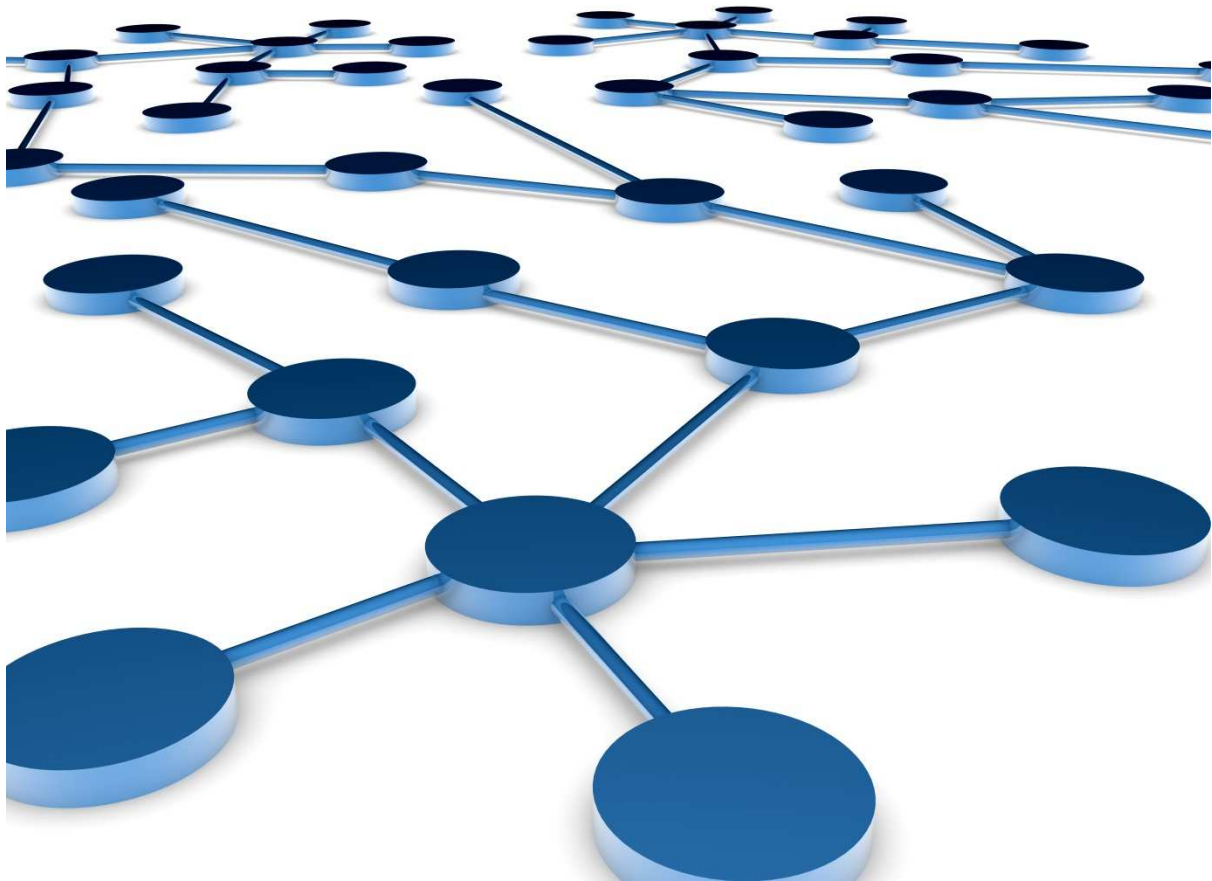


Using Social Media for Network Cooperation: The Europol Platform for Experts



Family Name:	Busetto
Given Name:	Loraine
Student Number:	s0195537
E-mail:	L.Busetto@student.utwente.nl
Master Program:	Public Administration
Date:	24-01-2012
Internal Supervisors:	Dr. A.J.J. Meershoek Dr. P.J. Klok
External Supervisors:	Dr. P. Van Renterghem A. Falcinella

Preface

With this Master Thesis my time as a student at Twente University has come to an end. As always, the end of one thing goes hand in hand with the beginning of another. I experience this transition with mixed feelings: curiosity for future projects, joy and relief as well as sadness and contemplation of the time that lies behind. Writing this thesis has meant a lot of time and effort. At the same time, it was a great challenge and I've enjoyed it immensely.

I would like to express my gratitude to several people for their support during the time of writing the thesis. I would like to thank

My supervisors Dr. A.J.J. Meershoek and Dr. P.J. Klok for their helpful feedback and willingness to support me on a somewhat unusual and long-distance way to my Master's degree by sharing their knowledge and suggesting new directions whenever I was stuck in my own head.

Europol for providing the opportunity to write my thesis on one of their core systems and providing a pleasant working environment for an intern.

Olivier, Pierre, Kris, Peter, Maria, Gjalt, Pam, Eva-Maria, Claus, Roman, José, Raquel and Sophie for welcoming me into their daily lives at work and making the eight months of my internship interesting as well as fun.

Alessandra for explaining the riddles and contradictions of professional work life to me and when no explanation was at hand, teaching me Italian humor.

I would also like to thank several people for their support during the past four and a half years of my student life. I would like to thank

My parents who never pushed me in any direction and thereby opened up a world of opportunities and who support me on every road I choose to take.

My brother who inspires me with his restless journey through countless countries and cities all over Europe.

Anne, Maren, Romy & Laura who, more than four years ago, let me go abroad but still refuse to let me stay there for too long.

Charlie, Imke & Yvonne with whom I found a new home in Enschede.

Tim who helps me find my way through new adventures.

Abstract

One of the major developments brought along by the internet during the past years is the advent of social media. And by extension, this has also entailed the development of network cooperation via social media. The following study is concerned with one specific application of network cooperation via social media, namely the Europol Platform for Experts, which is a social media tool for law enforcement experts. The aim of this paper fourfold: Firstly, to find out to what extent the EPE is being used by registered users. Secondly, it will be found out for which purpose(s) the EPE is currently being used. Thirdly, the aim is to find out which factors influence whether the EPE is or is not being used by the registered users. The fourth aim of the research is to find out how the registered users evaluate the EPE.

The data for the research was collected through a questionnaire and several interviews among the registered users and analysed through statistical analysis. The results of the study lead to the conclusion that the EPE is used only to a very limited extent. When it is used it is mainly for information seeking purposes, followed by communication and participation purposes. The analyses show that the factors performance expectancy, effort expectancy, social influence and facilitating conditions are all positively and significantly related to overall EPE use. The evaluation of the EPE by the registered users is very mixed and at times even highly contradictory and revolves around the topics information, community of experts, security, non-use, website functionality, accessibility, user-friendliness, and the absence of benefits or disadvantages.

Based on these findings, it appears that Europol has several ways to bring about an increased use of system and make the system more successful. Therefore, it is recommended that Europol focuses on three activities, namely changing performance indicators, and improving the system and raising awareness.

List of Tables

Table 1: Distinction between social media in public internet vs. entrepreneurial realm.	19
Table 2: Classification of Social Media by social presence/media richness and self- presentation/self-disclosure.	20
Table 3: Theoretical Model.	37
Table 4: Overview over the independent variables with their constructs and items (questionnaire).	42
Table 5: Overview over the independent variables with their constructs and items (interviews).	43
Table 6: Measurement of the dependent variable.	45
Table 7: Variables measuring the type of use.	46
Table 8: Variables measuring user characteristics.	46
Table 9: Computer variables: Number of items and Cronbach's Alpha	47
Table 10: Mean scores for information seeking items	51
Table 11: Mean scores for communication items	52
Table 12: Mean scores for participation items	53
Table 13: Purposes of EPE use - Means	53
Table 14: Model summary linear regression analysis of overall EPE use	54
Table 15: Coefficients linear regression analysis of overall EPE use	54
Table 16: Overall EPE use by attitude towards using technology.	55
Table 17: Model summary linear regression analysis of information seeking	57
Table 18: Coefficients linear regression analysis of information seeking	58
Table 19: Model summary linear regression analysis of communication	58
Table 20: Coefficients linear regression analysis of communication.	59
Table 21: Model summary linear regression analysis of participation.	59
Table 22: Coefficients linear regression analysis of participation	60
Table 23: Overview of categories and statements of the questionnaires (evaluation part)	64

Table 24: EPE use means by purpose of use: All users, known platform & unknown platform. . .	72
Table 25: Means of overall frequency of EPE use by platform membership.	73
Table 26: Means of purposes of EPE use by platform membership.	74
Table 27: Means of purposes of EPE use by platform membership, compared to known platform average.	75
Table 28: Answering Research Question 1: To what extent is the EPE being used by the registered users?.....	97
Table 29: Answering Research Question 2: For which purposes is the EPE being used?	97
Table 30: Answering Research Question 3a: Which factors influence whether registered users participate in the EPE?.....	97
Table 31: Answering Research Question 3b: Which factors influence whether network cooperation via the EPE is likely to occur?.....	98
Table 32: Answering Research Question 4: How do registered users evaluate the EPE?	98
Table 33: Platform membership and comments of respondents in the cluster	105
Table 34: Summary overview of the interview responses.....	107

List of Figures

Figure 1: Graphical Display of relationships between individual reactions to IT, intentions to use and actual use of IT.....	15
Figure 2: Graphical display of relationships between relevant variables, according to Venkatesh.	15
Figure 3: Start screen EPE website.	28
Figure 4: Start Page EPE Website.	32
Figure 5: How often do you use the EPE? Frequencies in percentages.....	50
Figure 6: SWOT assessment summary	69
Figure 7: How often do you browse the message forum on the EPE? Frequencies in percentages.	100
Figure 8: How often do you browse the blog on the EPE? Frequencies in percentages.....	100
Figure 9: How often do you browse the wiki on the EPE? Frequencies in percentages.....	101
Figure 10: How often do you browse the media gallery / library on the EPE? Frequencies in percentages.....	101
Figure 11: How often do you post or answer a question in the message forum on the EPE? Frequencies in percentages.	102
Figure 12: How often do you use the chat on the EPE? Frequencies in percentages.....	102
Figure 13: How often to you use the private messaging function on the EPE? Frequencies in percentages.....	103
Figure 14: How often do you write a blog entry on the EPE? Frequencies in percentages.....	103
Figure 15: How often do you upload a file to the media gallery / library on the EPE? Frequencies in percentages.....	104
Figure 16: How often do you write something in the wiki on the EPE? Frequencies in percentages.....	104

List of Abbreviations

C-TAM-TPB	Combined Technology Acceptance Model and Theory of Planned Behaviour
EPE	Europol Platform for Experts
IDT	Innovation Diffusion Theory
IT	Information Technology
MM	Motivational Model
MPCU	Model of PC Utilisation
OECD	Organisation for Economic Cooperation and Development
SCT	Social Cognitive Theory
SNS	Social Networking Site
TAM	Technology Acceptance Model
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
UGC	User Generated Content
UTAUT	Unified Theory of Acceptance and Use of Technology

