does the committee meet?
    c. Who determines what audits they will conduct?
    d. How is the relation between Senate and House?
    e. To what extent are audits politicized?

Information processing capacity

2. What capacity does the forum have for scrutiny?
    a. How many people work at Program Review and Investigations?
    b. What is the annual budget?
    c. How many audits does it conduct per year?

Orientation

3. How do you collect information for your audits?
    d. Does Program Review and Investigations specifically ask agencies for information?
    e. Does Program Review and Investigations staff visit the agencies?
    f. Do they search agencies records?

Kind of reconstruction

4. What kind of reconstructions is Program Review and Investigations interested in?
    a. Agency performance?
    b. Specific projects or decisions?

Explanation

Digital information is information which is used in the work process in a digital form. A paper document which was created with a computer but sent through the organization in a paper form is not digital information. A digital document which was sent through the organization in a digital form and then printed out and preserved in a paper form is digital information.

B. Statements

1. Digitization renders government organizations are more transparent to scrutiny because more information is recorded and information can more easily be analyzed.
2. There is little reason to doubt the reliability of the reconstructions based on digital information: digital information is at least as reliable as paper information.
3. Accountability forums make little use of digital information: they mostly rely on information in paper documents.
4. Accountability forums have insufficient information processing capacity to adequately process all the digital information available to them.
5. The availability of digital information enables reconstructions which could not have been made without it.
6. The fact that certain digital information was not available hampered fact-finding.
7. E-mail messages play an important role in audits.
8. Information from databases plays an important role in audits.

Appendix F. Relations between statements, hypotheses and indicators

The relations between the statements put to the respondents, hypotheses and indicators is shown in the table below.

Statement	Hypothesis	Indicator
1. Digitization renders government organizations are more transparent to scrutiny because more information is recorded and information can more easily be analyzed.	*Hypothesis 1.* The use of ICTs enhances the transparency of government organizations since more data is recorded and data can be retrieved more easily.	Completeness of reconstructions of facts.
2. There is little reason to doubt the reliability of the reconstructions based on digital information: digital information is at least as reliable as paper information.	*Hypothesis 2.* The use of ICTs has no influence on the reliability of digital information: digital information is at least as reliable as paper information.	Reliability of reconstructions of facts.
3. Accountability forums make little use of digital information: they mostly rely on information in paper documents.	*Hypothesis 3.* Accountability forums make little use of digital information: they mostly rely on information in paper documents.	Completeness and reliability of facts.
4. Accountability forums have insufficient information processing capacity to adequately process all the digital information available to them.	*Hypothesis 4.* Accountability forums have insufficient information processing capacity to adequately process all the digital information available to them.	Completeness of reconstructions of facts.
5. The availability of digital information enables reconstructions which could not have been made without it.	*Hypothesis 1.* The use of ICTs enhances the transparency of government organizations since more data is recorded and data can be retrieved more easily.	Completeness of reconstructions of facts.
6. The fact that certain digital information was not available hampered fact-finding.	*Hypothesis 1.* The use of ICTs enhances the transparency of government organizations since more data is recorded and data can be retrieved more easily.	Completeness and reliability of facts.
7. E-mail messages play an important role in audits.	*Hypothesis 5.* Information from organizational ICTs is most important for fact-finding by accountability forums.	Completeness and reliability of facts.
8. Information from databases plays an important role in audits.	*Hypothesis 5.* Information from organizational ICTs is most important for fact-finding by accountability forums.	Completeness and reliability of facts.