Thesis

for a Master of Arts Degree in Technology Governance

E-Government at the Interface of the Public and Private Sector: Business Process Re-engineering for handling Death Cases in Saarbrücken

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Abstract

This paper deals with the administration of cases of deceased in Saarbrücken, Germany. Private institutions which are involved in the public administration of those deaths are mainly communicating with public institutions on paper. Two processes are designed which facilitate electronic solutions to improve data exchange between the institutions. These two process are evaluated by the private institutions. The first process is based on a readily available web application that would not significantly change the current workflow and the second one is designed as a completely new process based on customer wishes. The paper was written in cooperation with eGo-Saar, an administrative union for E-Government in Germany, with the aim to provide a tool for decision making on whether this project is feasible at this point in time.

Key word: E-Government, Case Study, Business Process Re-engineering, Deceased, Digitalisation, Saarland, Germany.

Annotatsioon

Selle töö teemaks on surmade vormistamine Saarbrückenis Saksamaal. Eraasutused, mis nende surmade vormistamisega tegelevad, suhtlevad enamjaolt avalik-õiguslike asutustega paberkandjal. Asutustevahelise andmevahetuse lihtsustamiseks on loodud kaks protsessi. Neid kaht protsessi hindavad eraasutused.

Võtmesõned: e-valitsus, juhtumianalüüs, äriprotsesside ümberkavandamine, surm, digitaliseerimine, Saarland, Saksamaa.

Table of Contents

Abstract ... **3**

Table of Contents ... **4**

Table of Figures ... **5**

Table of Tables ... **5**

Index of Abbreviations ... **6**

Introduction ... **8**

1 E-Government ... **10**

1.1 E-Government Development Models ... 13

1.2 E-Government in Germany ... 14

1.3 E-Government in Saarland ... 16

1.3.1 The Base Project – An Electronic Civil Registry in Saarland ... 18

2 Method and Research Questions ... **20**

2.1 Business Process Re-engineering ... 24

3 The Case Study ... **27**

3.1 The Existing Process ... 27

3.1.1 The Civil Registry Office ... 27

3.1.2 The Funeral Home: Hubert Laubach Bestattungen ... 28

3.1.3 The Hospital: Klinikum Saarbrücken ... 29

3.1.4 Administering a Death Case ... 30

3.1.5 Reasons for Change ... 40

3.2 Re-engineering ... 41

3.2.1 Re-engineered Process 1: XSta ... 42

3.2.2 Feedback ... 44

3.2.3 Re-engineered Process 2: Solution Based on Customer Wishes ... 46

3.2.4 Feedback ... 49

4 Summary ... **51**

5 Outlook ... **53**

Bibliography ... **56**

Annex ... **60**

Table of Figures

Figure 1: E-Government development stages……..13

Figure 2: Pages filled in the hospital…...…….31

Figure 3: Start of process for the funeral home…….32

Figure 4: Administrative process within the hospital……...34

Figure 5: Sequence of process within the funeral home……35

Figure 6: Sequence of process within public institutions…….36

Figure 7: Complete administrative process of a death case…….38

Figure 8: Data exchange with XSta between the CRO and the hospital and the funeral home……44

Figure 9: Overview of efficiently designed process and data exchange via interfaces….48

Table of Tables

Table 1: List of qualitative research sources…….23

Table 2: Symbols for event-driven process……..24

Index of Abbreviations

BPR Business process re-engineering

CRO Civil registry office

DVDV Deutsches Verwaltungsdiensteverzeichnis (German Registry for Administrative Services)

eID Electronic identity card

EU European Union

ICT Information and communication technology

IT Information technology

OSCI Online Services Computer Interface

OECD Organisation for Economic Co-operation and Development

XML Extensible Markup Language

Introduction

E-Government has become a prominent topic in Germany, but it still has a long way to go until it is as developed as in other countries in Europe. Especially cooperation with the private sector is a sensitive topic for which research is needed.

The paper at hand deals with an administrative process across the public and private sectors in the German state of Saarland to shed some light on the challenges concerning this topic. It is imbedded in another project that concluded in 2013. Electronic registries were established for civil registry offices (CRO) for which also a standard working software was introduced throughout all CROs across the state. With the help of this common software data exchange with institutions outside the public institutions could be made possible. This is looked at within this paper for one specific area. The author conducted a case study about the possibility to simplify the administration of death cases by means of electronic processes between hospitals, funeral homes and the CRO in Saarland, exemplary on the hospital *Klinikum Saarbrücken* and the funeral home *Hubert Laubach Bestattungen*. The administrative process is analysed from a death in a hospital to the transfer to the funeral home until the closing of the death case in the public institutions, but focuses on the point of view of the two entities funeral home and hospital, not on the point of view of a CRO. Interviews for review of the current processes, for the design of new processes and for feedback on the proposed new processes were conducted. Emphasis lies on the exchange of case information about the deceased, most importantly the death record and the death notification. The death record is meant to keep a (medical) record of both the dead and the death, while the death notification is the official document notifying the CRO of this death and needed for it to be registered.

The document is divided into five main chapters. In the first one E-Government is discussed. Firstly the concept is introduced and subsequently some details about E-Government in Germany and Saarland are given. One sub-chapter about an E-Government project provides a closer overview about legislation and presents a framework for the following main project discussed. The second chapter briefly explains the methods of business process re-engineering and of case study, and states

the research questions. The first research question addresses the current administrative structure: How is the existing administrative process for death cases structured, from the occurrence of a death in the hospital until it is officially closed? After this question is answered, the second research question takes into account the demand for re-engineering: How to improve said process within the participating public institutions? This is a two-part question that looks at those approaches: improvement through applying a digital solution in place from another state and improvement through creating a new process based on customer wishes. In the next chapter the case study is given in detail, starting with an overview about the institutions involved, followed by the process description. Then the process is re-engineered twice and feedback about these processes is given. In the fourth a summary is drawn up, while in the last chapter details about a further outlook on aspects of the case study will be discussed.

1 E-Government

Since the emergence of the internet, information and communication technology (ICT) has found its way into many areas of everyday life. Though computers have been used in public offices for decades, E-Government as a term as such is relatively new and has become more popular around the year 2000 when digitalisation through enhanced use of the internet started.[1] This is especially shown by international organisations attending to the subject and publishing definitions of E-Government. So far not one global definition has emerged, but numerous ones by international organisations, governments, scholars and institutions. To provide a clearer overview of the field the following case study is placed in, some of the definitions are stated below.

In 2003 the Organisation for Economic Cooperation and Development (OECD) defined E-Government as "*The use of information and communication technologies, and particularly the Internet, as a tool to achieve better government*".[2] The OECD has published numerous documents about E-Government and country studies[3] and has established task forces and working groups to tackle a wide range of topics within this area.[4] "*Utilizing the internet and the world-wide-web for delivering government information and services to citizens*"[5] is the definition by the United Nations from 2001. Though both definitions emphasise the utility of the internet, they differ in focus, citizens or better government, and scope, ICT or only the internet.

The European Union (EU) held its first *Ministerial Conference on E-Government* in 2001,[6] has launched the *eEurope Award for Innovation in E-Government* in 2003,[7] and will roll out its second *E-Government Action Plan* in 2016 as part of the Digital Single

[1] Foley, P.; Alfonso, X. (2009) *E-Government and the Transformation Agenda*. P. 371

[2] OECD government studies (2003) *The e-Government Imperative*. P.23

[3] Cf. OECD website *Publications on Public Sector Innovation and Digital Government.* http://www.oecd.org/gov/public-innovation/publications-public-sector-innovation-digital-government.htm (24.08.2015)

[4] Ibidem

[5] United Nations Division for Public Economics and Public Administration (2001) *Benchmarking E-government: A Global Perspective*. P.1

[6] European Commission Press Release (28.03.2003) *Ministerial conference on eGovernment will celebrate the eEurope Awards for Innovation in eGovernment.* http://europa.eu/rapid/press-release_IP-03-455_en.htm?locale=en (26.08.2015)

[7] Ibidem

Market Strategy adopted in May 2015 to accelerate growth of the digital economy in Europe.[8] Clearly E-Government has become more prioritised throughout the last decade by the EU which defined E-Government as "[…] *the use of information and communication technologies in public administrations combined with organisational change and new skills in order to improve public services and democratic processes and strengthen support to public policies*."[9] Unlike the first two, this definition is much broader and takes into account further changes necessary for success in new technologies, organisational change and skills, and also the fundamental aspect of democracy for modern, Western types of government. E-Government therefore does not only refer to processes being electronified, but to a comprehensive restructuring of these processes and the way one goes about his daily tasks.

In the context of electronic public services often another term is named: good governance. Good governance, like E-Government, is defined with different foci and a varying number of characteristics. For the EU it entails openness, participation, accountability, effectiveness and coherence in its whitepaper about reforming European Governance.[10] These five principles are repeatedly emphasised as necessary for democracy and rule of law which brings us back to the EU's definition of E-Government. E-Government is seen as a tool to bring government and citizens closer together in a time when citizens are becoming more wary of politics, politicians, political institutions, and their interest in their concerns and choices.[11] This modernisation is only one of two key drivers, the other important one being economic reason.

Comprehensive E-Government services that facilitate a one-time-data-entry across a number of public institutions could already save billions of Euros each year within all European countries and would improve communication between the member states themselves and with the bodies of the EU.[12] The European Digital Single Market,

[8] European Commission (2015) *A Digital Single Market Strategy for Europe*. P.20

[9] Commission of the European Communities (2003) *The Role of E-Government for Europe's Future*. P.7

[10] EUR-Lex (2001) *European governance - A white paper*. P. 0001 – 0029 http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52001DC0428 (27.08.2015)

[11] Ibidem

[12] European Commission (2014) *Study on E-Government and the Reduction of Administrative Burden*. Pp. 24-26

which is supposed to break down digital barriers and fragmentation within Europe, is estimated to bring 415 billion Euros each year to the European market.[13] Expectation of financial gains and cutting costs are an essential part of E-Government projects and serves usually as the first benefit listed in arguments for implementing electronic services.

However, what E-Government entails for the individual differs greatly. For some it might only mean using a computer or saving time, for others it could be an improved, faster way of conducting business, maybe even be a citizen-centric bureaucracy, and another group may see it as a transformation of government and society.[14][15] Definitions of E-Government depend on the extent of contact with electronic processes, personal need and ICT skills required.

The definition chosen for this papers is the one by the EU: *"[…] the use of information and communication technologies in public administrations combined with organisational change and new skills in order to improve public services and democratic processes and strengthen support to public policies*."

This definition incorporates elements relevant for this case study because the method of this case study, re-engineering of business processes, entails organisational change, the learning of skills, the need for ICT, and the improvement of public services (see chapter 2.1).

As all member countries act within the regulations of the EU, in the context of E-Government specifically the 2009 ministerial declaration of Malmö, EU data was mainly used in the section above, but as no universal definition of E-Government exists, a closer look at E-Government in Germany follows in chapter 1.2.

To give a more comprehensive view about the place of the case study within E-Government, the next chapter presents an overview about its development.

[13] European Commission (2015) *A Digital Single Market Strategy for Europe*. P.3

[14] OECD E-Government Studies (2006) *Denmark.* P.162

[15] Misra, D.C. (2007) *Defining e-government: a citizen-centric criteria based approach*. P.2

1.1 E-Government Development Models

Like definitions of E-Government, models for E-Government development stages are plenty as well. They vary from three-stage models to six-stage models.[16]

Because this paper is written within a German context, a simple but comprehensive model from German scholars was chosen. Within this model E-Government developed in five stages. From only presenting facts or information, ICT use changed towards integrating digital interactions, first in form of online comments or E-Mails, then in electronic forms that enabled the user to influence procedures directly, e.g. reserving a license plate or arranging an appointment. Options were further enhanced through participatory involvement of citizens. This interaction with citizens also presupposes a higher level of interaction and system integration between public sector entities from national to local level. Within this development model complexity, capability and added value increase with each step.[17]

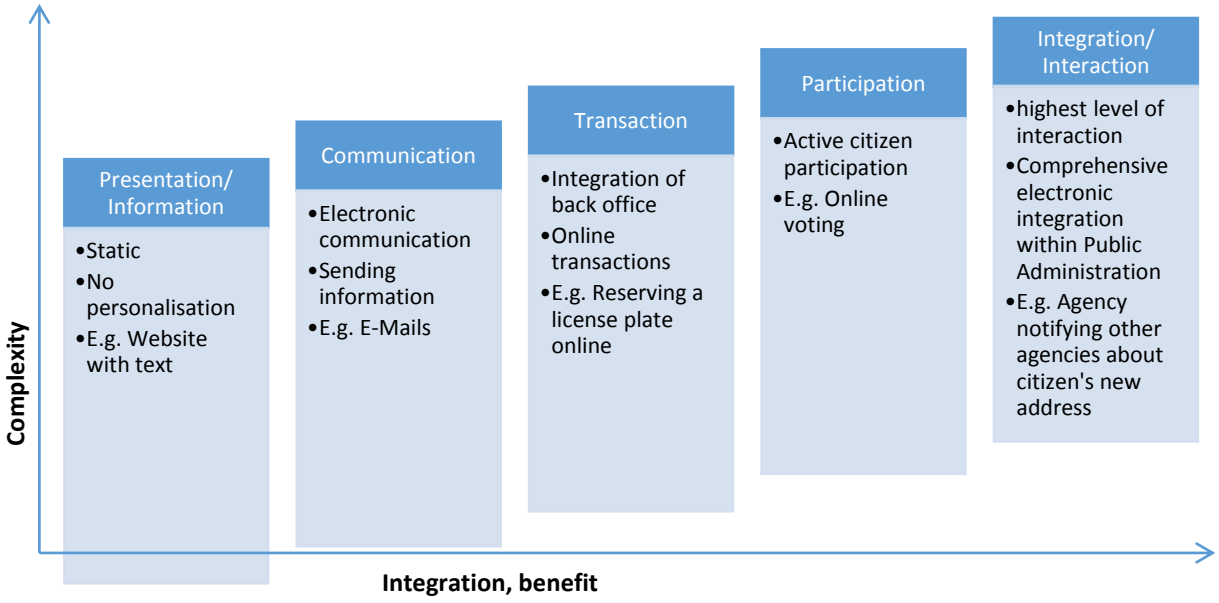

Figure 1: E-Government development stages. (Cf.Wirtz, Piehler 2010)

[16] Cf. Fath-Allah et al. (20014) *E-Government Maturity Models: A Comparative Study International Journal of Software Engineering & Applications.*

[17] Wirtz, B.W.; Piehler, R. (2010) *E-Government – Grundlagen, Instrumente, Strategien.* Pp. 11-13

The biggest potential for E-Government is reached in the last stages as seen in figure 1. The stage of integration enables citizens to use services and obtain information from one source by integrating exchange across different departments, functions and levels of government.[18] Though it is mostly thought of as exchange between government and citizens, government and business relationships are also part of E-Government. Businesses require information from the government for their economic activities and they have to fulfil certain tasks in connection to government[19] depending on their area of business that can be executed electronically. This can be in form of electronic declaration of tax[20] or filling in forms from government or church necessary for operating a business, e.g. a funeral home.

1.2 E-Government in Germany

On 01.04.2010 the federal contract for the implementation of article 91c of Basic Law came into effect, establishing the *IT Planning Council* as Germany's central organ for federal-state cooperation in information technology (IT). At the same time the *National E-Government Strategy* was established, which was the first guide for administrative development across all administrative levels within government. With the mentioned article, an act to connect the networks of the federal and state governments was set in place. However, the National E-Government Strategy is based on the principle of federalism and division of power,[21] therefore implementing the strategy is still in the hands of local governments.[22] In August 2014 the *Act to Promote Electronic Government* came into force. This act places the administrative units under obligation to open electronic channels and a DE-Mail account, a safe way for electronic communication with citizens through electronic identification.[23] Overall this act provides good guidelines for developing E-Government in Germany, but few

[18] Irani et al. (2006) *Transaction Stage of e-Government Systems: Identification of its Location & Importance.* P.2

[19] Joseph, R. (2009) *Government-to-Business (G2B) Perspectives in E-Government.* P.2

[20] Ibidem

[21] IT Planning Council (2010) *National E-Government Strategy.* P.3

[22] Grundgesetz der Bundesrepublik Deutschland. Art.70 I

[23] Gesetz zur Förderung der elektronischen Verwaltung (E-Government-Gesetz) vom 25. Juli 2013 (BGBl. I S. 2749). §2 I. II.

obligations. Exceptions that exempts offices from implementing new legislation,[24] e.g. due to size,[25] the relative powerlessness of the IT-Planning Council,[26] and the strong legislative power of the states that can override a few paragraphs,[27] constitute great obstacles for creating a coherent and comprehensive E-Government service net in Germany. E-Government development in Germany varies between the stages one and five mentioned in chapter 1.1, and might remain in an incoherent state for a longer period of time. Another drawback is that in 2014 only two out of 16 states had their own E-Government act, six states were planning on creating one and eight states saw no need for an act. Instead, administrative legislation is being gradually amended. This leads to slow and inconsistent implementation of (improved) E-Government while one state waits and observes how the other states proceed in regard of electronic administration.[28]

Besides legislative and economic considerations, E-Government also entails a political and sociological side, which is why, among other reasons, some countries today are culturally more reluctant to establish and develop it further. Germany is one of those countries as it is a federal and highly regulated country; it has several different levels of authority, solutions and implementations within a dense legal framework.[29] The reluctance towards digital services is evident on the data regarding the new electronic identity card (eID). Since November 2011 all new IDs given out in Germany are able to provide a digital identification function, e.g. to digitally sign documents, but it has to be activated upon request, otherwise it remains blocked. 41 percent of citizens claimed to possess the new eID, but only 32 percent of those chose to activate the eID function.[30] 39 percent of German citizens said they have used E-Government services during the last 12 months, a much lower percentage than in

[24] Cf. Nationales E-Government Kompetenzzentrum e.V. (2014) *Analyse des Potenzials des E-Government Gesetzes*. P.16

[25] Cf. Gesetz zur Förderung der elektronischen Verwaltung (E-Government-Gesetz) vom 25. Juli 2013 (BGBl. I S. 2749). §§6,7 I.