Table of Contents

Preface.....	2
Abstract	3
List of Tables.....	4
List of Figures.....	6
List of Abbreviations.....	7
1. Introduction.....	11
1.1 Context.....	11
1.2 Research Area.....	11
1.3 Research Aim	12
1.4 Paper Outline	12
2. Theoretical Framework.....	14
2.1 User Acceptance of Information Technology.....	14
2.2 Social Media.....	16
2.2.1 Definitions	16
2.2.2 Types / Categorisation	19
2.2.3 Factors Conducive to Social Media Use	20
2.2.4 Costs & Benefits of Social Media Use.....	21
2.2.5 Summary.....	22
2.3 Networks	23
2.3.1 What is a Network?.....	23
2.3.2 Types of Networks	23
2.3.3 Factors Conducive to Network Cooperation	24
2.3.4 Costs & Benefits of Network Cooperation.....	26
2.3.5 Summary.....	26
2.4 The Europol Platform for Experts.....	27
2.4.1 Background.....	27
2.4.2 The EPE Website.....	27
2.4.3 The Platforms.....	28
2.5 Conclusion.....	33
3. Methodology	34
3.1 Research Question, Theoretical Model & Hypotheses.....	34
3.1.1 Research Question & Sub-Questions	34
3.1.2 Theoretical Model.....	34

3.1.3	Hypotheses.....	37
3.2	Approach.....	38
3.2.1	Research Design.....	38
3.2.2	Case selection.....	38
3.3	Method of Data Collection.....	39
3.4	Method of Data Analysis.....	40
3.4.1	Methods for Qualitative Data Analysis.....	40
3.4.2	Methods for Quantitative Data Analysis.....	41
3.5	Constructs & Operationalisation.....	42
3.5.1	Measuring the Independent Variables.....	42
3.5.2	Measuring the Dependent Variable: EPE Use.....	44
3.5.3	New Variables.....	45
3.5.4	EPE Evaluation.....	47
4.	Results.....	49
4.1	EPE use.....	50
4.1.1	Questionnaires.....	50
4.1.2	Interviews.....	50
4.2	Purposes of EPE use.....	51
4.2.1	Questionnaires,.....	51
4.2.2	Interviews.....	53
4.3	Factors influencing EPE use.....	53
4.3.1	Questionnaires.....	53
4.3.2	Interviews.....	61
4.4	EPE Evaluation.....	63
4.4.1	Questionnaires.....	63
4.4.2	Interviews.....	67
4.4.3	SWOT Analysis.....	68
4.5	Differences between networks.....	72
5.	Conclusion.....	80
5.1	Conclusions.....	80
5.2	Recommendations.....	82
5.3	Limitations of the Study.....	84
5.4	Beyond Europol: Suggestions for Further Research.....	86
6.	Bibliography.....	88
7.	Appendix.....	92

A. Questionnaire Template.....	92
B. Introductory E-Mail (Questionnaire).....	94
C. Interview Template.....	95
D. Answering the Research Questions.....	97
E. Relative frequencies of information seeking, communication and participation behaviour: SPSS output.....	100
F. Summary overview of the platform memberships and comments of respondents in the cluster.....	105
G. Summary Interviews	107

1. Introduction

1.1 Context

The advent of the internet has been abrupt, significant, in short: revolutionary. In only a few years it has changed the daily lives of millions of people in unforeseen and irreversible ways. The changes that the internet has brought to us have had a major impact not only on our personal lives, but also on the societal, political and economic landscapes of most parts of the world. According to Donatella Campus (Campus, 2008, p.108) the “first and most immediate function of the internet is an informative one: the internet provides the users with enormous quantities of information at a low cost and obtained with modest efforts”¹. Moreover, the internet has provided “citizens of almost every state with uncountable opportunities for the seamless information exchange across the globe” (Maier, 2010).

Apart from this, there has been a broad recognition of the merits of the internet as a communication tool (see for example Niveau, 2010; Hunton, 2011 or Steinfeldt, et al., 2010). According to Campus, the special characteristic of the Internet with regard to communication is its interactive dimension, which allows for the two-way flow of communication (Campus, 2008, p.108).

Moreover, the internet has had a major impact on crimes as well as crime-fighting activities. A very accurate and telling summary of the role of the internet in today’s crime and crime fighting landscape, is probably the characterisation of the internet by the European Police Office as “target, tool and (...) weapon” (EuropeanPoliceOffice, 2011c). Similarly, Europol sees the role of the internet as a facilitator of diverse criminal activities – “as a communication, research, logistics, marketing, recruitment, distribution and monetarisation tool” (Europol, 2011). With regard to the consequences that the internet has caused and will be causing for society, the European Police Office predicts that the internet “will not only put new tools at the disposal of all criminal groups but will also expose new vulnerabilities in our information society” (EuropeanPoliceOffice, 2011c). In this sense, the internet “presents a challenging new frontier for criminology, police science, law enforcement and policing” (Gottschalk, 2010).

Given this background, it seems not only highly interesting but above all necessary and urgent that law enforcement agencies take advantage of the opportunities that the internet offers. One way to do this is to make use of what is meant by the broad term “social media” for network cooperation within law enforcement and police agencies.

1.2 Research Area

The main research areas of the proposed research are user acceptance of information technology, social media and network cooperation within the sphere of law enforcement. The combination of these research areas is rather new. The focus will be on a specific case, namely the Europol Platform for Experts (EPE).

¹ Own translation from original text in Italian: “La prima e piú immediata funzione di Internet è quella informativa: la rete fornisce agli utenti enormi quantità di informazione a basso costo, ottenute con modesto sforzo” (Campus, 2008, p.108).

The EPE's structure is such that there are several platforms (and sub-sites of these platforms) on the main platform, namely the EPE itself. These platforms are organised around specific law enforcement areas and only accessible for experts in these areas. However, the EPE is not a network of networks as it does not allow for members of different platforms to communicate with each other. That is, even though all platforms are contained in one website, they remain isolated from each other. (The only bridges between the networks are the administrators of the EPE and those users who are members of more than one platform.)

The function of the EPE is to facilitate online collaboration between experts in a specific law enforcement area. The platforms specify their own aim for the use of the EPE themselves. These aims usually include sharing knowledge, best practices and non-operational crime-related data. Access to the EPE is by invitation only. Access to the platforms on the EPE is by invitation or request. The managers of the platforms can specify the access rules for the sub-sites of their platform. Generally, people who are experts in one of the following sectors can be invited to register for the EPE: law enforcement, academia, Europol, private industry and other organisations. In some cases, users from outside the European Union can get access to the EPE as well.

1.3 Research Aim

The aim of the research is fourfold. The first aim is to find out to what extent the EPE is being used by registered users. Secondly, it will be found out for which purpose(s) the EPE is currently being used. Thirdly, the aim is to find out which factors influence whether the EPE is or is not being used by the registered users. The fourth aim of the research is to find out how the registered users evaluate the EPE.

1.4 Paper Outline

The paper will be structured as follows:

The next chapter will provide the theoretical framework of the study. In particular, definitions and categories of social media and network cooperation will be introduced, as well as factors expected to be conducive to social media use and network cooperation and the expected costs and benefits of social media use and network cooperation. Moreover, the EPE will be presented, including a short background, a presentation of the website and a presentation of several of the networks active on the EPE.

Chapter three will provide the methodology of the study and chapter four the results. The research will show that the EPE is used only to a very limited extent. When it is used it is mainly for information seeking purposes, followed by communication and participation purposes. The analyses show that the factors performance expectancy, effort expectancy, social influence and facilitating conditions are all positively and significantly related to overall EPE use. Attitude, skills and alternative systems on the other hand are not related to overall EPE use. The evaluation of the EPE by the registered users is very mixed and at times even highly contradictory and revolves around the topics information, community of experts, security, non-

use, website functionality, accessibility, user-friendliness, and the absence of benefits or disadvantages.

Finally, the paper ends with the recommendation that Europol should focus on three activities, namely changing performance indicators, and improving the system and raising awareness.

2. Theoretical Framework

In line with the third and fourth aim of the research, the theoretical background presented here will give insights into which factors can be expected to influence whether or not social media are being used as a network cooperation tool and which costs and benefits the use of social media as a cooperation tool can be expected to yield.

The theoretical model that will be developed based on the theoretical background is based on the Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh (2003). As this model is not completely applicable to the case of the EPE, it will be complemented by insights gained from social media and network literature. The social media literature will complement the UTAUT model by insights that are specific to social media with its special characteristics (e.g. participation, openness, transparency etc.) as opposed to technology in general. The networks perspective will complement the model in the sense that it offers theories as to which network characteristics can be expected to be conducive to the emergence of network cooperation. This will help explaining why participation on the EPE is likely to occur, because as participation on the EPE necessarily happens within a specific network context, participation *is* in fact network cooperation. Combined, these three lines of thought are expected to be able to explain why participation in the EPE, as a social media technology for network cooperation, is or is not likely to occur.

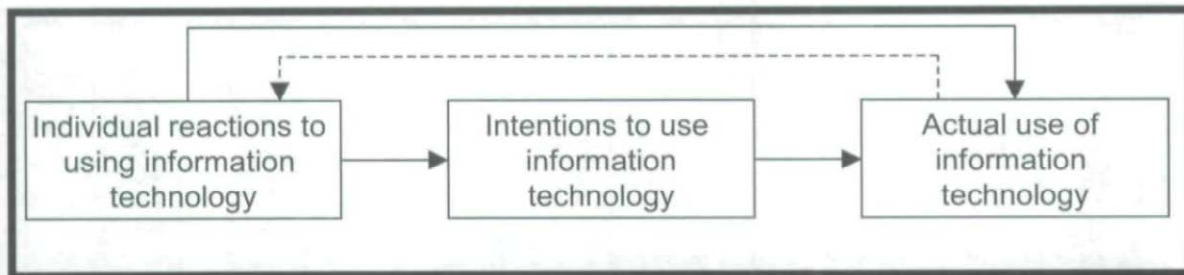
Finally, an overview of the Europol Platform for Experts will be presented at the end of the chapter.

2.1 User Acceptance of Information Technology

In his analysis of eight models of information technology (IT) acceptance, Venkatesh (2003) identifies factors which directly influence IT acceptance and factors which mediate the relationship between these variables and IT acceptance. He then unifies these variables in a unified model called the Unified Theory of Acceptance and Use of Technology (UTAUT). The model consists of four independent variables and four mediating variables.

The basic assumption underlying all of the models analysed by Venkatesh (2003) is that the reaction of an individual to the use of IT influences her use of IT directly. The reaction also influences the actual use indirectly by influencing an individual's intentions to use IT which then in turn influence the actual use. These relationships are shown in Fig. 1:

Figure 1: Graphical Display of relationships between individual reactions to IT, intentions to use and actual use of IT.

