

Abstract

This thesis represents the culmination of over 5 years' worth of hard work and places itself at the intersection of several topical areas. These topics are:

- "e-Government"
 - by conducting a bibliographical study showing the current state of the field
 - the inclusion of this field in a series of models
- "Social Media"
 - by defining the Social Media today, including the formalization of entities specific to this domain
 - by conducting case studies that give an overview on the use of Social Media
 - selecting, testing and grading of certain tools of the Social Media universe that can be used in the extraction of useful data
 - by creating our own software applications for Social Media
- "Digital Libraries"
 - through a comparative study of digital and traditional libraries
 - by redefining their role in the context of e-Governance
- "Software Engineering"
 - by implementing software solutions that enable data acquisition and their classification by redesigning their role in the context of e-Governance

The main purpose of this paper is to define a formal model that facilitates the connection between e-Government and its citizens through Social Media. The model used will have both a formal and an applied component, and its usefulness will be backed by conducting a series of case studies.

To achieve our self imposed goal we have set a number main objectives, grouped by areas touched by this thesis:

- Analysis of the current documentation on Social Media
- Conducting case studies on the use of Social Media
- Comparative analysis between different analysis tools commercially available for Social Media
- Implementing a software tool for obtaining data from the Social Media

- Implementing a data analysis software tool for the Social Media
- Defining a formal framework by setting the basic elements that will form the final model
- Researching the current documentation on traditional and digital libraries
- Case studies to determine how young people interact with traditional libraries versus a virtual environment.
- Researching the current documentation regarding e-Governance
- Development of e-Government models on Social Media

The thesis is divided into seven chapters covering both bibliographic study and personal contributions. Next, we will describe the structure of this paper chapter by chapter.

Chapter 1, "*Governance based on Information and Communication Technology: e-Governance*" defines the concept of e-Government and represents a chapter of bibliographical study. We (I) provide a number of definitions on e-governance and we (I) identify the important factors within a system of e-governance. The management and implementation of e-government are explored in a critical perspective and we (I) highlight the need for an interdisciplinary approach.

Chapter 2, "*The current state of the use of social media in e-Governance*" connects the e-Governance and the Social Media. Social networks are defined and characterized, then we (I) describe how e-governance is based on Web 2.0 technologies. Using Social Media to achieve public goals and its importance to the government are presented under a critical perspective, describing both the strategies and the risks involved in using social media in e-Governance.

Chapter 3, "*Social Media Tools*" presents a number of commercial software tools that can be used for obtaining and analyzing data from various social networks. These instruments are classified according to costs and for each of these we provide a download location and a brief description. The last section of the chapter presents the architecture of personal software solutions that were used in obtaining and processing data from the Twitter platform and at the same time discussing options for system reliability and optimization.

Chapter 4, "*Social Media and Digital Libraries*" defines traditional library and digital library then provides a comparative analysis of digital libraries against traditional libraries.

Chapter 5, "*The impact of social networking on the users*" presents two case studies on the use of social media and of traditional libraries by the students of the "Lucian Blaga" University.

Based on the results of the case studies we have determined the opportunity of using the Facebook social network for collaborative access to digital content. We defined the architecture of such a system that can become a complex e-Learning application that takes advantage of the opportunities offered by social networks. Facebook. The first was used to observe the spreading profile of the application and the second part implements parts of the e-Learning system architecture for the social media.

Chapter 6, "*Shaping Social Media in e-Government*" presents a model through which Social Media becomes a tool for promoting and collecting feedback for e-government tools. Defining the model is done in a generic way, initially disregarding the Social Media platform used and then the model and the results are customized for the Twitter social network. The results include a number of metrics specific to social graphs. Particular attention was paid to the classification of messages in Romanian the solution being validated by a human inspection using a team of students at the "Lucian Blaga" University in Sibiu.

The last chapter is one of conclusions. It summarizes the results of our research and defines the main lines for future research.

The final part of the thesis contains the bibliography section comprising over 130 references.

Table of contents

Foreword..... 1

1. Governance based on IT&C: e-Governance 4

1.1. Definitions and Scope 5

1.2. Management of e-governance 9

 1.2.1. Systems Management 9

 1.2.2. Public Data Management..... 10

1.3. The implementation of e-Governance 12

1.4. Research in the field of e-Government..... 19

2. The current state of the use of social media in e-Governance 23

2.1. Social Media and Social Networks services 23

2.2. Social Media in e-Governance 25

 2.2.1 Using Social Media to achieve public goals 26

 2.2.2. The importance of social media for the government 35

 2.2.3. The use of, the confidentiality and security of resources..... 38

 2.2.4. The rational use of the taxpayers time 41

2.3 The implications of social media in the governance process 44

2.4 Conclusions..... 49

3. Social Media Tools 52

3.1 Paid tools for sale 52

3.2 Free tools..... 57

3.3 Dedicated software for data collection and analysis for Twitter (TW-Crawler) .. 58

 3.3.1 Technologies used..... 58

 3.3.2 System architecture 59

 3.3.3. Retrieving data. Reliability and Optimization 59

 3.3.4 Data storage 63

3.3.5 Data retrieval	64
4. Social Media and Digital Libraries	67
4.1 Definition of the concept of library	67
4.1.1 The traditional library	68
4.1.2 The digital library	69
4.2 Traditional versus digital libraries.....	71
5. The impact of social networking on the users	75
5.1 Case Study 1 – The student's access to information	75
5.1.1 Results of similar studies	75
5.1.2 Setting up the study.....	76
5.1.3 Results.....	77
5.1.4 Conclusions.....	81
5.2 Case Study 2 – The student's access to information (2014)	81
5.2.1 Setting up the study.....	81
5.2.2 Results.....	82
5.2.3 Conclusions.....	83
5.3 Case Study 3 – Disseminating a Facebook Application.....	83
5.3.1 Setting up the study. The Facebook Application	83
5.3.2 Results.....	84
5.3.3 Conclusions.....	87
5.4 Template for promoting digital content through social media	87
5.4.1 The architecture of a Facebook application for collaborative access to digital content	89
5.4.2 Proof-of-concept application based on the proposed architecture	90
6. Modelling Social Media in e-Government	97
6.1 Defining concepts and entities employed in the model	97
6.2 The classification of messages	99

6.2.1 Classification according to the viral nature of the message.....	99
6.2.2 The characterization of messages from the perspective of the user's feelings.....	101
6.3 The Markov model for characterizing the geographical distribution of messages	106
6.4 Determining the target group of users	109
6.5. Obtaining the parameters for the model	112
6.5.1 Parameter determination message (PM)	112
6.5.2 Determining the geographic parameter (PG).....	113
6.5.3 Determining the user parameters (PU)	114
6.6. Models of e-Governance on social networks	114
6.7. Results	116
6.8 Conclusions.....	121
7. Conclusions and future developments	122
7.1 Conclusions.....	122
7.2 Future developments	125
Bibliography	126