[26] Idem §10

[27] Cf. Idem §3 III.

[28] Nationales E-Government Kompetenzzentrum e.V. (2014) *Analyse des Potenzials des E-Government Gesetzes*. Pp.16-21

[29] Seliger, B. (2002) *E-Government in a federal state – the case of Germany.* P.1

[30] Initiative D21; ipima (2015) *E-Government Monitor 2015.* P.19 http://www.E-Government-monitor.de/fileadmin/uploads/Studien/2015/150715_eGovMon2015_FREIGABE_Druckversion1.pdf (12.11.2015)

neighbouring countries, e.g. the same number in Austria was 73 percent.[31] One reason is that for many services, e.g. for the most commonly used service *ELSTER* to declare taxes, paper documents usually have to be sent additionally.[32] The most popular service still remains the simple retrieval of information about public transport.[33]

1.3 E-Government in Saarland

For over 15 years Saarland, the smallest German state, has been undergoing a comprehensive modernisation process in which technology plays a major role.[34] Two crucial projects aimed to offer 75 percent of all government services online until 2007 and to build the online citizen service portal *Bürgerdienste Saar*.[35] During this time it became evident that know-how and capacity were missing due to the state's small size. Also financial restrictions made it difficult for the communes to implement and abide by all regulations handed down to local government by the EU, the German Federal and local state governments.[36] Therefore in May 2004, all cities, communes and communal unions in Saarland came together to found eGo-Saar, the E-Government administrative union for Saarland, to stir and lead the technological side of administrative modernisation.[37] This centralised structure gave E-Government development a boost. Before, all communes acted autonomously in data management and creating administrative processes, and used individual servers.[38]

[31] Initiative D21; ipima (2015) *E-Government Monitor 2015.* P.19 http://www.E-Government-monitor.de/fileadmin/uploads/Studien/2015/150715_eGovMon2015_FREIGABE_Druckversion1.pdf (12.11.2015) P.6

[32] Idem P.4

[33] Idem P.24

[34] Saarland Landesregierung (2007) *E-Government-Strategie der saarländische Landesregierung*. P.15 http://www.saarland.de/dokumente/thema_innovation/egov.pdf (12.11.2015)

[35] Idem P.3

[36] Go-Saar *Der Verbandsvorsitzende Werner Laub über den eGo-Saar.* http://www.ego-saar.de/index.php?id=52 (12.11.2015)

[37] Saarland Landesregierung (2007) *E-Government-Strategie der saarländische Landesregierung* P.18 http://www.saarland.de/dokumente/thema_innovation/egov.pdf (12.11.2015)

[38] eGo-Saar (27.07.2014) *10 Jahre eGo Saar - Lebendige interkommunale Zusammenarbeit und Schicksalsgemeinschaft.* http://www.ego-saar.de/index.php?id=243&tx_ttnews[backPid]=16&tx_ttnews[tt_news]=1170&cHash=e754a75a611114fd37ba8ca314308785 (25.11.2015)

Local government in Saarland is in the process of drafting a state E-Government act.[39] At the moment by-laws and amendments regulate the use of electronic administration.[40] With this act, development of E-Government could make a leap forward as together with other legislation it could ease the creation of new processes without media interruption.[41] Connected to an increase in digital services for citizens, private sector institutions and within the public sector itself is the provision of an appropriate internet connection. Therefore, in 2009 the state government and eGo-Saar founded the *Breitbandberatungs- und Koordinierungsstelle,* the broadband consulting and coordination office. Today 99,5 percent of all households in Saarland can receive at least a 1 Mbit/s broadband connection. Regarding fast internet connection services offered, Saarland is nationwide ranked second.[42]

With 14 state projects and nine communal ones, Saarland is mid-range in E-Government activity of states in Germany.[43]

In a 2014 study by the consulting firm *McKinsey,* Saarland came in first place in the E-Government ranking of German states (without the three city states). The ranking was built on the sum of cities and communes in each state, and their number of services offered online out of a total of chosen eight services. Coming in first sounds positive in one's ear but the ranking categorised a state as *leader* if more than four out of the tested eight services were offered online. Of the 200 locales part of the study only ten were labelled as *leaders*.[44] Though perhaps a leader in E-Government in Germany regarding online services, the overall score of Saarland could still be considered poor because it was in comparison with weak competitors.

[39] Staatskanzlei des Saarlandes (17.07.2014) *E-Government im Saarland entwächst den Kinderschuhen.* http://www.saarland.de/6767_117352.htm (25.11.2015)

[40] Cf. Ministerium der Justiz Saarland *Landesrecht.* http://sl.juris.de/cgi-bin/landesrecht.py?d=http://sl.juris.de/sl/gesamtinhalt.htm (24.11.2015)

[41] Staatskanzlei des Saarlandes (17.07.2014) *E-Government im Saarland entwächst den Kinderschuhen.* http://www.saarland.de/6767_117352.htm (25.11.2015)

[42] eGo-Saar; Staatskanzlei Saarland. *Ziele.* http://www.breitband-saarland.de/index.php?id=2 (26.11.2015)

[43] Cf. IT Planungsrat. *Vorhaben.* https://www.e-government-landkarte.de/vorhaben-finden (21.11.2015)

[44] McKinsey & Company (2014) *Nur wenige Kommunen in Deutschland beim Thema E-Government top.* https://www.mckinsey.de/nur-wenige-kommunen-deutschland-beim-thema-e-government-top (25.11.2015)

1.3.1 The Base Project – An Electronic Civil Registry in Saarland

A civil registry is operated by a civil registry office (CRO) and contains all personal information about an individual relevant for public procedures, most importantly: change of name and marriage, birth and death certificates.[45] All deaths within the Federal Republic of Germany have to be reported to the closest CRO.[46]

Since 01.01.2009 the use of an electronic civil registry, opposed to a paper-based one, is permitted, since 01.01.2014 it has been mandatory for all CROs in Germany.[47] All paper documents are to be stored until they are entered into the electronic registry. An electronic civil registry also required an electronic safety registry for the civil registry to back up all information and to protect it from hacking, other cyberattacks and accidents from outside to protect personal data. Therefore two electronic registries had to be installed.

Each state was encouraged to establish a central registry available to all CROs in the state to improve information exchange in the regions, but the use of such a state-wide central registry was not made mandatory,[48] unlike the use of an electronic registry within each CROs.

Saarland decided to implement a central registry. The advantage for citizens was that before they had to ask for certificates to be issued at the CRO that originally registered the case, while with a central one they could request a certificate in any one of those offices within the state of Saarland as long as the event, e.g. marriage, had been registered within the state.

Previously, no electronic registry was being operated in any CRO in Saarland, so new modules for a comprehensive solution for all requirements set by the federal government had to be developed, e.g. a long-term verifiable, qualified electronic signature.[49] Each state had the freedom to implement the new legislation in their own regard. This constituted the first problem. Every CRO in Saarland had implemented their own software and work processes, none were the same and nearly no

[45] Personenstandsgesetz vom 19. Februar 2007 (BGBl. I S. 122), das zuletzt durch Artikel 49 der Verordnung vom 31. August 2015 (BGBl. I S. 1474) geändert worden ist. §1 I. II.

[46] Idem §28

[47] Idem §§75,76

[48] Idem §67

[49] Idem §56 IV.

communication was done between offices or between different government levels. Now all operation systems had to be standardised with a varying level of difficulty depending on inner resistance, skill and size. The *Publisher for Registry Office Matters* (Verlag für Standesamtwesen) provides the expert procedure (Fachverfahren) *AutiSta* (Automation im Standesamt/Automation in CROs) which was chosen as the standard working software within the CROs. It was chosen by eGo-Saar and the employees in the various offices.[50] The electronic civil registry and the safety registry are two registries that are operated in cooperation with all communes and cities in Saarland. They have an interface that allows the different AutiSta systems in the offices to access the two registries. These two registries are stored in two different places, physically and electronically, so that in case the civil registry was damaged the safety registry, which could not be accessed as freely, is out of harm's way.[51]

Also a novelty were the signature cards and card readers which had to be categorised within the highest possible safety class.[52] Towards the end of 2012, the whole system was tested in two CROs, so that in March 2013 a working system could be offered. Between March and September 2013 several training sessions were held by eGo-Saar to prepare and further educate the registrars with the new electronic system.[53] On 4th October 2013 all CROs in Saarland were successfully working with AutiSta and the two electronic registries, three months before the deadline set by the German government.[54] The operating costs of these systems are born by the communes, the investment costs were split between federal, state and communal government.[55]

The extension of this project into the private sector is the topic of this paper. Through a central electronic registry the CROs are now able to exchange information faster and in a simpler manner, but data exchange with outside institutions is still mainly paper-based, creating additional work as the data on paper has to be manually entered into AutiSta. In the event of a death information is exchanged between public and private sector institutions. This case is looked at in the following chapters.

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[50] Besse, S. (2014) *Einführung des elektronischen Personenstandsregisters (ePR) in den saarländischen Standesämtern –Projektabschlussbericht.* P.11-20

[51] Idem P.21

[52] Idem P.24

[53] Idem Pp.27, 28

[54] Idem P.36

[55] Idem Pp.33-34

2 Method and Research Questions

As mentioned in the previous chapters, E-Government is a field of growing importance but slow development in Germany. Projects to improve digital data exchange between public and private sector institutions are therefore also rare. Research into the possibilities of such projects is important and can help interested parties to advance in their communication. The research in this paper addresses one specific area within the field of digital communication possibilities between public and private institutions. It is about data exchange between hospitals and funeral homes with CROs for handling the administration of death cases. Two case specific questions for such institutions in Saarbrücken are explored:

1) How is the existing administrative process for death cases structured, from the occurrence of a death in the hospital until it is officially closed?
2) How to improve a given process within the participating public institutions
    a. through applying a digital solution in place from another state?
    b. through creating a new process based on customer wishes?

These two questions are addressed through the use of process mapping and business process re-engineering. As initially suggested by eGo-Saar, question 2a refers to a solution called XSta about which details are given in chapter 3.2.1.

The existing process throughout all institutions involved is designed firstly. The re-engineering focuses on the administration inside the hospital and the funeral home. Special cases, e.g. criminal cases, death of foreigners or death without having a family, are not considered in the process design. Additionally, the focus lies on the possibility of implementing proposals of a redesigned process by the hospital and the funeral home; the scope of this paper does not allow for an on-going evaluation of the re-engineering process during implementation. Therefore the content only mirrors the first stage of a re-engineering project.

The overall aim is to provide eGo-Saar with an analysis that enables decision-making about implementing a process or whether to continue in the direction of digitally connecting the public and private sector at all.

The research for the paper at hand was conducted within a case study. Case study, as a method, is widely used in public administration and compiling a thesis in social

sciences.[56] A case study is preferred when asking how or why questions, as it is done here, because they deal with operational links and it is a beneficial choice when the researcher has little control over what happens and focuses on contemporary, not past, events.[57] Also, a case study allows to investigate processes, changes or phenomena while maintaining characteristics of real-life events and a holistic approach.[58] As an administrative process is the subject looked at, this constitutes another reason to choose this method. Furthermore, this approach has the benefit of including several research tools: documents, interviews, observation and artifacts.[59] Qualitative research in form of interviews is the chosen method for data analysis and the main source of information as the employees execute the majority of tasks within the examined process. The unit of analysis is the usefulness of the technological solution based on user preferences. The case study will analyse how the business process can be re-engineered according to two specific foci, questions 2a and 2b. As the aim is to analyze a "how" question, the type of case study in this paper is explanatory.[60] Based on the initial interviews and document reviews, two processes with newly integrated support by IT will be re-engineered to improve working conditions and efficiency. A second round of interviews is conducted to assess feedback from the two customer groups, the hospital and the funeral home, about the proposed solutions.

The interviews were semi-structured.[61] Semi-structured interviews provide enough flexibility to adjust to the natural course of the interview, while still maintaining a framework for the interview that helps stay on focus on the chosen topic. It is a good choice when exploring real-world experiences.[62] The interviews began with an opening statement for the interviewer and the interviewee to establish a connection, so that the interviewee is more willing to provide detailed information. Then an open question was used to begin the interview process which then provided exploration

[56] Rober K. Yin (2002) *Case Study Research, Design and Method*. *Applied Social Research Method Series Volume 5*. Pp. 1-2

[57] Idem Pp.5-7

[58] Idem P.3

[59] Idem P.8

[60] Idem Pp.4-6

[61] Overview is attached in annex.

[62] Galletta, A. (2012) *Mastering the Semi-structured Interview and Beyond : From Research Design to Analysis and Publication*. P.24

opportunities to go more and more in depth of the process.[63] Therefore answers could not be anticipated, but a rough framework guided the process to acquire information about the complete process, and all details necessary for an evaluation, e.g. time needed for each process step, number of persons involved or technology used. The interviewer had to be very attentive and listen to the interviewees carefully as they are the most valuable source of information; information about the procedure and the personal experience executing each step.

The case study was conducted as part of an internship at eGo-Saar in Saarbrücken, the author undertook to be able to work within a real-life project. This work placement lasted from 13.07.2015 until 30.09.2015. The content of this paper is essential for evaluating the potential for the extension of the base project towards the private sector and the needs of E-Government in this sector, focusing in on the two customer groups.

The importance of people as a decisive factor in re-engineering projects (as mentioned in chapter 2.1) was taken into account by close cooperation, semi-structured interviews and information exchange as needed throughout the project with the participants. Therefore, some information does not have a verifiable citation as it was obtained during the interviews or through unpublished, sensitive documents. This is the case for the majority of process information and for some facts surrounding the process.

Six interviews were conducted and one additional observation. The interviews lasted approximately two hours each.

The interviews conducted with the personnel in the hospital and the funeral home served the purpose of information gathering, regarding firstly the current process and future re-engineering, and secondly feedback about said re-engineered process. The interview with the registrar in the CRO was an opportunity for the author to learn about the administrative side in the public institution first hand and to receive a complete overview of the whole process from the viewpoints of the public and private sector institutions involved. KommWis GmbH provided knowledge about XSta in an additional interview. This administrative union has already introduced the XSta service in another German state and could offer information about its functions. eGo-

[63] Galletta, A. (2012) *Mastering the Semi-structured Interview and Beyond : From Research Design to Analysis and Publication*. P.47

Saar arranged a meeting with the ministry of Interior of the state of Saarland in order to discuss legal matters for the development of E-Government, including aspects of the administrative process illustrated in this paper. Legislation has to provide further support for said E-Government development and changes in legislation take a fair amount of time, and constant re-evaluation and compromises. Also, all things connected to legislative matters are confidential until officially published by the institution itself. Therefore the content of this observation cannot be assessed for its tangible value in the future and thus will not be integrated into this paper. The meeting was rather an opportunity for the author to experience the challenges and discussions that go into the work in the field of E-Government in Germany.

Appointment	Institution	Type
16.07.2015 at 10:00 & 15. 09.2015 at 10:30	Hospital Klinikum Saarbrücken	Interview
20.07.2015 at 14:00	Civil registry Office Saarbrücken	Interview
23.07.2015 at 11:00 & 16.9.2015 at 13:00	Funeral Home Hubert Laubach	Interview
28.07.2015 at 10:00	KommWis Gesellschaft für Kommunikation und Wissenstransfer mbH	Interview
06.08.2015 at 10:00	Ministry of Interior	Observation

Table 1: List of qualitative research sources

At the end of chapter 3.1.4 the complete process is modelled and depicted with event-driven-process chains of the ARIS-model. The table below explains the chosen symbols.