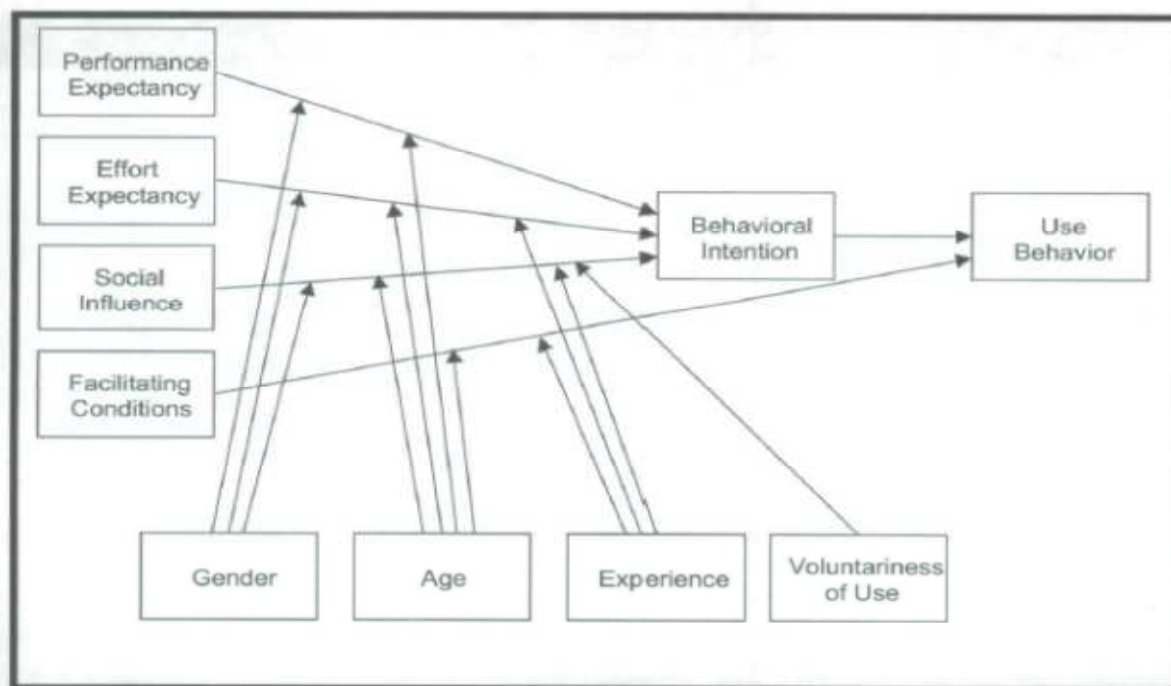


(Venkatesh, 2003)

The eight models compared by Venkatesh are the following: theory of reasoned action (TRA), technology acceptance model (TAM), motivational model (MM), theory of planned behaviour (TPB), combined TAM and TPB (C-TAM-TPB), model of PC utilisation (MPCU), innovation diffusion theory (IDT), and social cognitive theory (SCT). In total, the eight theories offer 32 constructs. Moreover, Venkatesh (2003) identifies four key moderating variables, namely experience, voluntariness, gender and age, which are expected to significantly influence the relationship between the constructs and the actual use of information technology.

After testing the eight models, Venkatesh formulates his own research model which unifies the strongest variables of the eight theories analysed. The most significant factors in Venkatesh's model are performance expectancy, effort expectancy, social influence and facilitating conditions (Venkatesh, 2003). Moreover, the most important mediators of the model are gender, age, voluntariness and experience (Venkatesh, 2003). Fig. 2 presents the Venkatesh's research model with the relationships between the different factors.

Figure 2: Graphical display of relationships between relevant variables, according to Venkatesh.



(Venkatesh, 2003).

As one can see in the research model, the factors performance expectancy, effort expectancy and social influence are expected to influence behavioural intention, which then is expected to influence use behaviour. Facilitating conditions are expected to directly impact on use behaviour. While gender is expected to moderate the relationships performance expectancy/behavioural intention, effort expectancy/behavioural intention and social influence/behavioural intention, age is expected to influence all of the hypothesised relationships, experience is expected to influence the relationships effort expectancy/behavioural intention, social influence/behavioural intention and facilitating conditions/use behaviour, and voluntariness of use is only expected to influence social influence/behavioural intention (Venkatesh, 2003)². These factors and the relationships between them comprise the Unified Theory of Acceptance and Use of Technology (UTAUT).

2.2 Social Media

Social Media, Social Networks, Web 2.0, etc... These are all terms that have gained considerable attention during the past few years. At the latest during and in the aftermath of the protests of the Arab Spring movement, social media have entered as a main focal point into mainstream discussions. However, it seems that the terms mentioned above are used in a mainly undistinguished way and it is therefore not always clear what is meant when someone refers to these terms. Facebook and Twitter are probably the most (in)famous examples of social media, however, often reference is also made to specific elements of social media such as blogs, wikis, social networks, and forums (Avidar, 2009; Malita, 2011).

Often the use of social media is linked to positive developments such as improved information sharing, more diversity, enhanced freedom of expression, and user engagement (Avidar, 2009; Malita, 2011). At times social media are also linked to negative developments such as cyber stalking, cyber bullying (Mishna, Cook, Saini, Wu, & MacFadden, 2011) or organised hacker groups like Anonymous.

2.2.1 Definitions

In order to work with a particular concept, such as social media, we need to first define the concept and relate it to and distinguish it from apparently similar and related concepts. In the following, definitions of the terms 'social media', 'web 2.0', 'social networking sites' (SNS) and 'social collaboration' are provided.

² The directions of the influence of the factors age, gender, experience and voluntariness of use are such that the effect of performance expectancy on behavioural intention will be stronger for younger men; the effect of effort expectancy on behavioural intention will be stronger for younger women at early stages of experience; the effect of social influence on behavioural intention will be stronger for older women in mandatory settings in the early stages of experiences; and the effect of facilitating conditions on usage will be stronger for older women with relatively more experience (Venkatesh, 2003).

a. Social Media

Social Media can be defined as “any highly scalable and accessible communication technology or technique that enables an individual to influence groups of other individuals easily” (Blossom as cited in Friedl & Vercic, 2011). According to Cusumano, social media networks are “new kinds of platforms that facilitate communication and offer new systems for texting and sending email as well as sharing files. They enable computing through access to different applications and databases” (Cusumano, 2011). Another definition is provided by Leopold who claims that the concept of media describes the “diverse use of online services by people mainly in the private and personal context” by using web 2.0 applications (Leopold, 2012)³. Moreover, Leopold identifies three core characteristics of social media, namely the basic function of the organisation of relationships (“community of interests”), the sort of communication (“many to many”) and usage of already existing platforms with available functions (Leopold, 2012). Bradley even identifies six core characteristics of social media as opposed to other forms of communication: participation, collective, transparency, independence, persistence, and emergence (Bradley as cited in Malita, 2011).

Moreover, Kaplan and Haenlein see the distinguishing characteristic of social media in its ability to create and exchange user-generated content” (Kaplan and Haenlein as cited in Hrastinski & Aghaee, 2012). Therefore, Hrastinski and Aghaee argue, “it is the users that decide whether a medium is used in social ways or not” (Hrastinski & Aghaee, 2012). Malita points out that while there are many different definitions of social media, most of them have some aspects in common, such as the idea that social media are facilitators of the “socialisation of content”, that social media are an “evolving phenomenon” and that they social media transform monologue into dialogue (from one-to-many communication to many-to-many communication) (Malita, 2011). Malita’s summary of social media is therefore the following: “(...)most social media services encourage collaboration, interaction and communication through discussion, feedback, voting, comments, and sharing of information from all interested parties” (Malita, 2011).

b. Web 2.0

Wijaya et al. define Web 2.0 as “the philosophy of mutually maximising collective intelligence and added values for each participant by formalised and dynamic information sharing and creation” (Hoegg, Martignoni, Meckel, & Stanoevska-Slabeva, as cited in Wijaya, Spruit, Scheper, & Versendaal, 2011). According to Leopold, web 2.0 features are mainly based on the “principle of the exchange of information or the possibilities of sharing information” (Leopold, 2012)⁴. Leopold relates these Web 2.0 features to creation of social networks, by pointing out how users can use these features to achieve some sort of group-related position or role in a specific group (Leopold, 2012).

According to Correa et al, social media provide “a mechanism for the audience to connect, communicate, and interact with each other and their mutual friends through instant messaging or social networking sites” (Correa, Hinsley, & Gil de Zúñiga, 2010).

A concept which is important to point out in this context is *user generated content* (UGC). UGC is what people create within the context of Web 2.0, or put differently, it is “the sum of all ways in

³ Own translation from original text in German: “...mannigfaltige Nutzung von Online-Diensten durch Menschen vorwiegend im privaten und persönlichen Kontext” (Leopold, 2012).

⁴ Own translation from original text in German: “...Prinzip des Austausches oder der Teilungsmöglichkeiten von Informationen” (Leopold, 2012)

which people make use of Social Media” (Kaplan & Haenlein, 2010). To be more precise, three criteria have been identified which define UGC. Firstly, UGC needs to be published on a “publicly accessible website or on a social networking site accessible to a selected group of people”, secondly, it must be created (at least to a certain extent) by one or more of the users themselves, and thirdly, its creation must not be part of the normal professional routine (OECD as cited in Kaplan & Haenlein, 2010).

c. Social Networking Sites

A social network can be defined as a certain number of individuals who create a connection amongst each other via an online platform, therefore, “individuals and activities are dependent on each other and the connections represent channels for the transfer of immaterial resources”⁵ (Wasserman and Faust as cited in Richter, Riemer, & Vom Brocke, 2011). Richter et al. also make a distinction between social networking sites and internet social networking (Richter, Riemer, & Vom Brocke, 2011). The latter describes the creation and maintenance of one’s own social network via the internet– often but not necessarily via social networking sites (Richter, Riemer, & Vom Brocke, 2011). Correa et al define social networking sites as “virtual collections of users’ profiles, which can be shared with others to create lists of companions and maintain contact with them” (Raacke & Bonds-Raacke as cited in Correa, Hinsley, & Gil de Zúñiga, 2010). According to Boyd and Ellison, social networking sites are defined by three elements: the construction of a profile within a limited system; the articulation of a user list with a shared connections; and the view and traversing of these lists within the system (Boyd & Ellison 2007 as cited in Richter, Riemer, & Vom Brocke, 2011).

Richter et al. see social networking sites as a sub-category of general social software and a prototype of social collaboration-related social network platforms (Boyd; Davenport; Hippner; McAfee; and Richter et al. as cited in Richter, Riemer, & Vom Brocke, 2011).

d. Social Collaboration

There are many terms and concepts used to describe this phenomenon, such as social collaboration, enterprise 2.0, or enterprise social networking. The term Enterprise 2.0 was first used by Andrew McAfee who defined it as “the use of emergent Social Software platforms within companies, or between companies and their partners or customers” (McAfee as cited in Richter, Riemer, & Vom Brocke, 2011). According to Richter et al, the concept Enterprise 2.0 refers to the “efforts related to the establishment of social software tools that stem from the public internet for the purpose of using them within the enterprise”⁶ (McAfee as cited in Richter, Riemer, & Vom Brocke, 2011).

Richter et al distinguish two forms enterprise social networking. The first form is similar to a normal social networking site, except for the limited scope of potential users which is confined to the company’s employees. This form is comparable to a company’s Intranet (Richter, Riemer, & Vom Brocke, 2011). The second form refers to the usage of already existing, public social networks by the enterprise (Richter, Riemer, & Vom Brocke, 2011).

⁵ Own translation from original text in German: “Individuen und ihre Aktivitäten sind somit abhängig voneinander und die Verbindungen stellen Kanäle für die Übertragung von immateriellen Ressourcen dar” (Wasserman and Faust as cited in Richter, Riemer, & Vom Brocke, 2011)

⁶ Own translation from original text in German: “...Bemühungen der Einführung von, aus dem öffentlichen Internet stammenden Social Software Tools für den Einsatz in Unternehmen” (McAfee as cited in Richter, Riemer, & Vom Brocke, 2011).

2.2.2 Types / Categorisation

Now that the most important terms have been introduced, we can turn to the main types of social media with the aim of creating a typology or categorisation that is useful as a theoretical basis.

Richter et al (2011) offer a categorisation that distinguishes social media in the public internet from its equivalents in the entrepreneurial realm. The distinction is displayed in Table 1:

Table 1: Distinction between social media in public internet vs. entrepreneurial realm.

Scope		Öffentliches Internet	Unternehmenskontexte
Generell	Phänomen	Web 2.0	Enterprise 2.0
	Artefakt	Social Software Platforms	Intranet Social Software
Speziell	Phänomen	Internet Social Networking (ISN)	Enterprise Social Networking (ESN)
	Artefakt	Social Network Sites (SNS)	Intranet Social Network Platforms

(Richter, Riemer, & Vom Brocke, 2011).

Within the realm of social media, Corcoran distinguishes between three types of media, namely “owned media (controlled by the marketer; e.g., company website), paid media (bought by the marketer; e.g., sponsorships, advertising), and earned media (not controlled or bought by the marketer; e.g., word-of-mouth, viral)” (Corcoran as cited in Hanna, Rohm, & Crittenden, 2011).

Kaplan & Haenlein on the other hand identify six types of social media. These are “collaborative projects, blogs, content communities, social networking sites, virtual game worlds, and virtual social worlds” (Kaplan & Haenlein, 2010). As a next step, these types are categorised along two dimensions, namely social presence/media richness and self-presentation/self-disclosure. In this context, social presence is defined as the “acoustic, visual, and physical contact that can be achieved” and is influenced by the “intimacy (interpersonal vs. mediated) and immediacy (asynchronous vs. synchronous) of the medium” (Kaplan & Haenlein, 2010). It can be expected that when the social presence is higher, the social influence of the users on each other increases as well (Kaplan & Haenlein, 2010). Media richness on the other hand is defined as “the amount of information they allow to be transmitted in a given time interval”, which has an influence on the possible reduction of ambiguity and uncertainty (Kaplan & Haenlein, 2010). The categorisation is displayed in the following table:

Table 2: Classification of Social Media by social presence/media richness and self-presentation/self-disclosure.

		Social presence / media richness		
		low	medium	high
Self-presentation /self-disclosure	high	blogs	Social networking sites	Virtual social worlds
	low	Collaborative projects	Content communities	Virtual game worlds

(Kaplan & Haenlein, 2010).

For the analysis of the EPE at a later stage of this research, all of these different categorisations will be used as they all highlight different aspects of social media. The distinction between social media on the public internet vs. social media in the entrepreneurial context sheds light onto the purpose of the social media tool at hand and its scope of application. The distinction between owned, paid and earned media helps to identify power relations and responsibilities at the system's "backstage". The classification by social presence/media richness and self-presentation/self-disclosure helps understand what can and should be expected of the system in terms of creating specific kinds of communities. In the end, these categorisations will help to understand the very nature of the EPE better.

2.2.3 Factors Conducive to Social Media Use

Cusumano (2011) identifies three successful social media platform attributes: To be successful, a platform must firstly "generate strong network effects" (peer pressure), secondly it must "minimise the opportunities for competitors to fragment the market through exploiting differentiation strategies or segmentation niches", and thirdly it must be difficult for users to use more than one platform (Cusumano, 2011).

According to Correa et al, social networking sites are mainly used by young adults (under 25) (Correa, Hinsley, & Gil de Zúñiga, 2010). The dichotomy of a younger and older generation – the former used to digital devices and social media, the latter not – is a popular notion. Terms such as "digital natives" (Prensky) the "net generation" (Tapscott), or "Homo Zappiens" (Veen & Vrakking) are widespread (all cited in Hrastinski & Aghae, 2012). However, this sharp distinction has been questioned as of late (Hrastinski & Aghae, 2012) and it seems that more and more adults are also beginning to follow the trend (Correa, Hinsley, & Gil de Zúñiga, 2010). Moreover, it seems that most social networking site users are "regular visitors", which means that most users check their own profile daily or every few days. The frequency of visits is even higher for the younger users (Correa, Hinsley, & Gil de Zúñiga, 2010). Furthermore, it seems that social networking site use is also associated with personality traits: Extraversion, neuroticism and openness to experience are all related to more SNS use (Correa, Hinsley, & Gil de Zúñiga, 2010).

According to Stocker & Mayer (2012) employees who are supposed to use social media within company context need certain skills to be able to do so, above all "web literacy". The authors advise companies to instruct their employees about open communication and provide guidelines, trainings and platforms accordingly (Stocker & Mayer, 2012). Stocker & Mayer point

out that it is of great importance for a company to convince their employees of the “individual and organisational added value of open communication”⁷ (Stocker & Mayer, 2012).

Hrastinski and Aghaee (2012) have conducted a study as to how campus students use social media as a study tool. Their conclusion is that while almost all of the respondents frequently use social media, it is mostly not for their studies. The authors call this “digital dissonance” (Hrastinski & Aghaee, 2012). The term was originally introduced by Clark et al to describe “the tension between learners’ in- and out-of-school use of social media” (Clark et al as cited in Hrastinski & Aghaee, 2012). It seems that there is no agreement as to whether additional instruction or training would increase the use of social media for educational purposes. While Alexander argues that instruction could be an important motivational factor, Dron argues that excessive instruction might lead to boredom instead of motivation (both as cited in Hrastinski & Aghaee, 2012).

According to Parra-López et al. (2011), social media use is influenced positively by “personal skills and predisposition towards social media”. Moreover, they claim that the factors “having access to the technologies needed to access social media” and “socio-technological environment” also have positive influence on social media (Parra-López, Bulchand-Gidumal, Gutiérrez-Taño, & Díaz-Armas, 2011).

2.2.4 Costs & Benefits of Social Media Use

Costs

Derntl et al. argue that open exchange and provision of distributed resources – which is one of the main characteristics of Web 2.0 – creates “a huge, informally structured and – generally semantically weak – pool of information and knowledge assets” (Derntl, Hampel, Motschnig-Pitrik, & Pitner, 2011). This has many negative consequences for the ways in which the data can be used. For example, it will be much more difficult to find specific data, or to compare two sets of data with one another. Put differently, the mere availability of a lot of information on the web, does not mean that it is easily accessible or can be processed or used easily. Of course, participating in social media requires resources (most of all time).

Benefits

In their study into the social media use of campus students for the support of their studies, Hrastinski and Aghaee (2012) discovered that most of the students saw the benefits of social media use in the possibility to connect “anytime and anywhere”. Moreover, efficiency and time-saving were also seen as important benefits (Hrastinski & Aghaee, 2012). The students also put forward that they preferred to use social media as a complementary tool instead of as a replacement for traditional and more direct means of communications (Hrastinski & Aghaee, 2012).

In their analysis of the micro-blogging application Twitter, Grabowicz et al (2012) draw parallels between the links in offline and online social networks. Their conclusion is threefold: Firstly they identify the “weakness of strong ties”, which describes the fact that personal

⁷ Own translation from original text in German: “Dabei ist es wesentlich, die Mitarbeiter zur Nutzung von Social Media und vom individuellen und organisationalen Mehrwert offener Kommunikation zu überzeugen” (Stocker & Mayer, 2012).

interactions mainly occur on internal links in one group. Secondly, according to them new information is predominantly transmitted via links that connect one group to another group, which they call the “strength of weak ties”. The third phenomenon is the “strength of intermediary ties” – the fact that new information is transmitted even more through links between individuals belonging to more than one group (Grabowicz, Ramasco, Moro, Pujol, & Eguiluz, 2012). While Grabowicz et al. thus see some important features of offline social networks mirrored in online social networks, Komito (2011) remains sceptical as to whether these strong ties are actually as strong as they seem in the different networks. Whereas he acknowledges that online social networks are able to forge strong ties (indicating the “strength and significance of the relationship among individuals”), it still has to be seen whether they can also create bonding capital, that is, if they can “facilitate shared mutual regard, close-knit and overlapping relations, economic interdependence (...) across distance” (Komito, 2011). According to McAfee (as cited in Ferron, Massa, & Odella, 2011) social networking sites can have a beneficial effect within companies because they change the interaction patterns of the employees. Above all, social networking sites make it possible for people to connect via “potential ties”, which are people that could potentially be of help for someone’s work if this someone would be aware of them. In this sense, social networking sites create added value for the organisation as well as the individual, “inducing and favouring collaborative attitudes and supporting the current practices of work coordination” (McAfee as cited in Ferron, Massa, & Odella, 2011).

Thus while it seems that also online networks can help create the necessary strong, weak and potential ties which are important for information flows in a network, it should be kept in mind that the strength of these links may have not entirely the same meaning for the different types of networks. On a related point, Komito (2011) mentions that one of the benefits that might be expected to be gained from the use of social networking sites is so-called “network capital” which is defined as the “capacity to engender and sustain social relations with individuals who are not necessarily proximate, which generates emotional, financial and practical benefit” (Larsen & Urry, as cited in Komito 2011).

Stocker & Maier (2012) see the main advantage of social media in their ability to make the communication and flow of knowledge of an enterprise visible and to accelerate them. Moreover, they claim that social media are “always connected” with openness, transparency and self-organisation (Stocker & Mayer, 2012).

Leopold (2012) claims that due to its orientation to interpersonal communication processes, social media are an optimal tool for the support of collaboration processes in enterprises. An additional benefit is that not only factual but also tactical knowledge can be saved (Leopold, 2012). Tactical knowledge includes “knowledge that is generated in actions and processes and has not manifested itself and can therefore not be simply assigned to rigid structures”⁸.

2.2.5 Summary

In conclusion then, we could expect the following factors to be conducive to the use of social media: strong network effects (peer pressure), (un)availability of alternative platforms, age, personality traits, web-related skills (web literacy), training/instruction, personal skills, IT access and the socio-technological environment. We would also expect that the use of the

⁸ Own translation from original text in German: “[...] Wissen, das in Abläufen und Prozessen generiert wird und sich noch nicht manifestiert hat und somit nicht einfach in starren Strukturen zugeordnet werden kann” (Leopold, 2012).

platform will generate costs such as the difficulty to access and process unstructured and semantically weak data and the use of resources, most of all time. We would expect that the use of social media will generate benefits such as increased efficiency; time savings; increased connectivity with other users; increased strength of potential ties; acceleration & increased visibility of communication & knowledge flow; more openness, transparency and self-organisation; and facilitation of collaboration processes.

2.3 Networks

2.3.1 What is a Network?

One key characteristic of a network is the concept of membership. While there do not necessarily have to be formal arrangements or rules, sometimes not even consensus, there has to be a distinction, however vague, between who's in the network and who's not. Related to this is another characteristic of networks, namely the minimum number of members in a network, which is generally said to have to be at least three (transcending unilateral and bilateral actions or cooperation) (Provan & Kenis, 2007).