Event-driven process chain is a design method for business processes that depict sequences. Elongated hexagons represent events. A process begins and ends with events which trigger and finish a process. Any activities are represented by quadrangles and are what drives the process forward. Mid-process events depict a situation that triggers the next part of the process. Small, blue quadrangles show the technology or tools used to execute a process step, e.g. E-Mail. Intermediate-ends,

represented by elongated quadrangles, refers to process steps which have no subsequent activity despite the process continuing further from another step.[64][65]

	Start and end event of process		Activity
	Mid-process event (situation)		Intermediate-end of a process step
	End of involvement of a party		Technology used for activity
	One of the two activities shown are executed		Both activities shown are executed

Table 2: Symbols for event-driven process chains

2.1 Business Process Re-engineering

Business process re-engineering (BPR), also referred to as *process redesign*,[66] seeks to change a process to improve business value by looking at a whole process anew. It concentrates on the desired outcome of the process opposed to only focussing on a function or single unit within a process. Re-engineering a whole new process to reach the desired outcome can therefore be a major opportunity or a major risk alike[67]. The change sought after in re-engineering processes is radical, meaning a fundamental change in a business process. This fundamental change does not refer to scope or to the old process itself, but rather the improvement of direction, the creation of a new working environment for the employees involved in the process. This is what distinguishes BPR from incremental or continuous improvement; those only support the existing environment, the culture and technology, so in other words the policies that are already in place.[68]

[64] Cf. Aris Community *Event-driven process chain (EPC).* http://www.ariscommunity.com/event-driven-process-chain (20.10.2015)

[65] Cf. Scheer, A-W.; Thomas, O.; Adam, O. (2005) *Process-Aware Information Systems: Bridging People and Software Through Process Technology*. Pp.127-132

[66] Chen, Y. (2001) *Empirical Modelling for Participative Business Process Re-engineering*. P.68

[67] Dixon et al. (1994) *Business Process Re-engineering: Improving in New Strategic Directions.* P.91

[68] Idem P.79

Starting a re-engineering project can derive from a crisis but it is often an active step towards the challenges and future ahead.[69] The first and essential step is to understand the current process.[70] Therefore BPR fits into the explanatory case study framework as it also focuses on how an organisation works, opposed to what is done as e.g. with a focus on a product or department.

These processes a BPR project looks at, are defined as *"[…] a structured, measured set of activities designed to produce a specified output for a particular customer or market. It implies a strong emphasis on how work is done within an organization."*[71]

A designed process is thus a structured plan for activities occurring within an organisation for a specified goal.

An enabler of re-engineering processes can be IT. Process re-engineering can be the link between IT and economic gain.[72] Capitalizing IT does not simply support a process, it also brings change onto the process itself.[73] Hence, the goal to raise efficiency level through implementing new technology usually leads to an organisational change as part of the BPR.

A prominent challenge in BPR projects is handling the human factor. When the whole process along several departments or even different institutions involves a number of people, likely a great number of views about the current and the target situation come into play. This means that BPR is a people-centric approach as it is the people who have to work with and thus evaluate the new re-engineered process – leading to a failure or success of the project.[74]

The processes explored in this case study are illustrated by the use of the *event-driven process chains*. This design illustrates processes in a clear, chronological manner that makes it easy to visually recognise how single tasks are allocated.[75] Parallel process

[69] Dixon et al. (1994) *Business Process Re-engineering: Improving in New Strategic Directions.* P.99

[70] Chen, Y. (2001) *Empirical Modelling for Participative Business Process Re-engineering*. P.92

[71] Davenport, T. (1992) *Process Innovation: Re-engineering Work through Information Technology*. P.5

[72] Idem P.45

[73] Chen, Y. (2001) *Empirical Modelling for Participative Business Process Re-engineering*. P.83

[74] Idem Pp.88-89

[75] Melzig-Tiehl, B; Joos, M. (2013) *Corporate Development*. Pp.160-162

steps are easily depicted. Output flows, function flows and information flows with clear start and end signs are the core of the design method.

This paper focuses on re-engineering a process within two private sector institutions that exchange data with public sector institutions. Though *business process* implies that this method is solely applied within businesses/private sector institutions and therefore suitable for this case study, BPR has been playing an increasing role within the public sector. The need for a reduction of cost, the invention of the internet, the increased use of IT in private homes and the tightly grown structures of government, are some of the trends that have an impact on the public sector. This has led to the need of reinventing government and also to the belief that BPR can have a positive impact in governmental institutions.[76]

[76] Thong et al. (2000) *Business Process Re-engineering in the Public Sector: The Case of the Housing Development Board in Singapore*. P.246

3 The Case Study

3.1 The Existing Process

This chapter introduces the two entities the case study focuses on, preluding with a summary of the tasks of the CROs to provide an idea about the case setting, and the existing process of administering a death case. The last sub-chapters illustrate this process in detail and state reasons why re-engineering was considered. It is followed by a chapter about the two proposed re-engineered processes and subsequent evaluations.

The accompanying figures are broken down into smaller sections for the funeral home, the hospital and the public institutions, to support understanding of the process. All figures are created by the author based on the information acquired during the interviews for process mapping. As is the majority of the following information; any content acquired through other means than the mentioned interviews is cited with the relevant sources. An explanation about the meaning of the symbols used in the figures can be revisited in chapter 2.0.

3.1.1 The Civil Registry Office

Saarland operates 53 CROs across 35 communes. The bureau of state administration takes oversight of the CROs and then as the highest instance the ministry of Interior of the Federal Republic of Germany.[77] The main CRO in Saarland is the office in the state capital Saarbrücken.

The CROs have to be notified about each death occurring within their area of responsibility. The biggest group sending death notifications are the funeral homes, then the hospitals, the seniority homes, the public prosecution office, a bigger group than normally assumed because each person found dead outside a care facility is by default a potential police case, and personal notifications being the smallest group. In this case the doctor gives all documentation to the family that goes to the CRO in person, thus reducing administrative costs for the commissioned funeral home. If a

[77] Besse, S. (2014) *Einführung des elektronischen Personenstandregisters (ePR) in den saarländischen Standesämtern.* P.6

death occurred in a public or a private institution, e.g. a hospital, this entity is responsible for the notification, or in case a funeral home is commissioned by the next of kin this responsibility is transferred to that funeral home. Death notifications differ from state to state, but all contain information about the entity officially notifying the CRO about the death which is necessary for all deaths. A death has to be registered to the designated area office where the death occurred within the third day after discovery of the body.[78]

In Saarland all CROs work daily with the software AutiSta. Therefore an extension for the communication with hospitals and funeral homes as biggest client groups is desired. Death cases are also the biggest group of administrative operations. On average 3000 people die annually within the area of responsibility in Saarbrücken, of which up to 100 are transported abroad or outside Saarland. Also each year approximately 2500 babies are born.

So far citizens can request any certificates, the service most sought after, electronically via an online form, by fax, letter or in person. Certificates can be collected in person or sent with postal services. One main problem regarding online services constitutes the compulsory explanation according to the administered case of the registrars. Many tasks require the registrar to educate the client about their rights, responsibilities and possible legal consequences of their decision, e.g. choosing name legislation for a baby for parents of foreign nationality. These explanations can only be administered in person, meaning a signature on paper is more convenient than an electronic one as the person in question is already on site in a number of cases. Also when requested in person the issue of the certificate takes on average 20 minutes, instead of up to three weeks via other channels.

3.1.2 The Funeral Home: Hubert Laubach Bestattungen

The funeral home participating in the case study is *Hubert Laubach Bestattungen* (funerals by Hubert Laubach) founded in 1880. Since then Hubert Laubach Bestattungen has developed into the biggest funeral home in Saarland.

[78] Personenstandsgesetz vom 19. Februar 2007 (BGBl. I S. 122), das zuletzt durch Artikel 49 der Verordnung vom 31. August 2015 (BGBl. I S. 1474) geändert worden ist. § 28

With 18 employees and 13 branches,[79] Hubert Laubach Bestattungen arranges approximately 1000 funerals a year. Handling this number of cases, it is essential to operate with modern technology. All information from all cases in the 13 branches comes together in a central office where two employees are responsible for data management, but one does the majority of the data-related work. All branches and the central office use the specialist funeral home software *PowerOrdo* by the company *RapidData*. It is a database solution, meaning a tool to store, extract and modify a great amount of information with a clear, efficient, standardised and readily available method.[80] This software is customised for each client and stores the information on its own server which provides higher data security. The funeral home handles a lot of information because it is an all-service-provider; it offers assistance in other non-funeral death-related tasks, such as applying for financial assistance by the state, filing for widow's pension, cancelling of bank accounts and insurances, clearing the household, transporting the body to another country, and many more services. For these tasks more information must be available to the funeral home when they get commissioned by the family than to the hospital. Aside from digital data, original paper certificates, e.g. birth or marriage certificates from the client and the deceased, are also used to be able to prove the identity and legal status of the deceased, and the official commission by the family to the public and private entities the funeral home deals with in their client's name. These certificates are not stored in digital form. If certificates are missing the funeral home requests them from the CRO to receive them on paper. As Saarbrücken from time to time suffers from a slow internet connection and internet outages, a big black board on the wall of the central office lists all open cases, basic information and their work status. The phones still run via ISDN, not via an IP-network, for greater stability; this way the phones still work to contact clients on the black board when the internet is down.

3.1.3 The Hospital: Klinikum Saarbrücken

The *Klinikum Saarbrücken*, also called *Winterberg*, is the biggest hospital in Saarland. Closely located on the border to Luxembourg and France, many foreign patients visit the maximum care hospital. A subsidiary of the city Saarbrücken, it has been a non-

[79] Cf. Hubert Laubach Bestattungen Website http://www.laubach-bestattungen.de/ (24.07.2015)
[80] Steiner, R. (2014) *Grundkurs Relationale Datenbanken*. Pp. 5-6

profit organisation since 1992.[81] Still, it has an annual turnover of approximately 128 million Euros, with about 27,000 in-patient and 80,000 out-patient cases. 2000 people are employed in the hospital, of whom 110 are part of the administration.[82]

The hospital staff works with a SAP software throughout the hospital across all units and 99 percent of all administrative processes are digital. Every year approximately 650 patients die in this hospital, making it the main source of reported deaths in Saarbrücken. The hospital staff responsible for handling the non-medical part of the death case is part of the finance and controlling department. Five employees are taught the administrative process to substitute during sickness and vacation of others, but one woman handles the majority of the cases.

3.1.4 Administering a Death Case

The event that triggers the process is the death of a patient in any of the units within the hospital Winterberg. The doctor who declared death has to perform an immediate post-mortem examination to find out time of death, cause of death and manner of death.[83] Only this doctor is allowed to fill in the death record which has to be done right away. Evidence of public health hazards and illnesses subject to official registration have to be reported to the public health department; any evidence of unnatural death has to be reported to the police.[84]

The death record consists of the pages A, B, 1, 2 and 3. All pages are of similar structure, i.e. contain the main information of the deceased, e.g. name and date of birth, but have added sections according to their purposes. A and B, called non-confidential section, are the main administrative pages, while 1-3, called confidential section, also contain cause of death which must not be publicly disclosed[85] as dignity of man is inviolable even beyond death,[86] thus pages 1-3 may only be passed on in a

[81] Homepage Klinikum Saarbrücken *Klinikum heute & gestern.* http://www.klinikum-saarbruecken.de/de/ueberuns/unternehmensprofil/Seiten/Klinikheutegestern.aspx (16.07.2015)

[82] Idem *Unternehmensprofil.* http://www.klinikum-saarbruecken.de/de/ueberuns/unternehmensprofil/Seiten/Unternehmensprofil.aspx (16.07.2015)

[83] Gesetz Nr. 1535 über das Friedhofs-, Bestattungs- und Leichenwesen vom 5. November 2003, zuletzt geändert durch das Gesetz vom 13. Oktober 2015 (Amtsbl. I S. 790). §15

[84] Ibidem

[85] Verordnung zur Durchführung des Gesetzes über das Friedhofs-, Bestattungs- und Leichenwesen vom 20. April 2004, zuletzt geändert durch das Gesetz vom 1. Juli 2009 (Amtsbl. S. 1240). §4

[86] Grundgesetz der Bundesrepublik Deutschland. Art.1

sealed envelope. Pages A and B, as well as pages 1-3, are similar and can be told apart by the addressee on the letter head. After the doctor has examined and filled in the death record, page 1 is sent to the public health department, page 3 is put into the patient's medical record, while A, B and 2 are secured onto the dead body which is transferred to the morgue.

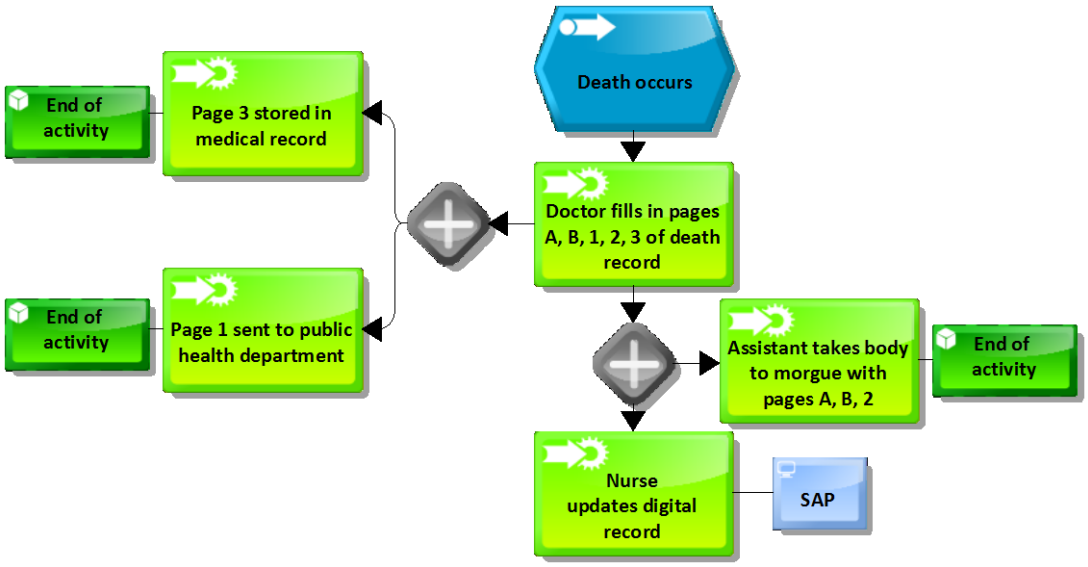


Figure 2: Pages filled in the hospital

The doctor's signature has to be clear and easy to read, so that everyone reading the death record can identify the doctor if need be. A nurse enters the death into the patient's digital medical file in SAP and notifies the family about the deceased.

The family calls the funeral home which provides them with all necessary information about the following procedure, most importantly which original certificates they have to take with them to the face-to-face meeting to plan the funeral. These meetings take around 2.5 hours of which electronic data administration takes up 15 minutes. If any certificates are missing, the funeral home is allowed to request their issue from the CRO, which is usually done in person, but also by E-Mail or phone call. Necessary certificates can be: birth, marriage and divorce certificate, family registry, national ID card and health insurance card for the public institutions, and for other purposes the funeral funding contract, funeral allowance certificate, life insurance, accident insurance, pension income adjustment and grave documentation.

After the meeting the funeral home fills in the death notification and forwards it to the hospital by fax or E-Mail. The administrator adds whether it was a natural or unnatural

death, puts the date on and signs it. After that an appointment to take the body to the funeral home is arranged. Usually this step is skipped and the funeral home visits the hospital without notice and takes along the death notification as original.

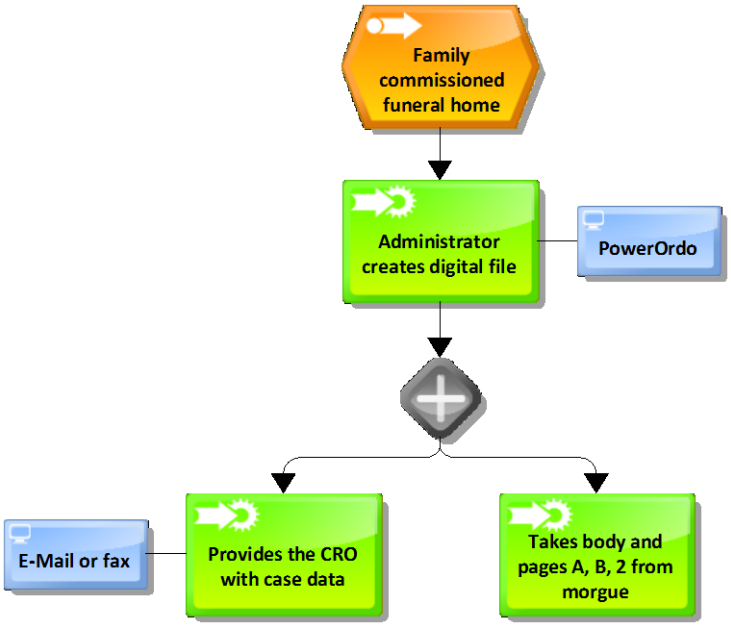


Figure 3: Start of process for the funeral home

As the morgue with the body can be situated far away from the doctor's unit, who has to be present when the funeral home collects it, designated times for collection are assigned to all funeral homes between 7:15 and 8:00 and at 10:00 in the morning. If there is any potential danger of infection, the doctor who performed the first post-mortem examination and declared death has to warn about and explain the dangers to the person transferring the body to the funeral home's morgue.[87] Potential danger of infection is also marked on the non-confidential section of death record.

The administrator in the finance and controlling department of the hospital checks the SAP software each morning for new death cases and adds name and date of death to a paper-based list on the desk. She also checks E-Mail and fax for incoming death notifications. If no funeral home sends one for a deceased patient, or for this deceased patient a funeral home from another German state or another country is commissioned by the next of kin, the hospital administrator also fills in the notification which is readily available as PDF document. Usually the funeral home, sometimes also the

[87] Gesetz Nr. 1535 über das Friedhofs-, Bestattungs- und Leichenwesen vom 5. November 2003, zuletzt geändert durch das Gesetz vom 13. Oktober 2015 (Amtsbl. I S. 790). §20 III.

hospital or both, forwards the death notification electronically to the CRO by fax or E-Mail.