Of course, different networks can have different purposes. However, one defining characteristic that all networks have in common is that the members "work together to achieve not only their own goals but also a collective goal" (Provan & Kenis, 2007). As Jones et al put it, the cooperation between network members is "based on implicit and open-ended contracts to adapt to environmental contingencies and to coordinate and safeguard exchanges" (Jones, Hesterly, & Borgatti, 1997). Networks can also be defined by the impact they have on their members or the context more generally. According to Marsh & Smith (2000) networks are "structures which constrain and facilitate agents". Additionally, they claim that networks institutionalize beliefs, values, cultures and forms of behaviour and thereby "simplify the policy process by limiting actions, problems and solutions" (Marsh & Smith, 2000).

By definition, networks are different from other, maybe more traditional modes of governance. Jones et al. (1997) for example claim that network governance differs from and competes with markets and hierarchies. According to Jones et al (1997) one main difference between network governance and traditional structures is that networks are characterised by informal rather than bureaucratic (within firms) and formal contractual relationships (between firms). Another important difference is that networks are governed "without benefit of hierarchy or ownership" (Provan & Kenis, 2007). Moreover, adherence to rules is "purely voluntary" and the formal accountability of the network members is only limited (Provan & Kenis, 2007). As Herranz (2007) argues, networks are located "between the extremes of monocentric hierarchical steering (...), and horizontal situations of complete autonomy of all actors (...)". One consequence of these differences is that networks require a different type of management "because standard nostrums of public administration do not apply when supervision, monitoring channels, and organizational cultures are diffuse" (Herranz, 2007)

2.3.2 Types of Networks

There are different types of networks, such as one mode or two mode networks or socio- or ego-centric networks. While in one mode networks cooperation takes place among the same type of members, in two mode networks the members consist of two different sets (Hawe, Webster, & Schiell, 2004). Socio-centric networks, which are also called complete networks, revolve around

members of a “single, bounded community”, whereas ego-centric or personal networks are defined from the perspective of one specific actor and consist of the relational ties that connect this specific actor to other actors (Hawe, Webster, & Schiell, 2004).

Types of networks can also be identified depending on their form of network governance. A network can have brokered or non-brokered network governance and if it has a brokered form of governance, the network can be “participant governed or externally governed” (Provan & Kenis, 2007). Provan & Kenis (2007) distinguish three main forms of network governance, namely shared governance (which is non-brokered), lead organisation (which is brokered and participant governed) and network administrative organisation (which is brokered but externally governed). There is no single “best” form of network governance, instead choosing the governance form that fits best, depends on four characteristics of the network, namely trust, the number of participants, goal consensus and the need for network-level competencies (Provan & Kenis, 2007). If there is a high density of trust, combined with only a limited number of participants, high goal consensus and little need for network-level competencies, then the shared governance form suits the network best. If, however, there is a low density of trust, only a moderate number of participants, relatively low goal consensus and only a moderate need for network-level competencies, then a lead organisation should be chosen for the governance of the network. Finally, if there is a moderate density of trust, relatively many participants, a relatively high goal consensus and a high need for network-level competencies, then a NAO should be appointed. This said it should be kept in mind that as network characteristics can evolve over time, so can the form of network governance, in order to ensure the minimisation of potential problems and the maximisation of benefits.

According to Klok (2012) networks can also be distinguished according to their structure: they can be policy communities or issue networks. While issue networks are characterised by open access, diverging values, resources competition, distrust and existence of ‘different worlds’, policy communities are characterised by limited entrance, shared values, symbiotic resource dependency, consensus (trust) and the creation of a ‘world of their own’ (Klok, 2012). While competitive dependencies are characterised by the competition of different actors about the same scarce resources, symbiotic interdependencies exist “when different actors possess different resources and the exchange of resources enables them to perform the actions that make them achieve their goals” (Fenger & Klok, 2001). Whereas competitive interdependence is assumed to lead to conflict, symbiotic interdependencies are assumed to lead to cooperation (Fenger & Klok, 2001). The resources that actors can have are: money, goods, skilled people, information, rights and legal competences (Klok, 2012).

Hence, networks can be categorised according to whether they are one- or two-mode networks, whether they are socio- or ego-centric, according to their form of network governance and according to their being either policy communities or issue networks.

2.3.3 Factors Conducive to Network Cooperation

In their study, Jones et al (1997) have identified conditions which are conducive to network cooperation and under which network cooperation, therefore, is likely to emerge. Their theory is based on the view of governance forms, such as for example networks, as exchange mechanisms. Moreover, the main underlying assumption is that for a governance form to be more efficient and strategically better than any other form of governance, it must “address problems of adapting, coordinating and safeguarding exchanges more efficiently than other governance forms” (Jones, Hesterly, & Borgatti, 1997). Based on this view, the authors identify

four exchange conditions which determine which form of governance is most efficient. The authors claim that for network governance to be efficient, the most important factors that need to be in place are asset specificity⁹ (because it intensifies coordination), demand uncertainty¹⁰ (because it requires the safe-guarding of exchanges), task complexity¹¹ (because it augments the need for network-level solutions), and frequency (because it helps transferring knowledge, it paves the way for structural embeddedness, and it provides cost-efficiency) (Jones, Hesterly, & Borgatti, 1997). They go on to argue that when these factors are there, then this will lead the network members to structurally embed their transactions. This again will make it possible for firms to use social mechanisms “for coordinating and safeguarding exchanges” (Jones, Hesterly, & Borgatti, 1997). These social mechanisms include the restriction of access to exchanges, the creation of a macroculture, collective sanctions, and reputation (Jones, Hesterly, & Borgatti, 1997). These have an effect on the reduction of coordination costs and help safeguard exchanges.

Feiock also distinguishes between various factors that are or are not conducive to network governance. According to him, asset-specific investments and difficulty in measuring and monitoring outcomes are not conducive to the development and maintenance of network governance (Feiock, 2007). Similarly, he claims that demographic heterogeneity among and within local governments and geographic distance between local governments are negatively related to and therefore not furthering network governance (Feiock, 2007).

Two other factors which should be taken into account are resource interdependency and belief congruence. According to Fenger & Klok (2001), the interdependency of actors can be categorised as competitive, symbiotic or independent (in the absence of any interdependency). They define competitive interdependencies as situations where “the action of one actor interferes with another actor’s ability to take action or achieve his goals” and symbiotic interdependencies as situations where “one actor’s actions contribute to another actor’s actions or goal achievement” (Fenger & Klok, 2001). The latter situation would occur when diverse actors are in possession of specific resources, but not all they would need to perform their actions, and only the exchange of resource between the actors would enable them to successfully do so.

Within this context, the beliefs of actors play an important role, too. According to Fenger & Klok (2001) beliefs can be congruent, indifferent or divergent. While in the case of both congruent and indifferent beliefs network governance is possible, the type of coalition behaviour may differ. In the case of divergent beliefs network governance is at best difficult if not unlikely. Consequently, when making actual practical arrangements for network governance, special attention should be paid to the resources available to and needed by the network members and how they relate to each other. Moreover, the beliefs of the network members should be taken into account. The most promising constellation of these factors would then be symbiotic interdependencies combined with congruent beliefs, which would lead to strong coordination. A combination of symbiotic interdependencies and indifferent beliefs is also feasible, although only coalitions of convenience should be expected. All other combination should be avoided

⁹ Jones et al (1997) Asset-specific exchanges as exchanges that “involve unique equipment, processes, or knowledge developed by participants to complete exchanges”.

¹⁰ *Environmental uncertainty* describes “the inability of an individual or organization to predict future events” (Milliken as cited in Jones et al. 1997). Demand uncertainty then is environmental uncertainty due to uncertainties arising at the demand side of the exchange.

¹¹ Jones et al. (1997) define task complexity as the “number of different specialized inputs needed to complete a product or service”.

because they are characterised by weak coordination, conflict and/or collective action problems (Fenger & Klok, 2001).

At the stage when it is decided that network governance is a desirable option, some practical considerations should be kept in mind as well. One of these considerations refers to some initial requirements that should be in place for a network to be formed. According to (Hay & Richards, 2000), a “number of strategic and contextual factors must be present” for network formation to occur. Firstly, there must be a positive sum game for all participating parties with regard to cooperation, that is, all members have to get benefits out of the cooperation as opposed to unilateral actions. Secondly, the participants must recognise that there is the potential for them to enhance their “strategic capacities” resulting from the pooling of their strategic resources. Thirdly, the network participants must establish the conditions for network cooperation to be not only desirable but also feasible (or recognise that these conditions are already in place). For network governance to be feasible, geographical or communicative proximity, shared norms and values, and/or the willingness to invest resources and give up some degree of sovereignty may be required (Hay & Richards, 2000).

2.3.4 Costs & Benefits of Network Cooperation

The idea behind cooperation in networks is essentially the same as behind almost any form of cooperation or collective action, namely that when several organisations cooperate with each other, they are better able to achieve certain desired outcomes than they would be without cooperation or even in case of competition. It seems that this idea is especially compelling when the need for profit-making is not involved in the equation because then the potential benefits are assumed to be even more prominent (Provan & Milward, 2001). In any case, it seems true that network governance can have both negative and positive consequences.

As already mentioned above, one of the main benefits of network cooperation is the attainment of certain goals that could not have been achieved (or at least to a lesser extent) without cooperation. These benefits are of special importance in the public sector, where “resources are often scarce, clients have multiple problems, service professionals are trained in narrow functional areas, and agencies maintain services that fit narrowly specified funding categories” (Provan & Milward, 2001). Other benefits of network governance include “enhanced learning, more efficient use of resources, increased capacity to plan for and address complex problems, greater competitiveness, and better services for clients and customers” (Provan & Kenis, 2007). According to Feiock, the main benefit of network governance is that it can “generate collective benefit by producing efficiencies and economies of scale in the provision and production of services and by internalizing spillover problems” (Feiock, 2007).

Among the costs of network governance are reduced autonomy, shared resources, and increased dependency (Provan & Milward, 2001). Moreover, considerable transaction costs can arise, including information/coordination, negotiation/division, enforcement/monitoring, and agency costs (Feiock, 2007).

2.3.5 Summary

Given the above, we would therefore expect that the following factors influence network cooperation: asset specificity (+/-), demand uncertainty, task complexity, frequency, difficulty of measuring & monitoring outcomes (-), demographic heterogeneity (-), geographic distance (-), symbiotic resource dependency, congruent beliefs, positive sum game for all members, potential

to enhance strategic capacities, network cooperation must be desirable and feasible (geographical or communicative proximity, shared norms and values, willingness to invest resources, willingness to give up some degree of sovereignty). Moreover, we would expect that network cooperation leads to costs such as reduced autonomy, shared resources, increased dependency and transaction costs. The benefits on the other hand include the generation of collective benefits, enhanced learning, more efficient use of resources, increased capacity to solve complex problems greater competitiveness, and better service for client & customer.

2.4 The Europol Platform for Experts

2.4.1 Background

The Europol Platform for Experts is a “secure web platform for specialists in a variety of law enforcement areas, enabling them to share knowledge, best practices and non-personal data on crime” (Europol, 2012a). The EPE is actually a platform of platforms: from one common start page (see Fig. 4), different sub platforms can be accessed. These sub platforms are restricted to users that have been invited to the specific platform only. Each sub platform can be customised (as regards the layout and the functionalities offered) according to the community’s needs. Generally, the EPE offers the following functionalities: document library, media gallery (for pictures and videos), message forum, blog, user’s directory, calendar, news, wiki, private messaging and chat (Europol, 2012a).

In 2012, the EPE’s performance was measured by three so-called “key performance indicators”, namely the number of expert areas covered by the EPE, the number of active users of the EPE and the number of users on the EPE from at least 10 member states (Europol, 2012b).

2.4.2 The EPE Website

The start page of the EPE can be reached via the URL <https://epe.europol.europa.eu>. Registered users can log in with their professional e-mail address and a password (see Fig. 3).

Figure 3: Start screen EPE website.



Once logged in, the screen shown in Fig. 4 appears. The red boxes have been added to indicate several relevant parts of the main page. Box 1 shows the tools that can be used by administrators to manage the site. It allows administrators to add or delete features and to manage the users of specific communities. It depends on the user rights of a specific user to what extent he can manage a given site. Box 2 shows the user group of a given community. The available membership categories are Academia, Europol, Law Enforcement, Private Industry, and other organisations. One or more of the categories can be chosen. Box 3 shows the available sub-pages of a community. These available pages can be customised according to the needs of each community. Pages can be deleted or only hidden for potential use at a later stage. Box 4 shows the other communities at the same or a higher level where the user is located at a given moment. They can be used to navigate between the different sub-communities of a given community. Box 5 shows all platforms currently available on the EPE (although it may be the case that some platforms are hidden). Those platforms displayed in grey cannot be accessed by the user. When the user is a member of a platform, the platform is displayed in blue and can be accessed. Box 6 shows the name of the user who is logged in and their organisation or nationality. Box 7 displays the chat functionality through which users can chat with those users with whom they share a common platform.

2.4.3 The Platforms

As already mentioned earlier, the EPE is a platform of platforms. Each of the sub-platforms is concerned with a specific law enforcement area. Only experts with the particular professional background that the specific platform is concerned with can be granted access to the platform. The EPE provides platforms dedicated to a variety of law enforcement areas such as cyber crime, firearms, anti-corruption, motorcycle gangs, terrorism, environmental crime, intellectual property crime, and financial crime. A few of these platforms will be shortly presented in this section. It should be noted that some of the networks for which data will be collected at a later

stage, cannot be discussed in detail here because of their sensitive nature. The networks presented here will be discussed in rather general terms so as not to betray any sensitive data.

The **environmental crime** platform is supposed to be used to facilitate the exchange of information between the experts active in environmental crime. The platform is also used in preparation of the conferences and meetings of the networks. Around these dates the frequency of use of the platform can reasonably be expected to increase. Moreover, as the network members use the platform to exchange documents relevant for the conferences, the expected use of the document library/gallery can be expected to be rather higher than the other features.

The **anti-corruption** platform is mainly used in support of the facilitation of working group meetings of the three subject areas that the network is concerned with. One would therefore expect that the features used most often are the document library/media gallery to share documents and possibly also the message forum for discussions.

The platform on **gang experts** (EPGE) is an exchange platform for national experts on motorcycle gang related crime. The EPE was designed to contain a repository of knowledge on motorcycle gangs in the different member states. Moreover, it contains a message forum which is supposed to serve as an exchange forum to ask questions to fellow experts and keep them updated on current developments which are of relevance to the wider European network. The platform is also used to support the preparation of the yearly conference of the network. The expected frequency of use can therefore be expected to increase around these conferences when preparations are made and information on the conference is shared. One would expect that the features used most often are the wiki (which holds the knowledge repository) and the message forum.

The platform on the exchange of **fingerprint and DNA data** (Pruem¹²) was designed as a support tool for the members of the Pruem network to help them with the implementation of the fingerprint and DNA hit/no hit systems as well as to keep each other up to date about the developments made and efforts achieved. At the moment of writing the thesis, the platform was mainly used to post the development stages of the implementation of the system in each network member state. However, a dedicated Pruem helpdesk has just been set up at Europol and became operational after the questionnaires stage was ended. Therefore, one would expect the expected frequency of the platform to be rather low and probably very limited to information seeking purposes.

The **financial crime** platform (FCIC) is the platform with the largest user group. The user group was migrated from an older platform to the platform on the EPE. The idea behind the old online environment was not to facilitate interaction between the platform members but to have a document repository. The network members usually use the EPE in order to find information on the financial crime legislation of other countries which is stored in the EPE. Moreover, there is an agreement that if the network members have information they consider relevant for the EPE, they send it via e-mail to one contact person at Europol who then puts it on the EPE for them. In fact this means that the financial crime network members use the EPE despite its social network

¹² The platform is named after the German city Pruem where the contract on the hit/no hit exchange of fingerprint and DNA data was signed by the participating member states.

features not because of them. This particular use of the EPE also has an impact on the expected frequency of the EPE use. Some financial crime investigators might only come into contact with international questions maybe once a year or less. This would be the only time they have an incentive to use the EPE. However, if they do find the information they need at this single point they do use the EPE, they might still highly appreciate what the EPE can offer them even though the frequency of their EPE would indicate that they hardly ever use the EPE.

Another platform concerns itself with a project on a **universal messaging format**. The network members of the platform are the network members of the multi-country network working on the project. This platform is a typical example of a platform that is closely tied to a specific project. Mainly, the platform is used to distribute all necessary documentation (such as meeting agendas, minutes, relevant legislation, and administrative documentation) to all network members. Even though the communication in the network is mainly by e-mail, these e-mails tend to inform the network members that certain documents have been uploaded to the EPE and where they can be found on the EPE. The activity on the EPE reflects this work method. Almost all documents on the platform have been uploaded by Europol staff who are responsible for the coordination of the project. Moreover, the functionalities used are mostly related to document storage. The social media features of the platforms, such as the message forum or the blog, have been disabled or are hardly used at all. Given this background, the expected frequency of the EPE use of this platform would be matching the actual activities of the network: Before and after the meetings, the use of the EPE would be higher as the network members will access relevant documentation. In the periods in between the meetings, the network activity can be expected to be close to zero as hardly anything changes on the platform.

Because there is a significant focus on the document storage and sharing functionalities of the website and the social media features of the EPE are hardly used, it would be expected that the users' satisfaction depends on how useful, complete and accessible they find the information provided on the EPE. This might go hand in hand with a low overall frequency of EPE use as well as a close to zero social media functionality use of the EPE.

One of the platforms on **payment fraud** makes extensive use of one of the social collaboration features of the EPE, namely the wiki. In this case the wiki is used as a catalogue of certain technical devices used by criminals and seized by the authorities. Pictures as well as technical specifications of these devices are catalogued and stored on the EPE with the possibility to be added, updated or extended by the user group. It should be noted however, that rather than a truly collaborative project, this wiki is mainly a one man project. Still, it receives wide recognition and appreciation from the other users and sometimes other users add their expertise to the catalogue.

The users of the platform also make use of the message forum to request assistance by their colleagues with regard to technical questions. Even though the message forum is not used very often, when it is used it shows an exchange of expertise on a very high technical level which seems to help the experts in their day-to-day business. However, it seems reasonable not to expect that experts come across questions of a highly technical nature like this every day. Therefore, the expected frequency of EPE use is probably less than daily, possibly even less than weekly.

The platform on witness protection is a special case because of the highly sensitive nature of its thematic area. The platform is part of the greater network called **special tactics**, which consists

of several different sub groups. The user group of the platforms consists of members of the national witness protection units. Network members report that the need for (international) cooperation in this law enforcement area is extremely high, especially for smaller countries which rely on the help of other countries because they have no choice but to send their witnesses abroad for protection. However, there seems to be a lot of suspicion with regard to the security of the EPE. Moreover, because the partners have to trust each other, they prefer face-to-face communication or traditional methods of communication such as telephone and e-mail with persons they already know personally. Because of the need for cooperation in this field, the existing network has already a long-standing tradition of cooperation and established methods to achieve cooperation. It should therefore be expected that the EPE, if it is used, it is rather used for document exchange and storing, for example with regard to foreign legislation. Because of the sensitive nature, it is rather unlikely that the social media features of the network will be used very often.

Figure 4: Start Page EPE Website.

The screenshot shows the start page of the EPE website. At the top, there is a navigation bar with a 'Manage' dropdown and 'Toggle Edit Controls' (1). The logo 'EUROPOL PLATFORM FOR EXPERTS' is on the left, and a user profile for '(eu) Loraine Busetto' with a 'Sign Out' link is on the right (6). Below the navigation bar is a yellow horizontal bar (2). On the left, there is a sidebar menu with 'HIDDEN AUDIENCE' and 'Further Info' (3) containing links for 'Home', 'Help and Best Practices wiki', 'Contact', 'Private Messaging', and 'User Authorization'. The main content area has a breadcrumb 'Europol Platform for Experts | Home' (4) and a search bar. The main heading is 'Welcome to the Europol Platform for Experts!'. Below this, there is a paragraph about the EPE as a secure environment for specialists. A yellow warning box states: 'You cannot use the EPE on the Internet for the exchange of personal data, classified information or to share any data related to specific criminal events. You can only exchange this type of information by using the systems available on the Europol Secure Network.' A large red box (5) highlights the 'EPE Platforms' section, which lists various specialized platforms such as 'Administrative Approach to Tackling OC', 'EACT', 'ENFSI Crime Scene Website', 'ENLETS', 'EnvlCrimeNet', 'EPGE - Gang Experts', 'E-SCAN - Europol', 'E-SCAN - Global', 'E-SCAN - Law Enforcement', 'European Law Enforcement Communicators Platform', 'European Platform for Firearms Experts - EPFE', 'Financial Crime Information Centre (FCIC)', 'IFOREX', 'Intellectual Property Crime', 'North Africa Middle East Uprising', 'PaySafe', 'PCCC Platform', 'Prism implementation', 'Special Tactics - ATLAS', 'Special Tactics - CHIS', 'Special Tactics - Covert Surveillance', 'Special Tactics - EHWG', 'Special Tactics - EuNAT', 'Special Tactics - ISLE', 'Special Tactics - Witness Protection', 'UMF2 - Universal Message Format 2', and 'Z_Management'. On the right side, there is a large graphic with the Europol logo and the text 'EPE Europol Platform for Experts'. Below this is a smaller graphic with the text 'EUROPOL PLATFORM FOR EXPERTS' and 'For secure law enforcement knowledge sharing'. At the bottom right, there is a footer with 'Settings' and 'Online Members (1)' (7).

2.5 Conclusion

At this point normally the theoretical model that is based on the theoretical background would be introduced. However, as the theoretical model developed in this study is dependent on several operational considerations, it will be introduced in the next chapter.

3. Methodology

After having provided the theoretical framework of the study, the following chapter provides the study's methodology.

3.1 Research Question, Theoretical Model & Hypotheses

Given the theoretical background outlined above, the following research question and sub-questions have been identified:

3.1.1 Research Question & Sub-Questions

How is the EPE being used and evaluated by the users?

1. To what extent is the EPE being used by the registered users?
2. For which purposes is the EPE being used?
3. Which factors influence whether the EPE is being used?
 - 3.1 Which factors influence whether registered users participate in the EPE?
 - 3.2 Which factors influence whether network cooperation via the EPE occurs?
4. How do registered users evaluate the EPE?