Now the funeral home is allowed to take the body to its own morgue after the doctor has signed off on the release. Before the body is taken out of its refrigerated compartment, the death record is reviewed to assess whether there is a danger of infection for the employees or the public. If an unnatural death is assumed or proven, the local police (which in case of Saarbrücken is also the CRO because it was given some of the police responsibilities, but this is a rare exception in Germany) has to permit the release as well which is done by phone inside the hospital morgue. After collecting the body, the employee of the funeral home goes to the administrator, shows one of the original certificates that proves the identity of the body and pays her 26 Euros administration fee, so that she signs the original of the death notification and hands out a receipt for the fee. Both are scanned and attached to the digital medical record in SAP as PDF documents. Also the now closed, paper-based medical record of the patient, including copies of the death record and the death notification, are forwarded to the firm *G.O.S.* (Gesellschaft für optische Speichersysteme) which scans and archives all files for the hospital. It also creates films with all documents which can be accessed via SAP. With this step the involvement of the hospital ends.

The administration within the hospital administrator takes approximately ten minutes if no problems occur. Such problem are more frequent where foreign funeral homes are commissioned to pick up the body. Many do not come on time for body pick up in the mornings, do not understand why regulations are so strict, certificates are missing or not translated, or language barriers slow down the process. The administrative employees speak French due to the physical proximity of the two French speaking countries France and Luxembourg, but a growing number of Turkish patients, and therefore bodies, cause administrative delays.

The funeral home sends case information and the death notification via fax or E-Mail to the CRO which creates a preliminary death case, and visits the office later on to receive the death certificate. This certificate is the official proof of death for connected administrative processes, e.g. closing a bank account, and for receiving a permit for burial or cremation later on. Having received all case information earlier, the office clerk or registrar verifies the sent data with the original certificates the funeral home

brings by. Also page A, and in case of a burial also page 2, are handed over. If any certificates are missing a preliminary permit for a funeral can be issued to ensure a timely funeral.

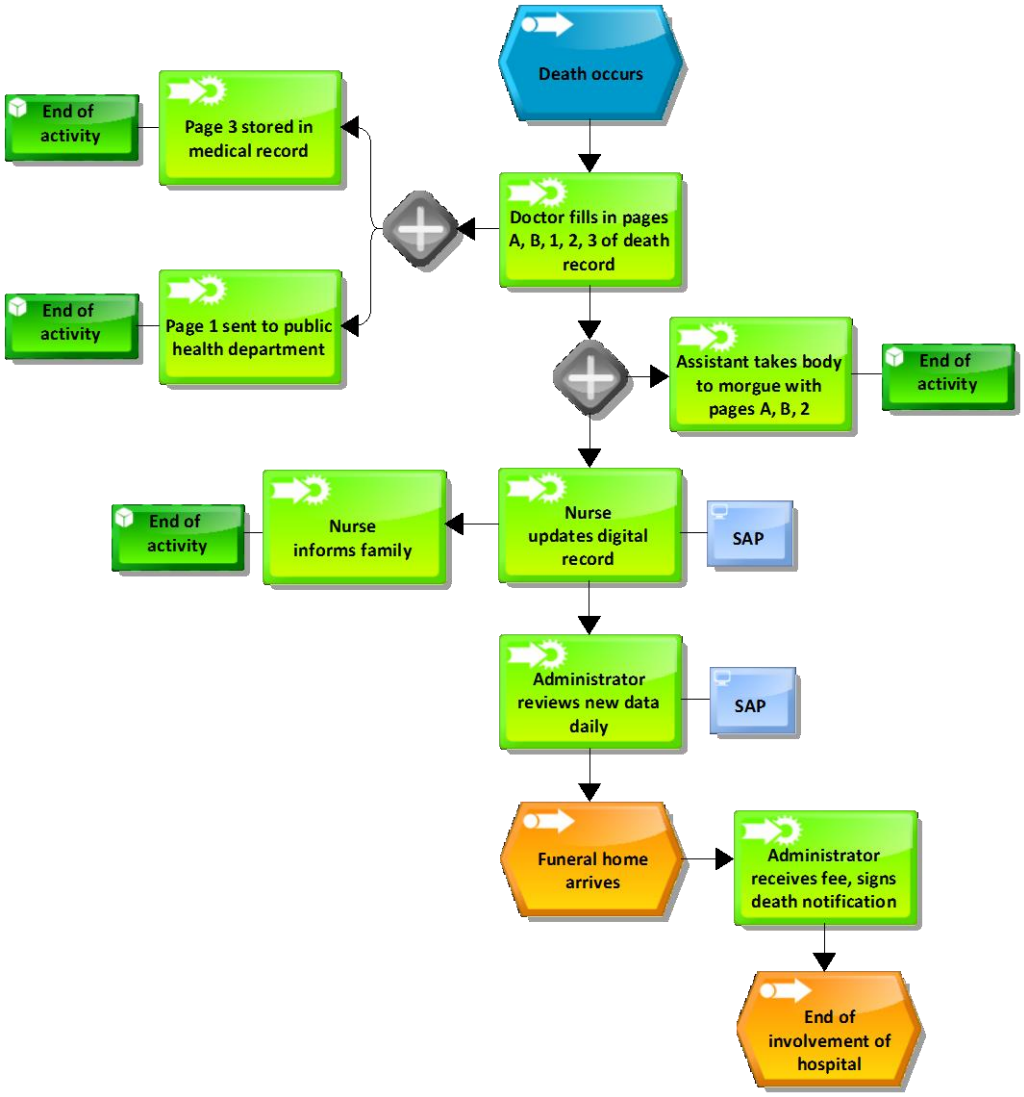


Figure 4: Administrative process within the hospital

When a person has passed away cremation or burial may only be executed after a minimum of 48 hours, except in cases of public health hazard, and within a maximum of seven days, unless they are transferred to another region or country, then that transfer has to happen within that period of time.[88] In case employees of funeral homes from further away, e.g. foreign ones, are also present in the CRO, they are given

[88] Gesetz Nr. 1535 über das Friedhofs-, Bestattungs- und Leichenwesen vom 5. November 2003, zuletzt geändert durch das Gesetz vom 13. Oktober 2015. §§31-32

priority, so that sometimes local firms have to come back the next day to pick up certificates. On average a death case in the CRO is processed within 20 minutes.

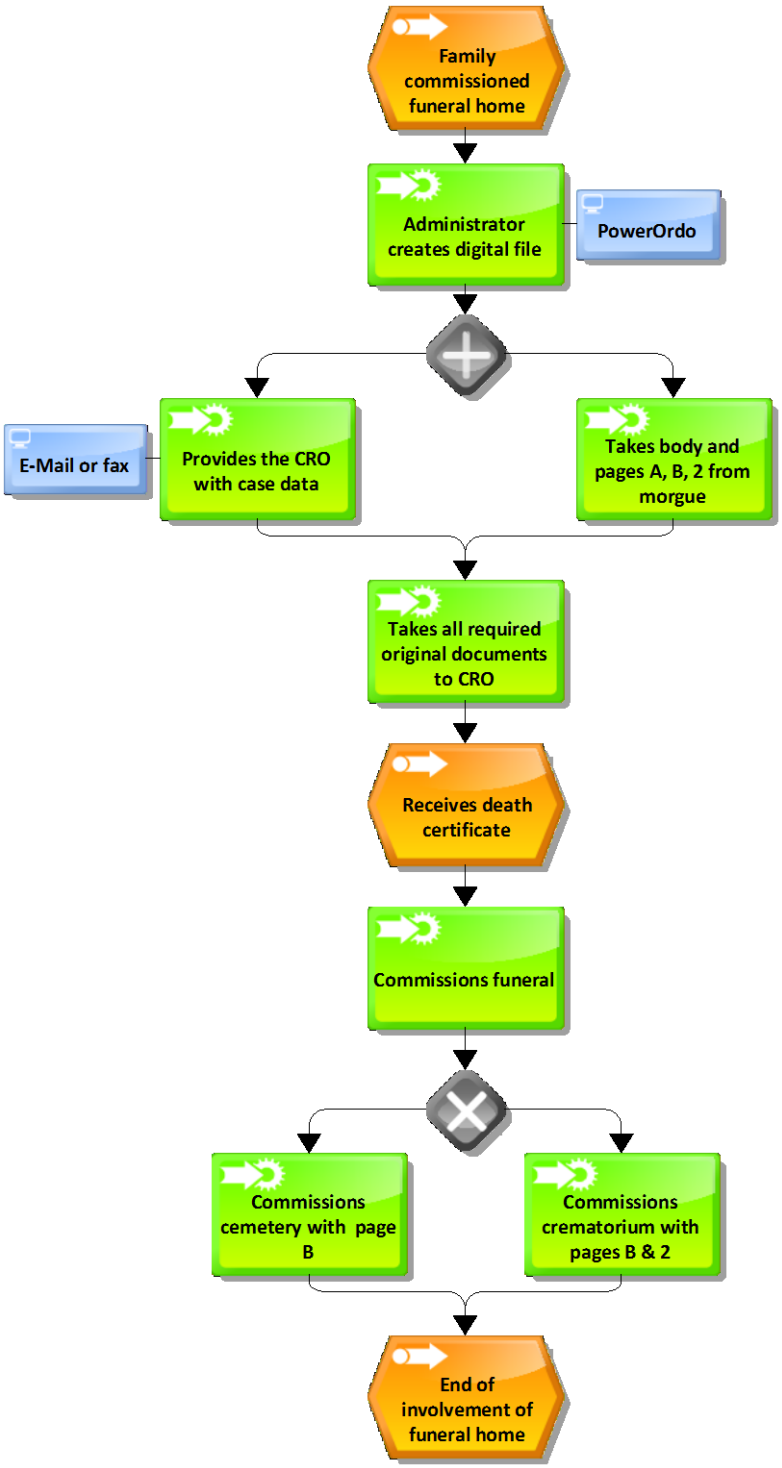


Figure 5: Sequence of process within the funeral home

After receipt within five working days of the following month, the CRO sends the pages A and 2 to the public health department which verifies all information once

again and makes sure nothing could be suspicious of threatening public health. The public health department keeps the originals of the pages A and 1 it has already received at this point, and page B, which will be forwarded later on but is now still with the funeral home, and destroys them after 30 years,[89] while copies of pages A and 1 are sent within ten working days of the following month to the regional bureau of statistics that uses the data for demographic statistics and destroys these copies after entering them into their system.

Figure 6: Sequence of process within public institutions

Upon personal meeting with the funeral home the family has already decided on a burial or cremation. In case of a burial of the deceased, the funeral home has only page B left in their hands. The burial has to be officially commissioned to the cemetery office which takes care of the burial administration, while the funeral home is in charge of the funeral arrangements. The cemetery office certifies the burial on page

[89] Gesetz Nr. 1535 über das Friedhofs-, Bestattungs- und Leichenwesen vom 5. November 2003, zuletzt geändert durch das Gesetz vom 13. Oktober 2015. §16 III.

B. Afterwards this document is forwarded by their office to the public health department.

If the family decided on a cremation, the funeral home keeps pages B and 2, and the cremation has to be officially commissioned to the crematorium. Their doctor performs the second post-mortem examination to ensure cause of death taken from page 2 was correct, as well as all other information about the body entered correctly, so that all doubts about a cremation can be excluded in an official second examination report. Still, the local police, in case of Saarbrücken again the CRO, has to issue a permit for the cremation. The request and the permit are issued by E-Mail, which also contains scans of all documents about the deceased. After the cremation, the crematorium forwards page B, the document that certifies the cremation, to the public health department, and archives page 2 in their own facilities. This ends the administrative process of a death case.

Map of current Process

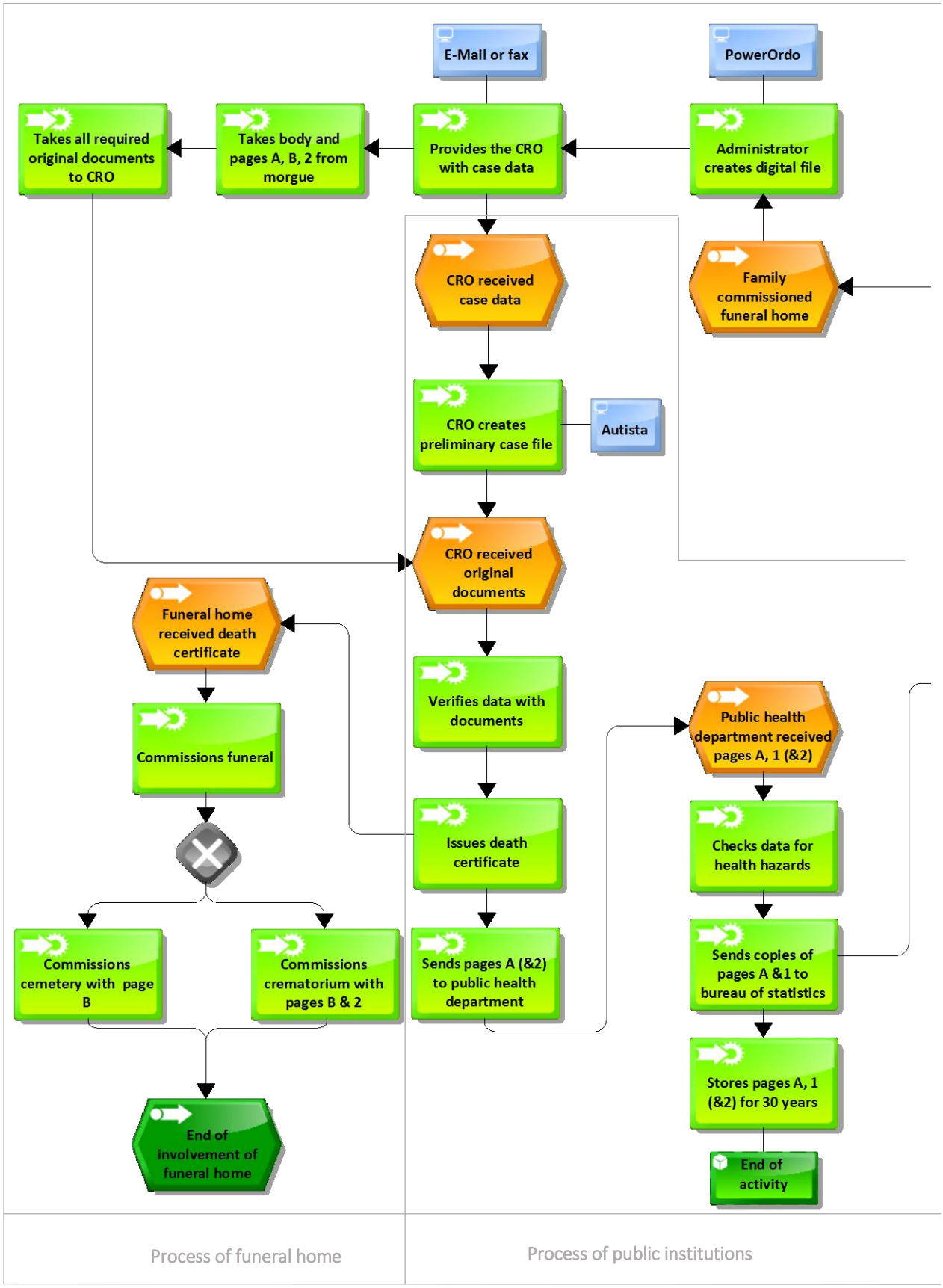
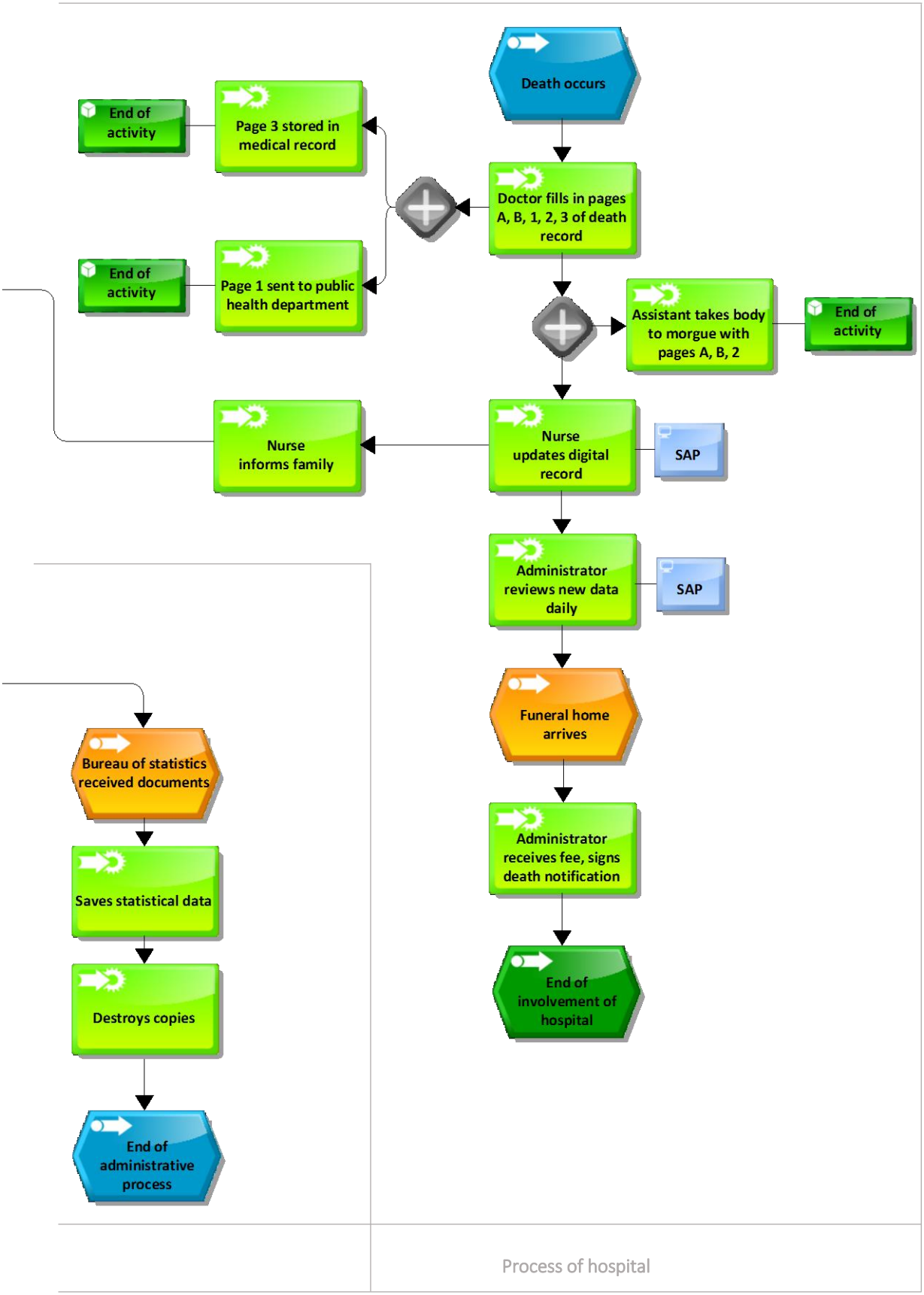