3.1.2 Theoretical Model

For the explanatory part of the study (corresponding to the third aim of the study), a theoretical model has been developed. In this section this model is presented. As mentioned above, it is based on the IT acceptance model by Venkatesh because it is considered to be the most comprehensive model. However, some factors which are specific to social media use and network cooperation have to be added to the model. Likewise, some factors which are not relevant in the case of the EPE need to be removed from the model. One of the main considerations was that for practical reasons (e.g. if a questionnaire is too long and too detailed attrition is likely to increase), the exhaustive list of constructs and items had to be significantly shortened. Generally, constructs and items were excluded from the model when they were rather weak from a methodological point of view (e.g. no negatively formulated statements); too difficult to measure given the limited scope of a Master Thesis; or not relevant for a law enforcement organisation. In total, the following changes have been made:

Whereas all four factors (performance expectancy, effort expectancy, social influence and facilitating conditions) were kept in the model, the same cannot be said for the constructs of these factors.

With regard to **performance expectancy**, extrinsic motivation, job-fit, relative advantage and outcome expectations have been removed from the model as these concepts do not differ significantly from the construct perceived usefulness. Perceived usefulness has the advantage that it can be measured in the sense that the system is useful for the performance of the job and

in the sense that the information provided on the system is useful. Additionally, the construct collective benefits has been added to the factor performance expectancy. This construct has the advantage that it stresses benefits yielded by the system because of its collaborative nature, which is an important factor with regard to the willingness to cooperate in a network.

With regard to the factor **effort expectancy**, the construct perceived ease of use has been removed as it seems to measure the expectations that people have of a system. As we assume that all users have already used the system, expectations about a system do not seem to be applicable. Moreover, the construct ease of use is still included in the model. Accessibility has been added as a construct as this seems to be a relevant factor, especially for the law enforcement area and people's willingness to engage in social media. It covers the tools with which the system can be accessed (e.g. computer, smartphone, tablet) as well as the location (e.g. normal work station).

From the factor **social influence**, the construct image has been removed as this is not applicable in the EPE context. With regard to the construct subjective norm, the professional dimension of the importance of peer influence has been stressed, which is also expected to be of influence with regard to social media use. With regard to the construct social factors, the concept has been extended to include whether users feel comfortable enough to expose themselves to their fellow users on the system.

Perceived behavioural control has been removed as a construct from the **facilitating conditions** factor as it can be better captured under skills (which will be introduced below). The construct facilitating conditions remains and will focus on whether instruction or training was available to the user. The construct compatibility also remains in the model and focuses specifically on the compatibility of the system with the context of the user's normal job. Finally, the construct socio-technological environment has been added in order to measure how common it is to use social media in this specific (law enforcement) environment outside of the professional sphere.

Even though it is excluded from the Venkatesh model, the factor **attitude toward using technology** has been added to the model as it seems relevant in the law enforcement area to know whether people have a good feeling towards a certain system. Moreover the item is formulated in such a way that it can also be used for the evaluative part of the study in the sense that the respondents can formulate their satisfaction with the system in a very general way.

Finally, four factors which seem to be relevant in the broader context of social media and network cooperation have been added to the model.

Firstly, the factor **skills** has been added which includes the constructs web literacy and language skills. Web literacy is designed to measure both a user's social media experience and computer skills. Language skills refer to a user's ability to read (that is, passively understand) and write (that is, actively contribute) in English, which is the language used on the EPE. The latter construct takes into account the international user group of the EPE and the implications for participation this might have.

The second factor that has been added is called **alternative systems**. This factor takes into account that not only does Europol offer more than one system through which information can be exchanged by Europol staff and national law enforcement personnel, but also the differing security levels that are associated with each system. Therefore, the factor alternative systems includes the constructs security and availability of alternative systems.

Thirdly, the factor **exchange conditions** has been added. This factor is relevant with regard to the context within which the network operates. It includes the constructs asset specificity, demand uncertainty and frequency. These are all constructs which help determine the likelihood of successful network cooperation.

Finally, the factor **network feasibility** has been added. This factor measures how feasible network cooperation is, given certain circumstances. The constructs are communicative proximity, shared norms & values, willingness to invest resources, willingness to give up some sovereignty.

It should be mentioned that even though some variables were outlined in the theoretical framework part as relevant, the following variables have not been included in the model: Personality traits have been outlined as relevant for the use of social media. However, as these are very complex to measure, it has been decided not to include them. It is assumed that it would require a separate questionnaire to only measure personality traits if this was to be done in an adequate way. With regard to network cooperation the variables task complexity, difficulty of measuring and monitoring outcomes, symbiotic resource dependency, positive sum game for all network members and potential to enhance strategic capacities have not been included in the model because they are also too complex to measure in an adequate way. Demographic heterogeneity and geographic distance have been excluded from the model because they are defining elements of every network active on the EPE and therefore will assume only one value. Moreover, the negative effects expected to occur from these factors can be assumed to have been cancelled out by the very existence of the EPE. The concept of congruent beliefs is also excluded from the model because Fenger & Klok (2001) claim that this concept is only relevant when the resource dependency is symbiotic. However, resource dependency is not measured; therefore congruent beliefs are excluded as well.

The above results in the following theoretical model:

Table 3: Theoretical Model.

Performance Expectancy	Perceived Usefulness	EPE USE · EPE USE · EPE USE
	Collective Benefits	
Effort Expectancy	Complexity	
	Ease of Use	
	Accessibility	
Social Influence	Subjective Norm	
	Social Factors	
Facilitating Conditions	Facilitating Conditions	
	Compatibility	
	Socio-Technological Environment	
Attitude Towards Using Technology	Attitude Toward Behaviour	
Skills	Web-Literacy	
	Language Skills	
Alternative Systems	Security	
	Availability of Alternative Systems	
Exchange Conditions	Asset Specificity	
	Demand Uncertainty	
	Frequency	
Network Feasibility	Communicative Proximity	
	Shared Norms & Values	
	Willingness to Invest Resources	
	Willingness to Give up Some Sovereignty	

3.1.3 Hypotheses

Based on the theoretical model outlined above, the following hypotheses have been formulated:

H1: If a registered user's **performance expectancy** is relatively high, his EPE use is likely to be relatively high, too. If, however, a registered user's performance expectancy is relatively low, his EPE use is likely to be relatively low, too.

H2: If a registered user's **effort expectancy** is relatively high, his EPE use is likely to be relatively low. If, however, a registered user's effort expectancy is relatively low, his EPE use is likely to be relatively high.

H3: If the **social influence** on a registered user with regard to the EPE is relatively positive, his EPE use is likely to be relatively high. If, however, the social influence on a registered user with regard to the EPE is relatively negative, his EPE use is likely to be relatively low.

H4: If the **facilitating conditions** which a registered user experiences with regard to the EPE are relatively positive, his EPE use is likely to be relatively high. If, however, the facilitating conditions which a registered user experiences with regard to the EPE are relatively negative, his EPE use is likely to be relatively low.

H5: If a registered user's **attitude toward the EPE** is relatively positive, his EPE use is likely to be relatively high. If, however, a registered user's attitude toward the EPE is relatively negative, his EPE use is likely to be relatively low.

H6: If a registered user's **skills** with regard to the EPE are relatively advanced, his EPE use is likely to be relatively high. If, however, a registered user's skills with regard to the EPE are relatively basic, then his EPE use is likely to be relatively low.

H7: If a user's preference to use **alternative systems** rather than the EPE is relatively high, his EPE use is likely to be relatively low. If, however, a user's preference to use alternative systems rather than the EPE is relatively low, his EPE use is likely to be relatively high.

H8: If a network's **exchange conditions** are relatively positive, the network's use of the EPE is likely to be relatively high. If, however, a network's exchange conditions are relatively negative, the network's use of the EPE is likely to be relatively low.

H9: If **network cooperation is relatively feasible**, the network's use of the EPE is likely to be relatively high. If network cooperation is relatively unfeasible, the network's use of the EPE is likely to be relatively low.

3.2 Approach

3.2.1 Research Design

The proposed research is of descriptive (1st and 2nd sub question), explanatory (3rd sub question) as well as evaluative nature (4th sub question).

The research consists of qualitative as well as quantitative research; moreover both desk research and field research have been conducted. The theoretical background for the study has been obtained through qualitative desk research: mainly scientific articles regarding technology acceptance, social media and network cooperation have been consulted. The empirical part of the study is supported by qualitative and quantitative desk research (questionnaires) and qualitative field research (interviews). Moreover, the research as a whole is case-oriented as it focuses on a specific case, namely the EPE.

The data sources for this study are scientific literature on social media, networks and IT user acceptance, interviews, questionnaires, and the EPE website's content.

3.2.2 Case selection

Social Media have become a focal point world-wide. With the uprisings of the Arab Spring at the latest the transformative power of social media has become apparent. Until now the focus has mainly been on well-known and popular social networking sites such as Facebook and Twitter. During the past decade, social media have also captured the attention of the scientific community. While the influence of social media in the social and political domain are being analysed extensively, the research undertaken in the entrepreneurial domain is skewed very much towards the communication by enterprises towards consumers/customers. The use of social media as a cooperation tool within enterprises (sometimes also including external

cooperation partners) – also known as social collaboration – is still a very open field of study. In this perspective, however, social media are being used as instruments to facilitate and support cooperation in professional networks. Especially in a knowledge society, these professional networks are claimed to be of utmost importance for the increase of efficiency and innovation. Network cooperation as opposed to traditional hierarchical or market models has been the new mantra for quite some years already, but paired up with social media, the dynamics of this cooperation can be accelerated to new dimensions. The relevancy of the topic increases even more when the law enforcement area enters the picture. While social media are associated with core values such as transparency, openness, collaboration and innovation, law enforcement is traditionally rather seen as a secretive, conservative and very hierarchical area. It would therefore be extremely interesting to what extent these two – seemingly contradictory – areas can be combined, if that is even possible or desirable.

In this regard, the EPE makes for an especially interesting case study. It offers a great variety of networks to choose from, which differ in terms of types of users, levels of activity, subject area, size and other characteristics. Moreover, both Europol as an international organisation as well as the EU Member States and third countries are involved in the development and the use of the program. Moreover, the EPE is today old enough to allow for some preliminary conclusions and recommendations to be drawn, but still young enough to leave room for improvements and strategic alignment if necessary.

3.3 Method of Data Collection

The relevant data for the study have been collected through different means. Part of the data was obtained through desk research while the other part was obtained via field research. The theoretical basis for the study was obtained via an extensive literature review which mainly focuses on social media (and social collaboration), network analysis and IT user acceptance. Another part of the desk research consists of content analysis of the EPE in general.

The field research consists of questionnaires which were sent to all registered users of the EPE and interviews conducted with a selected group of respondents. This group represents different types of users, platform managers and administrators. For the questionnaires as method of data collection, the individual registered users are the units of analysis as well as units of observation. However, for the interviews¹³ as method of data collection the units of analysis and observation differ. In any case, the units of observation are the interviewees. However, for the questions in the first (EPE use) and second part (network characteristics) of the interview, the units of analysis are the networks because here the interviewees are asked to make statements about the network and for example the participation in the network as a whole. These statements are taken as proxies for the actual networks which cannot all be analysed directly in detail. Whereas for the third part of the interview (EPE evaluation), the units of analysis are again the individual interviewees because here they are asked for their personal evaluation of the EPE.