Figure 7: Complete administrative process of a death case


Death occurs
Doctor fills in pages A, B, 1, 2, 3 of death record
Page 3 stored in medical record
End of activity
Page 1 sent to public health department
End of activity
Assistant takes body to morgue with pages A, B, 2
End of activity
Nurse updates digital record
SAP
Nurse informs family
Administrator reviews new data daily
SAP
Funeral home arrives
Administrator receives fee, signs death notification
End of involvement of hospital
Bureau of statistics received documents
Saves statistical data
Destroys copies
End of administrative process
Process of hospital

3.1.5 Reasons for Change

Since 01.01.2014 electronic registries are mandatory,[90] before there were only paper registries, and the majority of work done in the CROs is digitally executed. For them typing in information by hand into their system AutiSta despite the fact that it all already exists in digital form consumes a lot of time. It would also save time if the CRO or the funeral home could help the hospital to fill in information about the deceased and their family as they have a comprehensive overview about all data because the deceased's family speaks directly with the personnel of the funeral home and brings over the certificates. Information exchanged between the hospital, the funeral home and the CRO is done in paper form, or by E-Mail and fax. An electronic interface that could transfer all data correctly into their respective systems, e.g. SAP for the hospital, could save a lot of time for all parties involved.

Within the hospital further room for improvement exists due to its structure. Many patients die at night with few or only one doctor present in the unit. Busy night shifts can cause doctors to forget to fill in certain information, sometimes the date is wrong when a patient dies after midnight, or the signature is unreadable. The long shifts they work can result in longer work breaks afterwards, but as only one doctor, the one who declared death and filled in the death record in the first place, is allowed to alter the death record, delays frequently happen until the record is filled in correctly. The nurses do not check the pages for possible errors and no monitoring mechanism exists, resulting in errors of data or signature often being discovered in the hospital office when the funeral home wants to collect the body. An electronic, pre-filled death record that only requires minimal specific case information for the document to be processed could prevent doctors from making mistakes when they are overworked, tired and busy. This way additional time is saved as no document has to be scanned and added as a PDF document onto SAP manually. The administrator only takes 10 minutes per case on average, which results in a minimum 6500 minutes per year that she works for administrating death cases only, plus additional time for more complicated ones. Winterberg, just like most hospitals throughout the country, has experienced huge cuts of funding, having led to employment of 16 hours per month for administrative

[90] Personenstandsgesetz vom 19. Februar 2007 (BGBl. I S. 122), das zuletzt durch Artikel 49 der Verordnung vom 31. August 2015 (BGBl. I S. 1474) geändert worden ist. §§3, 75

employees in finance and controlling. Consequently they have about 20 hours overwork each month which is not paid but taken in vacation days, creating a shortcut in workers who have to continuously substitute for each other. Therefore the affected staff are greatly interested in a time-saving E-Government solution to administer death cases. The staff have voiced the wish that a perfect electronic solution would cut out their part entirely as the office is far from the morgue and the papers are with the body. If payment and signature could be dealt with digitally, there would be no need for further office work. Also the funeral home employees could save half the time spent in the hospital when collecting the body. Working with the expensive and all-rounder software SAP across the hospital an electronic solution has to foremost be cheap and have an interface so that all data from SAP can be transferred onto the solution and vice versa as purchasing a new software is out of the question. Two years ago 100 percent of exchange of documents between the hospital and other institutions (e.g. health insurer, public offices, cooperative associations) was done on paper and with the help of postal services, whereas now it is only around three percent, of which administering a death case is a big part, therefore interrupting the electronic workflow of the employees.

The funeral home operates with a specialised, comprehensive and clearly laid-out system, therefore an interface solution to transfer data from PowerOrdo to AutiSta and back is the desired method, too. They are enthusiastic about and open to electronically improve their operation which mainly addresses data exchange with the CRO for the death notification, death record and requesting and issuing certificates. Almost daily an employee spends a considerable amount of time at the CRO.

3.2 Re-engineering

The first re-engineered administrative process is based on the solution in use in Rheinland-Pfalz, a German state neighbouring Saarland. The equivalent for eGo-Saar there is called *KommWis* (Gesellschaft für Kommunikation und Wissenstransfer mbH). KommWis offered their expertise and provided the information necessary to design a similar process to find out if their working solution could be transferred to the funeral homes and hospitals in Saarbrücken. This solution is readily available, simple to execute and compatible with the AutiSta software used in the CROs.

The second proposed process was developed with efficiency as the main factor and the wishes of the employed staff in the hospital and funeral home in mind. It still reflects reality; the documents and their flow are not changed, nor is any step fictional. The structural and technological change is possible and possibly becoming reality in the not-too-distant future; however current legislation, finances and unwillingness to change top-to-bottom make this process unachievable at this point in time, though it can serve as an example for a new design in a few years' time.

The following process illustrations are simplified to demonstrate only the relevant sections.

3.2.1 Re-engineered Process 1: XSta

The essential change in this process are the two connectors seen below from the hospital administrator and the funeral home to the CRO that represent the death notification sent electronically and directly to the CRO. The death record as the longer document goes through a number of hands and has a section containing sensitive information. To provide an implementable solution within the current legislative state and hospital structure this document cannot be included in a digital process as of yet.

As before when a death occurs, the doctor has to fill in pages A, B and 1-3, which are sent to their respective places. The nurse enters the death into the SAP system of the hospital and notifies the family of the deceased who in turn commissions a funeral home. The funeral home collects the body and the death record, and goes to the administrator to pay the administrative fee, so that he or she fills in the notification if necessary, signs it and scans in the needed documents to attach them in SAP.

Now the hospital and the funeral home both, independently from each other, can choose to use a service provided by the Publisher for Registry Office Matters called *XSta*. XSta provides a web client for each of the two entities with corresponding forms adjusted to these entities to electronically send the death notification to the designated CRO.

Via login into XSta the data of the user is pre-filled into the form about user information, so that this section can be skipped and the CRO knows who sent the data. Then either five sections for the hospital or eleven for the funeral home have to be filled in, with little mandatory information, so that the death notification can be sent

within the required time frame even in case some information about the deceased and their family is not yet available. Afterwards the finished document can be printed, signed and posted to the CRO. Electronically the notification is on the XSta server from where the AutiSta server of the CRO can take the data through a secure connection, protected by a firewall and a previous safety check. From the AutiSta database the registrar sees that new information has arrived that he or she can now view and subsequently transfer into a new preliminary case file within the death registry. After the funeral home has brought the original notification and the certificates, the registrar reviews and completes the data needed in the electronic file and is thus able to finish the administrative in-house process and hand out the death certificate to the funeral home.

The addressed CRO can be chosen from a database. This database, and the client forms with the saved data of the respective client, would be generated by eGo-Saar who would also have the overview of the operation of the XSta-service.

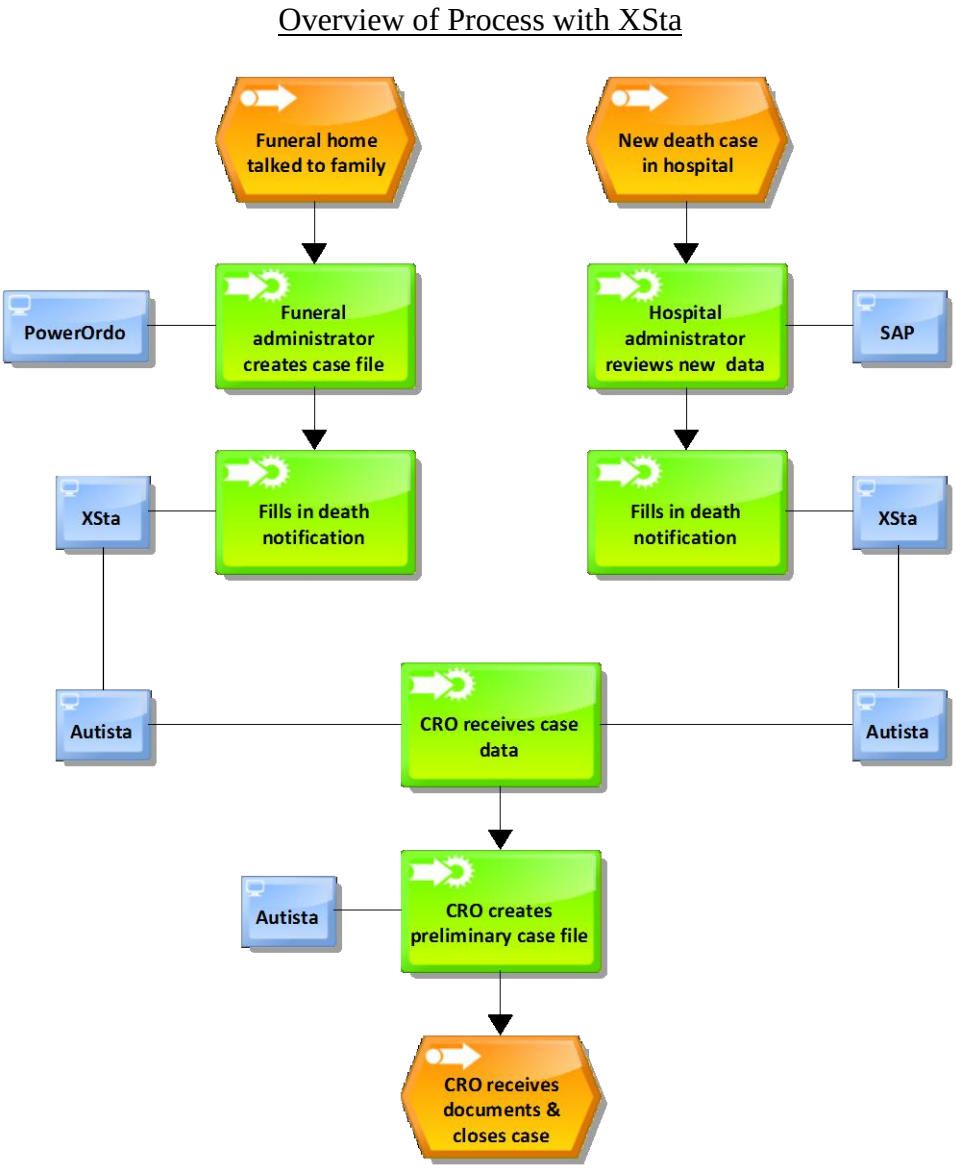


Figure 8: Data exchange with XSta between the CRO and the hospital and the funeral home

3.2.2 Feedback

As can be taken from the description, this electronic solution for the death notification is an additional step for the funeral home and the hospital, it does not significantly change the sequence or amount of work done. Therefore the feedback from both was fairly similar.

The employees of the hospital and the funeral home liked the simplicity of the XSta form, but do not see an advantage in terms of time-saving, for both the most important factor. SAP and PowerOrdo are two specialised and comprehensive solutions into which they input the data about the death cases. For the funeral home to re-enter data

into a form to send it electronically takes overall more time than entering it once into their own system that is able to generate the required form for the notification, print it and fax it over to the CRO. PowerOrdo and XSta have several tabs or sectioned forms to fill in, so that the size of the layouts mean that both cannot be used side by side on one screen adding time to the process by continuously switching between the two open windows to look up the data entered in PowerOrdo to re-enter it into XSta. Furthermore, the document still has to be printed and taken to the CRO which is done in combination with taking over a number of other documents for several death cases. Almost daily an employee goes to the office, so bringing death notifications along is no additional effort, the time result is neutral here and therefore does not support a financial investment for another electronic service.

The hospital staff as well sees the re-entering of the data as the crucial factor for rejecting this process, as well as the switching between windows on one monitor that would be necessary. Though the administrator works mainly electronically and she would like to digitalise all work, to fill in the three small parts on the death notifications the funeral homes bring by, and scanning them and the receipt for the administrative fee is not perceived as overly disruptive, but as efficient as it can be given the circumstances. Also the number of death notifications only filled in by the hospital is not high enough to justify buying an additional service. Here the administrator has now the choice to fill in the information on paper giving her hand a chance to relax and follow different moving patterns or in a PDF document which structure she is very familiar with.

To sum it up, the funeral home and the hospital alike could not perceive an added value through the use of XSta.

During the feedback interviews the author witnessed, especially from the hospital staff, a friendly atmosphere and willingness to improve their work processes, but also a resistance towards change to their internalised processes without clear and immediate improvement to a bigger extent. Generally, bringing across an improvement in the workflow to employees can be a challenge in change management, including E-Government projects. In the case of the XSta process it is clear though, that it is no suitable solution.

3.2.3 Re-engineered Process 2: Solution Based on Customer Wishes

This process differs from the current one right from the start when a death occurs even though the sequence of administering the death case and the order of document exchange remains the same. The doctor fills in the death record electronically in SAP, also a death notification can be generated if required, with all basic information (personal and hospital data) already pre-filled. Both can be signed digitally with an individual ID card the doctors carry for medical related purposes; the doctor's private ID card cannot be facilitated because in Germany a person cannot be forced to carry or use an electronic ID in private life for the sake of a job and it prevents abuse outside the hospital in case of theft as it has no validity outside the system. The confidential section is printed twice and the doctor adds cause of death by hand, scans them for archiving as already done currently, and puts these inside two sealed envelopes. One is sent to the public health department and the other is placed with the body which is taken to the hospital morgue, while the electronic information is sent to the CRO via an interface between SAP and AutiSta. As the death record is still needed in paper form for cremation and burial the doctor has to print and sign it as well. The printed death record is also placed with the body. A nurse notifies the family who commissions a funeral home that can go to the morgue at the designated times to collect the body in case of the risk of infection to make sure the respective doctor is available, or at any other time without said danger. Though used to the assigned collection time spots, now if the funeral home has difficulties to assure collection on time, it can call ahead to ask about the status of the body to know whether they can come later that day. The assistant assigned to the morgue can quickly verify and scan the identification document of the body the funeral home brings by and sign off on the release of the body. Payment in cash or electronically at the hospital reception are offered, and thus immediately transferred into SAP. Furthermore the assistant has to complete and sign the death notification brought by the funeral home. Upon collecting the body the funeral home already knows whether a cremation is requested and thus if the second envelope is needed. If not it will be destroyed by the hospital staff. The funeral home enters all data into their PowerOrdo software during the talk with the family and send this information also via an interface to AutiSta. With the combined information from the interface AutiSta can transfer the data into the correct form and can generate a preliminary death case automatically, so the CRO can verify the data

later when the funeral home brings the certificates and the signed death notification and then subsequently issues the death certificate. The CRO can now print and post the case information to the public health department, from where the information is later forwarded to the regional bureau of statistics. The administration of the burial and the cremation stay the same, only that the information on the death record is now typed and printed instead of written by hand. The second envelope will be opened and archived in the crematorium and the public page of the death record signed by either the crematorium or the cemetery office and forwarded to the public health department.

Overview of Process with Data Exchange via Interfaces

Figure 9: Overview of efficiently designed process and data exchange via interfaces

3.2.4 Feedback

This process was seen in a positive light by both the hospital and funeral home.

The administrative staff of the hospital were delighted that they were cut out entirely of the process, saving them a minimum of 108.3 hours of work. How many of these hours would be transferred to the doctors and the assistant of the hospital morgue cannot be estimated as the entire hospital structure could not be analysed, however it can be assumed that at least some of the hours would be saved overall, due to the pre-filled section of the form, omission to scan the record and the receipt of the paid administrative fee, and the possibility to pay electronically and to generate the death notification. And though not all documents can be sent electronically, the amount of prints is reduced. The second part of this process the hospital was interested in was the electronic data transfer to the CRO without the additional entry of all data twice as in the first process. Still, it would not be considered implementable as long as there was no complete substitute for paper documents, so a comprehensive solution that includes the confidential section and omits all printing is required, as is an analysis of the doctors' work to ensure no additional administrative hardship. Only under these conditions a financial investment could be considered, and only in the amount of overall administrative time and costs saved. As 99 percent of the administration is done electronically, not much saving potential compared to the previous electronification can be expected. Furthermore, a top-down approach by the hospital management is required to change the working structure of the hospital.

In conclusion the interviewed hospital staff in the finance and controlling department see potential for this process and evaluate it as more efficient, but not implementable as of now and with a lack of benefit for the hospital overall compared to the current processes and workflows and the necessary investment of finances and time.

The funeral home on the other hand was less affected by the second process proposal and would like to see it implemented for its time-saving quality. Time can be saved by omitting the need to go to the third floor to the administration of the hospital located far away from the morgue which adds up to many hours as the ten minutes the staff there are working on the administrative work from the side of the hospital is a much smaller amount of the time than the staff of the funeral home are present there. A lot of interest sparked the interface for data transfer as now nothing has to be printed

anymore from their side and it is likely that if such an option existed as a purchasable module for PowerOrdo that it would be bought by the funeral home.

Still, the solution is incomplete. A considerable amount of time is spent going to and waiting at the CRO to receive various certificates. If that could be done completely electronically it would have the biggest potential for saving time. The challenge of that is that further public and private institutions are involved, e.g. health insurer and cemetery or cremation offices. A complete electronic process would enable the funeral home to send certificates to those institutions and to receive them from the CRO in a secure, electronic manner. And it presupposes the electronic availability of all certificates in the CROs which is not yet the case. Without this comprehensive solution across all institutions either the CRO would have to issue original certificates on paper or the funeral home would have to print the certificates, the authenticity of which has to be able to be verified by these other institutions.

Overall the funeral home is interested in the interface solution for data transfer to the CRO, but sees more potential in the area of electronic certificates.

4 Summary

This paper looked at the process for administering death cases in Saarbrücken, Saarland from the point of view of a hospital, Klinikum Saarbrücken, and a funeral home, Hubert Laubach Bestattungen, until the case closes in public institutions. The two research questions could be answered. The process throughout the involved institutions could be mapped through the help of qualitative research, answering the first question. This process was subsequently re-engineered to improve its efficiency through applying the solution XSta, and through reorganising the execution and creating an electronic interface. The quality of the improvement of both newly designed processes was analysed and evaluated by the two main entities taking part in the case study, the hospital and the funeral home.

The overarching purpose for the second research question was to provide a base for deciding on whether to follow one of the proposed processes and realize a respective project. Research question 2a) looked at implementing the application XSta. Even though a solution like XSta that provides the desired service exists, it is not implementable if it does not integrate into the existing work processes of the places it is meant to serve. Therefore the solution could be discarded. In order for Saarland to advance electronic data transfer and communication it seems that an interface solution is the method of choice as addressed by research question 2b). For the accompanying second proposed process further structural changes within the entities are needed and subject of the management of those entities. Thus the significance of the expressed proposal is limited. It can only be concluded with certainty that an interface solution as such is the right choice as it does not add on to the amount of work done while also not disrupting the established conduct of process. The organisational changes accompanying the second process were based on customer wishes but not essential for an interface solution. Being aware of the technological advancement, a modernization of work structures, technology and organisation, will likely be undertaken in the coming years.

Also, a widespread implementation and acceptance of electronic signatures and certificates, as desired by the funeral home, is a complex matter of a greater issue that lies in the future of E-Government development in Germany and cannot be addressed within this paper.

The project is closed with the result that at the moment no further steps in this direction will be taken. Digital integration of private institutions involved in public administration will be reviewed by eGo-Saar at a later point in time. Therefore this study has served its purpose and has helped eGo-Saar to decide whether to go forward with this matter.

5 Outlook

However, an outlook into one aspect of the case study is possible: an interface for data exchange from the funeral home to the CRO. To do so an expert, Dr. Günther Metzner, managing director of the Publisher for Registry Office Matters, was interviewed about possible solutions to assess the timely possibility of creating an electronic interface between the public and private sector. The following information is based on the interview conducted on 14.09.2015.

The difficulty in implementing such an interface lies not in creating this interface between PowerOrdo (or SAP) and AutiSta itself, which can be done in approximately four weeks, but in the exchange of data from a legal perspective. The XSta web client was designed as additional part of the *expert procedure* of AutiSta and adheres to the required security standards. The essential part is that data is directly entered into the provided solution and not taken from within an application of a private institution, with which exchange is not permitted.

The Publisher for Registry Office Matters has been working with the market leader in software solutions for funeral homes, RapidData which offers PowerOrdo. A legislative problem constitutes the *German Registry for Administrative Services DVDV* (*Deutsches Verwaltungsdiensteverzeichnis*). It is an E-Government platform for the public sector used to process the data exchange between the various government agencies on federal, state and communal level for the electronic expert procedures via a decentralised server structure that transfers data secure, legally binding and automated. The goal was the secure authentication of the communication partner and direct communication between E-Services. Users are only the expert procedures, not persons themselves. The registry lists all users able to exchange data, identified via electronic certificates, and operates with the protocol standard for the German municipal economy, called *OSCI (Online Services Computer Interface)* especially suitable for E-Government. The communication is *XML*-based (*Extensible Markup Language*), a language that defines a set of rules to encode documents in a format readable for machines and humans.

Adding another user like SAP or PowerOrdo for XML-based communication is fairly easy, but the DVDV and the OSCI standard do not allow data exchange between public and private entities in current legislation, therefore it is not possible to add

funeral homes onto the registry DVDV. A proper communication infrastructure is missing in Germany for these exchanges, so that an alternative is being searched for in cooperation between RapidData and the Publisher for Registry Office Matters. It is estimated that it will take up to two years. They try to establish a federal solution to ease communication between states as the federal concept is very strong in Germany, causing delays in processing administrative matters across states and government levels. If structural and legislative challenges cannot be overcome, instead of a federal database with all approximately 3300[91] funeral homes in Germany able to exchange data with all the thousands of CROs, maybe 16 state solutions with communication between state funeral homes and offices can be established in the near future.

Except for the factors and the development directly connected to the elements of the case study, overall trends should be considered as well. One such trend and unpredictable factor is the digitalisation within the private sector. Ten percent of German hospitals, some in Saarland, use a hospital information system called *iMed One*, 35 of them utilise its mobile version. The personnel use special medical tablets for their administration in cooperation with *Deutsche Telekom Healthcare Solutions*.[92] If doctors carry mobile devices new options to overcome obstacles concerning time consumption for implementing E-Government solutions could be found, e.g. signing documents through a scan of fingerprint on a tablet, instead of entering data on a stationed computer which does not factor in the busy and physically active daily work of the medical staff.

All this constitutes new opportunities for solutions in the field of E-Government, but only time will show its development. Concerning the case study especially the confidential section of the death record constitutes a problem as its sensitive information has to be forwarded but must stay confidential. Furthermore, financial interest comes into play with the acceptance of electronic certificates. Electronic certificates with long-term verifiable, qualified signatures that cannot be lost, but instead continuously resend to a number of institutions over the course of years contradict the financial interest of the state which gains income with each certificate

[91] According to Mr. Metzner. No public database with official number available.

[92] Klein, M. (24.08.2015) *Knappschaft im Saarland wird zum digitalen Vorreiter*. P.23

issued. This may be considered an obstacle to further development, at least in the short or medium term.

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Annex

Interview Information

Interview Partner	Institution	Type
Mrs Busch & Oliver Profit	Hospital: Klinikum Saarbrücken Winterberg 1, 66119 Saarbrücken 0681 9630	Interview
Karin Schmidt	Civil Registry Office: Standesamt Saarbrücken Rathaus St. Johann, 66111 Saarbrücken 0681 9051758	Interview
Marco Wolers & Sina Fuchs	Funeral Home: Hubert Laubach Bestattungen Nauwieserstraße 27, 66111 Saarbrücken 0681 389390	Interview
Katrin Kleisinger	KommWis GmbH Hindenburgplatz 3, 55118 Mainz 06131 62770	Interview
Dr. Günther Metzner	Publisher for Registry Office Matters Hanauer Landstraße 197, 60314 Frankfurt am Main 069 4058940	Phone call

Interview framework for acquiring process information from the hospital, the funeral home and the CRO.

All questions are subject to change during the interview:

Question 1: Please, take me through your work process step by step.

Question 2: Please provide details about time spent and tools used.

Question 3: What is most time-consuming and annoying?

Question 4: How would you design the perfect process for yourself?

Question 5: What are legal/work place requirements that cannot be changed?

Question 6: What are frequently recurring problems?

Interview framework for evaluating the designed processes from the hospital and the funeral home. Both were explained and after each feedback was requested.

Question 1: What is your overall impression, the first thought that came to mind?

Question 2: Which parts would you like to see implemented?

Question 3: Which parts do you would you like to change

Question 4: Which problems would you foresee if being implemented?

Question 5: Would you support the implementation of the new process?

Summaries interview hospital

Interview 1:

Interview was conducted with Mrs Busch in her office while she continued with her work on demand. Firstly, the project and thesis work were explained and eGo-Saar and the interviewer introduced. Following the first question Mrs Busch took out the paper pages of the death record, explained the purpose of each page and explained the order in which each is distributed. Then an employee of the funeral home came by, so the interviewer was able to observe the process life: checking off the name of the dead person on the list, receiving the adminisatration fee, signing the death notification, scaning the receipt and the notification and adding the PDF documents onto SAP. After that also each section of the death notification was explained. After that personal details about the work were talked about. Handling cases of deceased in between doing all the other work in the department, the use of the devices, the planing, working in the hospital, time spent on all the cases, the structure of the department. Following this information the interviewer incquired about the wishes of Mrs Busch for the redesign.

Interview 2:

This time Oliver Profit, head of the department, was present with Mrs Busch, and offered his office as interview space while both took a break from their work. The XSta process was introduced and shown step by step on paper with screenshot of each section of the application. Immediate feedback was a dismissal due to an increase in work. The second process was explained. Feedback was clearly positive and an implementation seen as desirable but not as realistic. After the recent electronic update within the hosptal administration that eliminated the vast majority of paper, the potential for improvement for new investment is extremely limited. Also the process is as efficient as possible and each case processed relatively fast. Unless a new design is implemented without effort, none is deemed necessary, especially as long as paper is still involved somewhere and without a top-down push by the management. The greatest worry was any hardship put on doctors and medical personnel who already operate under dificult circumstances.

Summaries interview funeral home

Interview 1:

Interview was done in the open-space office on the desk of Marco Wolers within the central administrative office. Firstly the project and thesis work was explained. The complete work process within the funeral home was explained, alongside the organisation of all the funeral operations. The purpose of all documents was explained during and underpinned by legislation. The idea that the public sector would accept electronic documents and be able to establish a working solution was seen with scepticism while it was also greatly desired. PowerOrdo was explained in detail. They like the software and would definitely not settle for another one. Already an electronic interface was mentioned as desired solution. A few times the interview was interrupted by work duties that let the interview observe the real experience. When asked about the perfect process, all would be able to be executed from the space of the office.

Interview 2:

This interview was conducted with Sina Fuchs in the same open-office space on her desk. Her colleague was on vacation, so she was very busy. But after the introduction of XSta she very carefully went over the material provided and took her time to

understand it fully while continuing her work. Therefore she able to give a detailed answer comparing the time required using XSta and PowerOrdo as is. The solution was rejected. The interview went on to explain the second process which was again favored. She was hesitant to give a clear answer about whether they would buy an interface solution as she does not have the authority to make such a stateent and the financial component was unclear, but she assumed an interface solution would be purchased if the costs were not too high though it does not address the actual need. She did stress that not the death record or the death notification were the troublesome parts of the process for the personnel but the certificates. She suggested eGo-Saar concentrate on this issue and modernisation of within the public sector.

Summary interview CRO:

The interview was conducted in the office of registrar Karin Schmidt in the civil registry office within the town hall of Saarbrücken. Thomas Schulz was present in the beginning of the interview to introduce the project. He subsequently left to continue with work in his own office. Mrs Schmidt led to interviewer through the whole process of administering cases of deaths and births, explained about the duties of registrars, the organisation of CROs and the advantages and problems with modern technology, e.g. the new Autista. She saw great time-saving potential though electronic documents for adminstering death cases but saw some problems in certain cases where the duty to inform about rights and obligation is required by the registrar to the ones submiting documents. She also explained the special cicumstances the registrars in Saarbrücken work in as they have to take up some police responsibilities, like checking the body and casket and sealing it when sending a deceased abroad.

Summary interview Mister Metzner:

The interviewer contacted Mr Metzner through the website of the Publisher for Registry Office Matters. He called back, very enthusiastic that someone is interested in their work, himself being interested in the thesis. The topic surrounding the interview was the establishment of an interface for data exchange between the public and private sector. He said to construct an interface between Autista and PowerOrdo or SAP is relatively easy and the real issue lies in the legislation, mainly that the DVDV, the registry where users for this data exchange have to be listed on, does not permit users from outside public institutions. As changing legislation is time intensive

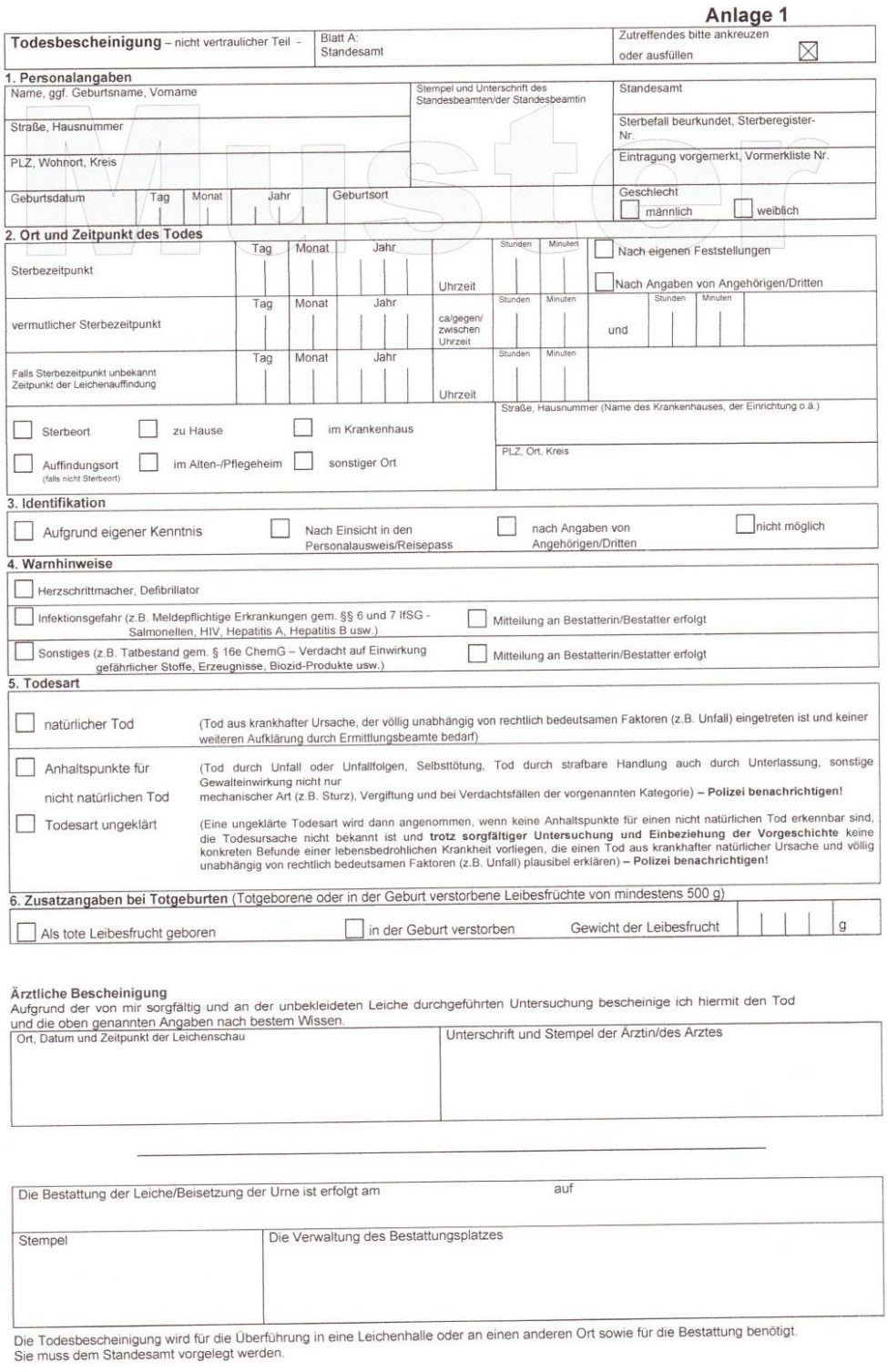
and difficult, it cannot be foreseen as of now (end of 2015) what solution their cooperation with RapidData will result in. Together they try to establish a federal solution but it may end up being several state-ones.

Summary interview KommWis GmbH:

The interviewer arrived together with two members of eGo-Saar in their offices. The two heads of both administrative unions discussed other matters in a separate office while I interviewed Ms Kleisinger with the other employees of the unions present. We are taken through the processes for hospitals and funerals homes with tests clients. KommWis was responsible for establishing the service, creating digital client data and continues to maintain the application. They are also working on broadening the client base. The main reason why institutions decide to use XSta is said to be the simple design, it leads the client step by step with clear instructions through the document. The goal is to include all hospitals and funeral homes in their database but due to their varying sizes and finances that is seen as unlikely.

Death Record

Page A



Anlage 1

Todesbescheinigung – nicht vertraulicher Teil – | Blatt A: Standesamt | Zutreffendes bitte ankreuzen oder ausfüllen ☒

1. Personalangaben

Name, ggf. Geburtsname, Vorname | Stempel und Unterschrift des Standesbeamten/der Standesbeamtin | Standesamt

Straße, Hausnummer | Sterbefall beurkundet, Sterberegister-Nr.

PLZ, Wohnort, Kreis | Eintragung vorgemerkt, Vormerkliste Nr.

Geburtsdatum: Tag | Monat | Jahr | Geburtsort | Geschlecht: ☐ männlich ☐ weiblich

2. Ort und Zeitpunkt des Todes

	Tag	Monat	Jahr		Stunden	Minuten	
Sterbezeitpunkt				Uhrzeit			☐ Nach eigenen Feststellungen ☐ Nach Angaben von Angehörigen/Dritten
vermutlicher Sterbezeitpunkt				ca/gegen/ zwischen Uhrzeit			und Stunden Minuten
Falls Sterbezeitpunkt unbekannt Zeitpunkt der Leichenauffindung				Uhrzeit			

☐ Sterbeort ☐ zu Hause ☐ im Krankenhaus

☐ Auffindungsort (falls nicht Sterbeort) ☐ im Alten-/Pflegeheim ☐ sonstiger Ort

Straße, Hausnummer (Name des Krankenhauses, der Einrichtung o.ä.)

PLZ, Ort, Kreis

3. Identifikation

☐ Aufgrund eigener Kenntnis ☐ Nach Einsicht in den Personalausweis/Reisepass ☐ nach Angaben von Angehörigen/Dritten ☐ nicht möglich

4. Warnhinweise

☐ Herzschrittmacher, Defibrillator

☐ Infektionsgefahr (z.B. Meldepflichtige Erkrankungen gem. §§ 6 und 7 IfSG - Salmonellen, HIV, Hepatitis A, Hepatitis B usw.) ☐ Mitteilung an Bestatterin/Bestatter erfolgt

☐ Sonstiges (z.B. Tatbestand gem. § 16e ChemG – Verdacht auf Einwirkung gefährlicher Stoffe, Erzeugnisse, Biozid-Produkte usw.) ☐ Mitteilung an Bestatterin/Bestatter erfolgt

5. Todesart

☐ natürlicher Tod (Tod aus krankhafter Ursache, der völlig unabhängig von rechtlich bedeutsamen Faktoren (z.B. Unfall) eingetreten ist und keiner weiteren Aufklärung durch Ermittlungsbeamte bedarf)

☐ Anhaltspunkte für nicht natürlichen Tod (Tod durch Unfall oder Unfallfolgen, Selbsttötung, Tod durch strafbare Handlung auch durch Unterlassung, sonstige Gewalteinwirkung nicht nur mechanischer Art (z.B. Sturz), Vergiftung und bei Verdachtsfällen der vorgenannten Kategorie) – **Polizei benachrichtigen!**

☐ Todesart ungeklärt (Eine ungeklärte Todesart wird dann angenommen, wenn keine Anhaltspunkte für einen nicht natürlichen Tod erkennbar sind, die Todesursache nicht bekannt ist und **trotz sorgfältiger Untersuchung und Einbeziehung der Vorgeschichte** keine konkreten Befunde einer lebensbedrohlichen Krankheit vorliegen, die einen Tod aus krankhafter natürlicher Ursache und völlig unabhängig von rechtlich bedeutsamen Faktoren (z.B. Unfall) plausibel erklären) – **Polizei benachrichtigen!**

6. Zusatzangaben bei Totgeburten (Totgeborene oder in der Geburt verstorbene Leibesfrüchte von mindestens 500 g)

☐ Als tote Leibesfrucht geboren ☐ in der Geburt verstorben Gewicht der Leibesfrucht ____ g

Ärztliche Bescheinigung

Aufgrund der von mir sorgfältig und an der unbekleideten Leiche durchgeführten Untersuchung bescheinige ich hiermit den Tod und die oben genannten Angaben nach bestem Wissen.

Ort, Datum und Zeitpunkt der Leichenschau | Unterschrift und Stempel der Ärztin/des Arztes

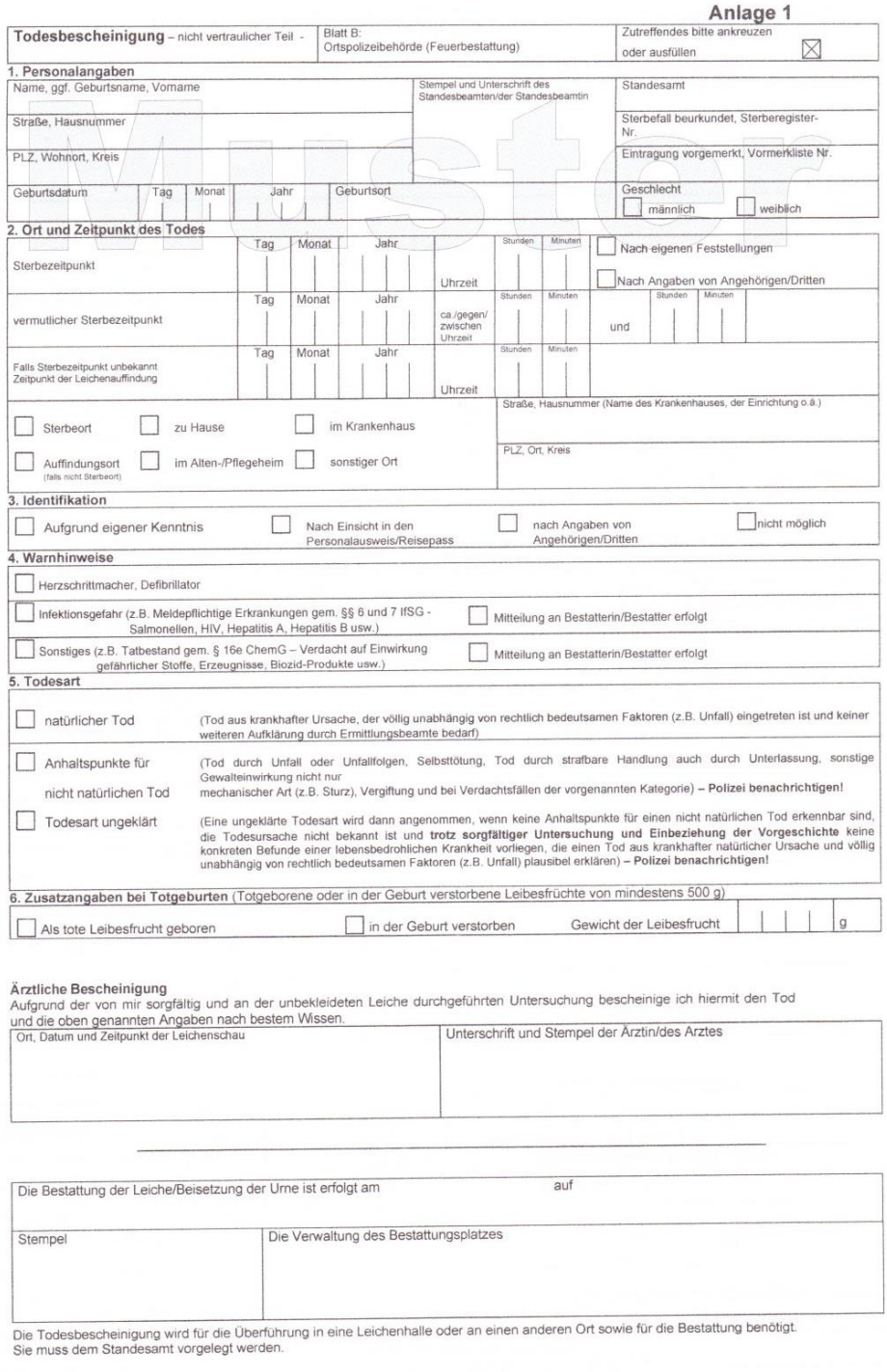
---

Die Bestattung der Leiche/Beisetzung der Urne ist erfolgt am ____ auf

Stempel | Die Verwaltung des Bestattungsplatzes

Die Todesbescheinigung wird für die Überführung in eine Leichenhalle oder an einen anderen Ort sowie für die Bestattung benötigt.
Sie muss dem Standesamt vorgelegt werden.

Page B



Anlage 1

Todesbescheinigung – nicht vertraulicher Teil –

Blatt B:
Ortspolizeibehörde (Feuerbestattung)

Zutreffendes bitte ankreuzen oder ausfüllen ☒

1. Personalangaben

Name, ggf. Geburtsname, Vorname

Straße, Hausnummer

PLZ, Wohnort, Kreis

Geburtsdatum | Tag | Monat | Jahr | Geburtsort

Stempel und Unterschrift des Standesbeamten/der Standesbeamtin

Standesamt

Sterbefall beurkundet, Sterberegister-Nr.

Eintragung vorgemerkt, Vormerkliste Nr.

Geschlecht ☐ männlich ☐ weiblich

2. Ort und Zeitpunkt des Todes

	Tag	Monat	Jahr		Stunden	Minuten	
Sterbezeitpunkt				Uhrzeit			☐ Nach eigenen Feststellungen ☐ Nach Angaben von Angehörigen/Dritten
vermutlicher Sterbezeitpunkt				ca./gegen/ zwischen Uhrzeit			und Stunden / Minuten
Falls Sterbezeitpunkt unbekannt Zeitpunkt der Leichenauffindung				Uhrzeit			

☐ Sterbeort ☐ zu Hause ☐ im Krankenhaus

☐ Auffindungsort (falls nicht Sterbeort) ☐ im Alten-/Pflegeheim ☐ sonstiger Ort

Straße, Hausnummer (Name des Krankenhauses, der Einrichtung o.ä.)

PLZ, Ort, Kreis

3. Identifikation

☐ Aufgrund eigener Kenntnis ☐ Nach Einsicht in den Personalausweis/Reisepass ☐ nach Angaben von Angehörigen/Dritten ☐ nicht möglich

4. Warnhinweise

☐ Herzschrittmacher, Defibrillator

☐ Infektionsgefahr (z.B. Meldepflichtige Erkrankungen gem. §§ 6 und 7 IfSG - Salmonellen, HIV, Hepatitis A, Hepatitis B usw.) ☐ Mitteilung an Bestatterin/Bestatter erfolgt

☐ Sonstiges (z.B. Tatbestand gem. § 16e ChemG – Verdacht auf Einwirkung gefährlicher Stoffe, Erzeugnisse, Biozid-Produkte usw.) ☐ Mitteilung an Bestatterin/Bestatter erfolgt

5. Todesart

☐ natürlicher Tod (Tod aus krankhafter Ursache, der völlig unabhängig von rechtlich bedeutsamen Faktoren (z.B. Unfall) eingetreten ist und keiner weiteren Aufklärung durch Ermittlungsbeamte bedarf)

☐ Anhaltspunkte für nicht natürlichen Tod (Tod durch Unfall oder Unfallfolgen, Selbsttötung, Tod durch strafbare Handlung auch durch Unterlassung, sonstige Gewalteinwirkung nicht nur mechanischer Art (z.B. Sturz), Vergiftung und bei Verdachtsfällen der vorgenannten Kategorie) – **Polizei benachrichtigen!**

☐ Todesart ungeklärt (Eine ungeklärte Todesart wird dann angenommen, wenn keine Anhaltspunkte für einen nicht natürlichen Tod erkennbar sind, die Todesursache nicht bekannt ist und **trotz sorgfältiger Untersuchung und Einbeziehung der Vorgeschichte** keine konkreten Befunde einer lebensbedrohlichen Krankheit vorliegen, die einen Tod aus krankhafter natürlicher Ursache und völlig unabhängig von rechtlich bedeutsamen Faktoren (z.B. Unfall) plausibel erklären) – **Polizei benachrichtigen!**

6. Zusatzangaben bei Totgeburten (Totgeborene oder in der Geburt verstorbene Leibesfrüchte von mindestens 500 g)

☐ Als tote Leibesfrucht geboren ☐ in der Geburt verstorben Gewicht der Leibesfrucht ____ g

Ärztliche Bescheinigung

Aufgrund der von mir sorgfältig und an der unbekleideten Leiche durchgeführten Untersuchung bescheinige ich hiermit den Tod und die oben genannten Angaben nach bestem Wissen.

Ort, Datum und Zeitpunkt der Leichenschau

Unterschrift und Stempel der Ärztin/des Arztes

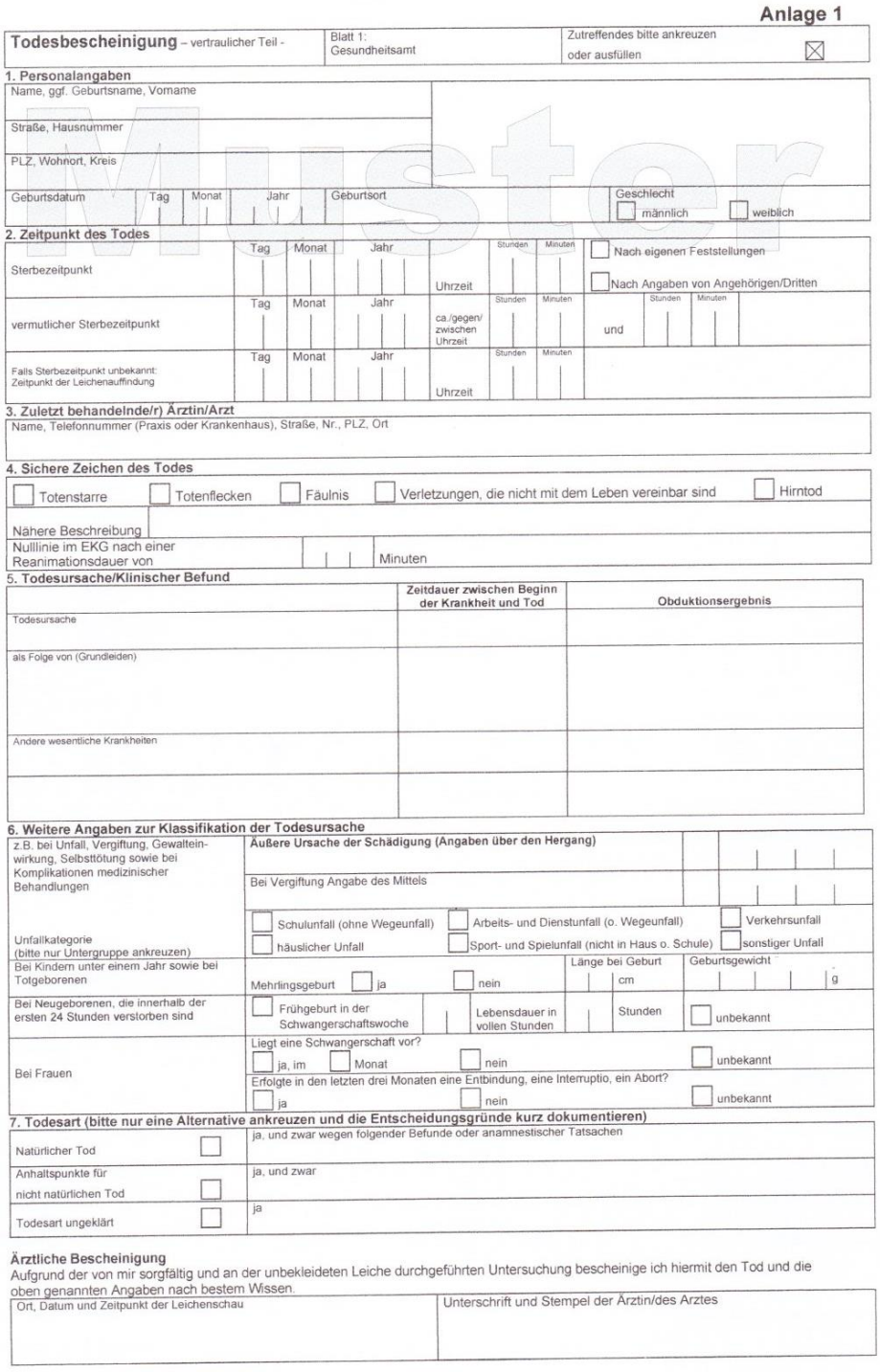
Die Bestattung der Leiche/Beisetzung der Urne ist erfolgt am auf

Stempel

Die Verwaltung des Bestattungsplatzes

Die Todesbescheinigung wird für die Überführung in eine Leichenhalle oder an einen anderen Ort sowie für die Bestattung benötigt. Sie muss dem Standesamt vorgelegt werden.

Page 1



Anlage 1

Todesbescheinigung – vertraulicher Teil – | Blatt 1: Gesundheitsamt | Zutreffendes bitte ankreuzen oder ausfüllen ☒

1. Personalangaben

Name, ggf. Geburtsname, Vorname

Straße, Hausnummer

PLZ, Wohnort, Kreis

Geburtsdatum | Tag | Monat | Jahr | Geburtsort | Geschlecht ☐ männlich ☐ weiblich

2. Zeitpunkt des Todes

	Tag	Monat	Jahr		Stunden	Minuten	
Sterbezeitpunkt				Uhrzeit			☐ Nach eigenen Feststellungen ☐ Nach Angaben von Angehörigen/Dritten
vermutlicher Sterbezeitpunkt				ca./gegen/ zwischen Uhrzeit			und Stunden Minuten
Falls Sterbezeitpunkt unbekannt: Zeitpunkt der Leichenauffindung				Uhrzeit			

3. Zuletzt behandelnde/r) Ärztin/Arzt

Name, Telefonnummer (Praxis oder Krankenhaus), Straße, Nr., PLZ, Ort

4. Sichere Zeichen des Todes

☐ Totenstarre ☐ Totenflecken ☐ Fäulnis ☐ Verletzungen, die nicht mit dem Leben vereinbar sind ☐ Hirntod

Nähere Beschreibung

Nulllinie im EKG nach einer Reanimationsdauer von | | Minuten

5. Todesursache/Klinischer Befund

	Zeitdauer zwischen Beginn der Krankheit und Tod	Obduktionsergebnis
Todesursache		
als Folge von (Grundleiden)		
Andere wesentliche Krankheiten		

6. Weitere Angaben zur Klassifikation der Todesursache

z.B. bei Unfall, Vergiftung, Gewalteinwirkung, Selbsttötung sowie bei Komplikationen medizinischer Behandlungen

Äußere Ursache der Schädigung (Angaben über den Hergang) | |

Bei Vergiftung Angabe des Mittels | |

Unfallkategorie (bitte nur Untergruppe ankreuzen)
☐ Schulunfall (ohne Wegeunfall) ☐ Arbeits- und Dienstunfall (o. Wegeunfall) ☐ Verkehrsunfall
☐ häuslicher Unfall ☐ Sport- und Spielunfall (nicht in Haus o. Schule) ☐ sonstiger Unfall

Bei Kindern unter einem Jahr sowie bei Totgeborenen
Mehrlingsgeburt ☐ ja ☐ nein | Länge bei Geburt | cm | Geburtsgewicht | g

Bei Neugeborenen, die innerhalb der ersten 24 Stunden verstorben sind
☐ Frühgeburt in der Schwangerschaftswoche | Lebensdauer in vollen Stunden | Stunden | ☐ unbekannt

Bei Frauen
Liegt eine Schwangerschaft vor? ☐ ja, im ☐ Monat ☐ nein ☐ unbekannt
Erfolgte in den letzten drei Monaten eine Entbindung, eine Interruptio, ein Abort? ☐ ja ☐ nein ☐ unbekannt

7. Todesart (bitte nur eine Alternative ankreuzen und die Entscheidungsgründe kurz dokumentieren)

Natürlicher Tod ☐	ja, und zwar wegen folgender Befunde oder anamnestischer Tatsachen
Anhaltspunkte für nicht natürlichen Tod ☐	ja, und zwar
Todesart ungeklärt ☐	ja

Ärztliche Bescheinigung

Aufgrund der von mir sorgfältig und an der unbekleideten Leiche durchgeführten Untersuchung bescheinige ich hiermit den Tod und die oben genannten Angaben nach bestem Wissen.

Ort, Datum und Zeitpunkt der Leichenschau	Unterschrift und Stempel der Ärztin/des Arztes

Page 2

Anlage 1

Todesbescheinigung – vertraulicher Teil – | Blatt 2: Durchschrift | Zutreffendes bitte ankreuzen oder ausfüllen ☒

1. Personalangaben

Name, ggf. Geburtsname, Vorname

Straße, Hausnummer

PLZ, Wohnort, Kreis

Geburtsdatum (Tag / Monat / Jahr) | Geburtsort | Geschlecht ☐ männlich ☐ weiblich

2. Zeitpunkt des Todes

	Tag	Monat	Jahr		Stunden	Minuten	
Sterbezeitpunkt				Uhrzeit			☐ Nach eigenen Feststellungen ☐ Nach Angaben von Angehörigen/Dritten
vermutlicher Sterbezeitpunkt				ca./gegen/ zwischen Uhrzeit			und Stunden Minuten
Falls Sterbezeitpunkt unbekannt: Zeitpunkt der Leichenauffindung				Uhrzeit			

3. Zuletzt behandelnde/r) Ärztin/Arzt

Name, Telefonnummer (Praxis oder Krankenhaus), Straße, Nr., PLZ, Ort

4. Sichere Zeichen des Todes

☐ Totenstarre ☐ Totenflecken ☐ Fäulnis ☐ Verletzungen, die nicht mit dem Leben vereinbar sind ☐ Hirntod

Nähere Beschreibung

Nulllinie im EKG nach einer Reanimationsdauer von ___ Minuten

5. Todesursache/Klinischer Befund

	Zeitdauer zwischen Beginn der Krankheit und Tod	Obduktionsergebnis
Todesursache		
als Folge von (Grundleiden)		
Andere wesentliche Krankheiten		

6. Weitere Angaben zur Klassifikation der Todesursache

z.B. bei Unfall, Vergiftung, Gewalteinwirkung, Selbsttötung sowie bei Komplikationen medizinischer Behandlungen	**Äußere Ursache der Schädigung (Angaben über den Hergang)**		
	Bei Vergiftung Angabe des Mittels		
Unfallkategorie (bitte nur Untergruppe ankreuzen)	☐ Schulunfall (ohne Wegeunfall) ☐ Arbeits- und Dienstunfall (o. Wegeunfall) ☐ Verkehrsunfall ☐ häuslicher Unfall ☐ Sport- und Spielunfall (nicht in Haus o. Schule) ☐ sonstiger Unfall		
Bei Kindern unter einem Jahr sowie bei Totgeborenen	Mehrlingsgeburt ☐ ja ☐ nein	Länge bei Geburt ___ cm	Geburtsgewicht ___ g
Bei Neugeborenen, die innerhalb der ersten 24 Stunden verstorben sind	☐ Frühgeburt in der Schwangerschaftswoche	Lebensdauer in vollen Stunden ___ Stunden	☐ unbekannt
Bei Frauen	Liegt eine Schwangerschaft vor? ☐ ja, im ___ Monat ☐ nein		☐ unbekannt
	Erfolgte in den letzten drei Monaten eine Entbindung, eine Interruptio, ein Abort? ☐ ja ☐ nein		☐ unbekannt

7. Todesart (bitte nur eine Alternative ankreuzen und die Entscheidungsgründe kurz dokumentieren)

Natürlicher Tod ☐	ja, und zwar wegen folgender Befunde oder anamnestischer Tatsachen
Anhaltspunkte für nicht natürlichen Tod ☐	ja, und zwar
Todesart ungeklärt ☐	ja

Ärztliche Bescheinigung

Aufgrund der von mir sorgfältig und an der unbekleideten Leiche durchgeführten Untersuchung bescheinige ich hiermit den Tod und die oben genannten Angaben nach bestem Wissen.

Ort, Datum und Zeitpunkt der Leichenschau	Unterschrift und Stempel der Ärztin/des Arztes

Page 3

Anlage 1

Todesbescheinigung – vertraulicher Teil – | Blatt 3: Doppel für Ärztin/Arzt, die/der die Todesbescheinigung ausgefüllt hat | Zutreffendes bitte ankreuzen oder ausfüllen ☒

1. Personalangaben

Name, ggf. Geburtsname, Vorname

Straße, Hausnummer

PLZ, Wohnort, Kreis

Geburtsdatum | Tag | Monat | Jahr | Geburtsort | Geschlecht ☐ männlich ☐ weiblich

2. Zeitpunkt des Todes

	Tag	Monat	Jahr		Stunden	Minuten	
Sterbezeitpunkt				Uhrzeit			☐ Nach eigenen Feststellungen ☐ Nach Angaben von Angehörigen/Dritten
vermutlicher Sterbezeitpunkt				ca./gegen/ zwischen Uhrzeit			und Stunden Minuten
Falls Sterbezeitpunkt unbekannt: Zeitpunkt der Leichenauffindung				Uhrzeit			

3. Zuletzt behandelnde/r) Ärztin/Arzt

Name, Telefonnummer (Praxis oder Krankenhaus), Straße, Nr., PLZ, Ort

4. Sichere Zeichen des Todes

☐ Totenstarre ☐ Totenflecken ☐ Fäulnis ☐ Verletzungen, die nicht mit dem Leben vereinbar sind ☐ Hirntod

Nähere Beschreibung

Nulllinie im EKG nach einer Reanimationsdauer von | | | Minuten

5. Todesursache/Klinischer Befund

	Zeitdauer zwischen Beginn der Krankheit und Tod	Obduktionsergebnis
Todesursache		
als Folge von (Grundleiden)		
Andere wesentliche Krankheiten		

6. Weitere Angaben zur Klassifikation der Todesursache

z.B. bei Unfall, Vergiftung, Gewalteinwirkung, Selbsttötung sowie bei Komplikationen medizinischer Behandlungen	**Äußere Ursache der Schädigung (Angaben über den Hergang)**	
	Bei Vergiftung Angabe des Mittels	
Unfallkategorie (bitte nur Untergruppe ankreuzen)	☐ Schulunfall (ohne Wegeunfall) ☐ Arbeits- und Dienstunfall (o. Wegeunfall) ☐ Verkehrsunfall ☐ häuslicher Unfall ☐ Sport- und Spielunfall (nicht in Haus o. Schule) ☐ sonstiger Unfall	
Bei Kindern unter einem Jahr sowie bei Totgeborenen	Mehrlingsgeburt ☐ ja ☐ nein	Länge bei Geburt cm / Geburtsgewicht g
Bei Neugeborenen, die innerhalb der ersten 24 Stunden verstorben sind	☐ Frühgeburt in der Schwangerschaftswoche / Lebensdauer in vollen Stunden	Stunden ☐ unbekannt
Bei Frauen	Liegt eine Schwangerschaft vor? ☐ ja, im Monat ☐ nein ☐ unbekannt	
	Erfolgte in den letzten drei Monaten eine Entbindung, eine Interruptio, ein Abort? ☐ ja ☐ nein ☐ unbekannt	

7. Todesart (bitte nur eine Alternative ankreuzen und die Entscheidungsgründe kurz dokumentieren)

Natürlicher Tod ☐	ja, und zwar wegen folgender Befunde oder anamnestischer Tatsachen
Anhaltspunkte für nicht natürlichen Tod ☐	ja, und zwar
Todesart ungeklärt ☐	ja

Ärztliche Bescheinigung

Aufgrund der von mir sorgfältig und an der unbekleideten Leiche durchgeführten Untersuchung bescheinige ich hiermit den Tod und die oben genannten Angaben nach bestem Wissen.

Ort, Datum und Zeitpunkt der Leichenschau	Unterschrift und Stempel der Ärztin/des Arztes

Death Notification

An Standesamt I Saarbrücken

SterbeReg. Nr. .....

Vorgang Nr.: Eingang am:

Schriftliche Sterbefallanzeige §§ 28 bis 31 PStG, § 38 PStV, § 2 BevStatG	
Familienname, Geburtsname, Vornamen, Beruf:	
Geburtstag und –ort :	
Standesamt und Register Nr. des Geburtseintrags der verstorbenen Person:	
Rechtliche Zugehörigkeit oder Nichtzugehörigkeit zu einer Kirche usw.	Eintrag auf Wunsch: ☐ ja ☐ nein
Letzte Anschrift:	
Familienstand: ☐ ledig ☐ verheiratet ☐ verwitwet ☐ geschieden ☐	
Todestag:	Todesstunde, -minute:
Zuletzt gesehen am: Uhrzeit:	Aufgefunden am: Uhrzeit:
Todesort, Straße und Hausnummer	
☐ natürlicher Tod	☐ nicht natürlicher Tod
Staatsangehörigkeit der verstorbenen Person:	Ehegatte:
Familienname, Geburtsname, Vornamen des letzten Ehegatten oder Lebenspartners	
Geburtstag und –ort des hinterbliebenen Ehegatten oder Lebenspartners, Standesamt und Register Nr. , Wohnanschrift	
Eheschließungstag und –ort, Standesamt und Register Nr., Kennzeichen des Familienbuchs der verstorbenen Person	
Tag und Ort der Begründung der Lebenspartnerschaft, Standesamt und Register Nr. der verstorbenen Person	
Anzahl volljähriger Kinder: Anzahl minderjähriger Kinder:	Anschriften:
Auskunftgeber/Beziehung zur verstorbenen Person:	
Anzeigender:	

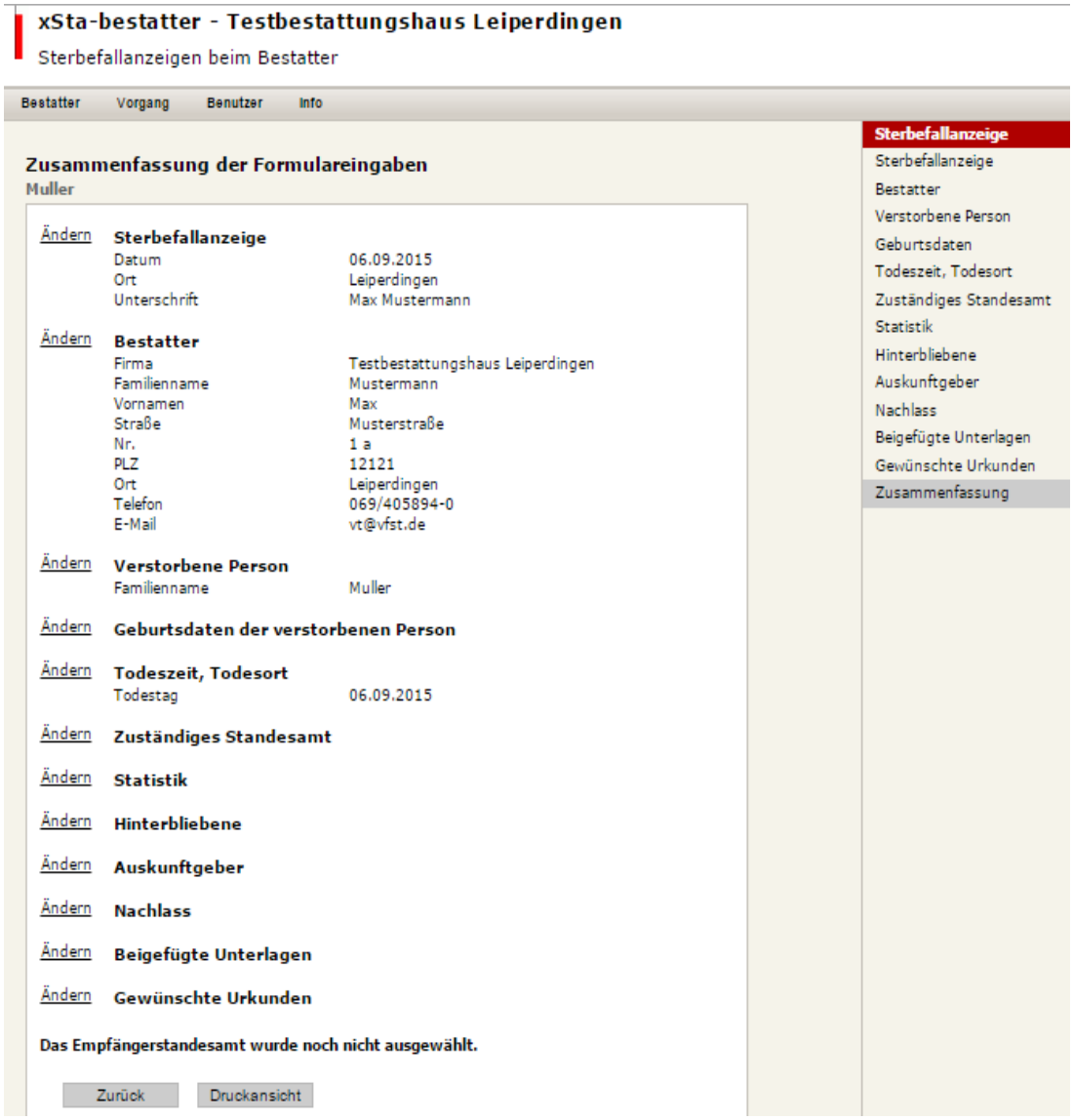
Beerdigungsinstitut	Anzahl der **gebührenpflichtigen** Sterbeurkunden Stück
☐ Erdbestattung	☐ Feuerbestattung
Friedhof	Einäscherung erfolgt im Krematorium in:
Leichenpass Nr.: Weitere Angaben:	

Stempel

Unterschrift des Anzeigenden

Vermerke:

XSta for funeral homes: Screenshot of data summary



XSta for hospitals: Screenshot of data summary

Author's Declaration

I hereby declare that I am the sole author of this Master Thesis and that I have used no other sources than those listed. The thesis has not been presented to any other university for examination.

Author: Siri Kim Krautter

Signature:……..
Date:……

The Master Thesis meets the established requirements.

Supervisor: Prof. Dr. Robert Krimmer

Signature:……
Date:…….

Accepted for examination …….
Board of Examiners of Technology Governance Master Theses