The fact that the questionnaire has been sent to all registered users, means that the whole population of the study, namely all individuals who are registered users of the EPE, have been

¹³ For the interview outline, see appendix C.

included at this stage of the research. This group of registered users include those who do use the EPE (often) and those who do not. It has been decided to include the whole population instead of only a sample because of the relatively small and thus still manageable size of the population (in May 2012 the EPE had approximately 1500 registered users) and because it could be expected that the response rate might be relatively low. This expectation seems reasonable due to the time at which the questionnaire has been sent out (at the beginning of the organisation's summer vacation period in July and August) and the resulting potential unavailability of respondents. Another reason for including the whole population is that by including as many respondents in the study, the probability is higher that also registered users who do not use the EPE (often) respond to the questionnaire. With regard to the interviews, however, it has been decided to only focus on a sample. The selected sample size (n=9) is relatively small compared to the whole population. The selected sampling method is purposive sampling. This technique has been selected because various practical constraints make the otherwise preferable random sampling virtually impossible. One of the main constraints is the geographical distance to potential respondents who are spread all over Europe and in some cases even outside Europe. The main criteria for the purposive sampling were to have variation in terms of user types (managing versus normal user roles), organisation affiliation (Europol staff versus external users) as well as gender and age. Thus, more specifically, heterogenic sampling has been applied.

The quantitative data gathered through the questionnaire was analysed through statistical analysis. The qualitative data gathered through the questionnaires and interviews was used to complement the quantitative insights gathered.

3.4 Method of Data Analysis

3.4.1 Methods for Qualitative Data Analysis

3.4.1.1 Questionnaires

For the qualitative analysis of the open-ended questions in the questionnaire, the statements made by the respondents are categorised into different categories. At first, the statements are grouped together in groups of similar statements. These groups are then condensed into thematic categories. The aim of the categorisation is to map the topics which were addressed by the users. The statements then reflect which opinions were voiced by the respondents within the categories.

It should be noted that the number of statements made does not reflect the number of people who made the statements. Sometimes respondents gave the same answer for the benefits and strongest features, or for the disadvantages and the weakest features. Or they repeated what they already mentioned above in the additional remarks section. All these statements are counted even when they are more or less the same statements made by the same respondent, so as not to miss slightly different formulations and expressions of opinion. Only those which were formulated in exactly the same way were left out. Furthermore it should also be noted that some statements are not reported here. This is for example the case when the statement has nothing to do with the objective of the survey or is directed toward a different unit or person. Additionally, incomprehensible statements are not considered. Some words are been replaced by more general terms (as indicated in brackets) so as not to disclose sensitive details, such as

names or specific platforms. When respondents make hypothetical statements (e.g. what they expected the benefits of the platform to be once they started using it), these are also not considered. Moreover, statements such as “don’t know”, “no opinion”, “n/a” or “no idea” are treated as blanks and consequently not considered in the analysis. Finally, sometimes statements are split. For example the statement “The EPE is an easy way to exchange information and experience” would be processed as “The EPE is an easy way to exchange information” and “The EPE is an easy way to exchange experience” so as to consider all information provided in the statement.

It should be noted that a considerable amount of discretion by the researcher is inevitable in this exercise, especially due to language barriers. Sometimes the author has to guess or make small assumptions. For example, many respondents mentioned the “changing information” as one of the benefit provided by the EPE. Mostly, due to the context it was assumed that the respondents were referring to information exchange, instead of actually changing information provided on the EPE.

3.4.1.2 Interviews

The data collected in the interviews are presented as a summary in a tabular overview as well as available in a detailed written account. The data are presented per interview question. Particular attention is paid to the fact that some sensitive data given by the respondents (especially with regard to their work in law enforcement) has to be presented in a generalised, non-sensitive way.

3.4.1.3 SWOT Analysis

For the evaluation part of the research, the qualitative data collected in the interviews and questionnaires is presented in the form of a SWOT analysis. A SWOT analysis is a form of presentation that portrays the strengths, weakness, opportunities and threats of a certain project. The benefits of a SWOT analysis are that it presents the most important positive and negative aspects of a project in a very concise and understandable way. Moreover, it is an instrument often found in business settings. As this research paper also addresses a business need and should provide the basis for future actions, it seems appropriate to summarise the results of the evaluation in a SWOT matrix.

3.4.2 Methods for Quantitative Data Analysis

3.4.2.1 Regression Analysis

Regression analysis is suitable for independent variables that use Likert scales. Therefore, regression analysis is used to test the hypotheses presented above, that is, whether the following variables are significantly related to the overall use of the EPE: performance expectancy, effort expectancy, social influence, facilitating conditions, attitude towards using technology, skills, and alternative systems.

When one wants to estimate the impact of more than one independent variable on one dependent variable, a multiple regression analysis is used (Qualitrics, 2011). Multiple regression analyses can only be used for linear relationships between a dependent variable on a continuous scale and independent variables on a ratio, interval or ordinal scale (Palgrave, n.d.).

Moreover, in order to use multiple regression analysis, it is advisable to have at least five times as many respondents as independent variables. All these criteria are satisfied for this study¹⁴ (Palgrave, n.d.).

3.5 Constructs & Operationalisation

3.5.1 Measuring the Independent Variables

The independent variables will be measured through questionnaires and interviews. Table 4 shows an overview of the variables with their constructs and the corresponding items that will be covered by questionnaires:

Table 4: Overview over the independent variables with their constructs and items (questionnaire).

Variable	Constructs	Items
Performance Expectancy	Perceived Usefulness	Using the system makes it easier to do my job.
		The information provided on the EPE is useful.
	Collective Benefits	Participation in the EPE will yield benefits I could not have achieved on my own.
Effort expectancy	Complexity	Using the system takes too much time from my normal duties. (-)
		It takes too long to learn how to use the system to make it worth the effort. (-)
	Ease of Use	I find the system easy to use.
	Accessibility	I would use the system more often if I could access it from my smartphone/tablet.
		I can access the system easily.
Social Influence	Subjective Norm	People who are important to me professionally think that I should use the system.
	Social Factors	The proportion of colleagues who use the system is high.
		I feel comfortable contributing to the content on the EPE.
Facilitating Conditions	Facilitating Conditions	Specialised instruction concerning the system was available to me.
		I know where to get help if I have a problem using the system.
	Compatibility	The IT infrastructure at my work place is compatible with the system.
	Socio-Technological Environment	I personally know many people who use social media in their leisure time.

¹⁴ There are seven independent variables and 333 respondents, thus a ratio of about 1:47, which is rather high.

Attitude Toward Using Technology	Attitude toward behaviour	Using the system is pleasant.
Skills	Web-Literary	I regularly use social media (e.g. Facebook, Twitter, etc.)
		My computer skills are adequate to use the EPE.
	Language Skills	I feel comfortable expressing myself in English on the EPE.
		I can understand the English language used on the EPE.
Alternative Systems	Security	I trust that the EPE is a secure enough system for the exchange of non-operational data.
	Availability of Alternative systems	The EPE is the easiest way to exchange non-operational data with a group of experts.

The items in the questionnaires are statements to which the respondents are asked to indicate the agreement on a 5 point Likert scale (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree) plus the option “not applicable” (n/a).

Table 5 shows an overview of the factors, constructs and their corresponding items that will be covered by interviews:

Table 5: Overview over the independent variables with their constructs and items (interviews).

Variable	Constructs	Items
Exchange conditions	Asset Specificity	To what extent do you and your network partners need unique/specialised equipment, processes, or knowledge to provide your service? To what extent do the network partners provide these?
	Demand Uncertainty	Is there a steady demand for the service you and your network partners provide? / Can you and your network partners plan the provision of your services according to your expectations of the demand for these services?
	Frequency	How frequent is the interaction between the network partners?
Network Feasibility	Communicative Proximity	How easy is the communication between the network partners? Are there any major obstacles to the communication between network partners?
	Shared Norms & Values	How often do you encounter conflict with your network partners due to differing norms & values? / Do you think that by and large your network partners apply the same norms & values to their work as you do?

	Willingness to Invest Resources	To what extent are you and your network partners willing to invest resources (such as time & money) into the network cooperation?
	Willingness to Give up Some Sovereignty	To what extent are the network partners willing to give up some authority/responsibility to their network partners?
		To what extent are you and your network partners willing to share credit with your network partners?

3.5.2 Measuring the Dependent Variable: EPE Use

In their study on the use of social networking site and personality traits, Zhong et al. (2011) measure SNS use as the amount of hours “participants spent on social network sites on a typical day”. Besides the inclusion of a self-report measure on the amount of time, they also included two Likert-scale questions on the “idling time online and the impact of online media use on traditional media use” (Zhong, Hardin, & Sun, 2011). These measures are useful for measuring the frequency of EPE use.

In their study of Facebook use and social capital, Ellison et al (2007) develop a measure of Facebook Usage and within this measure, the *Facebook Intensity* measure. This measure consists of the amount of Facebook friends a user has, the average time spent on Facebook in the past week, and several measures of the user’s emotional connection to Facebook as well as its integration into the user’s everyday activities (Ellison, Steinfield, & Lampe, 2007). While the Facebook-Friends measure is not applicable to the EPE the other measures are.

Smock et al. (2011) recognize the usefulness of the Facebook Intensity scale developed by Ellison et al., but criticise that the approach “does not enable researchers to distinguish among different kinds of uses”. As a solution, they decided to measure the frequency of use per feature¹⁵. With a 5 point Likert-type scale (strongly agree/strongly disagree) they measured the responses to statements such as “I update my status on Facebook often” (Smock, Ellison, Lampe, & Wohn, 2011). While the specific features of Facebook naturally differ from those offered on the EPE, it might still be useful to include feature-specific frequency measures as these might shed more insights into the type of use that the users makes of the EPE. Using the private messaging function often might signify a different type of use than frequent use of the message forum might. It also sheds light onto which features are the most popular or useful features the EPE offers.

In their study on young people’s internet use, Eynon & Malmberg (2011) develop a typology “of the different ways that young people use the internet across a range of online activities”. Thus, the focus is here not only on whether and how often people use the internet (frequency) but instead on *how* people use the internet (Eynon & Malmberg, 2011). For this purpose, the authors measure five types of internet use, namely communicating, information seeking, entertainment, participating and creativity (Eynon & Malmberg, 2011). For this study, entertainment & creativity are left out from the model as they are not applicable for the EPE as a

¹⁵ A feature is defined as “a technical tool on the site that enables activity on the part of the user” (Smock, Ellison, Lampe, & Wohn, 2011).

professional social collaboration tool. Eynon & Malmberg (2011) measure communication through the items chatting online, sending and receiving emails and posting comments or messages to a forum (amongst others). For the EPE therefore communication will be measured by measuring how often a user posts or answers a question in the message forum, how often he uses the chat and how often he uses the private messaging function. The items through which Eynon & Malmberg measure information seeking are not applicable to the EPE. Consequently, in this study, information seeking is measured by how often a user browses the message forum, how often he browses the blog, how often he browses the wiki and how often he browses the media gallery. Eynon & Malmberg measure participation, amongst others, through the items writing your own blog, adding or changing content in a wiki, and putting podcasts, music or videos on the internet (Eynon & Malmberg, 2011)¹⁶.

Table 6 presents an overview of how the dependent variable (EPE use) will be measured:

Table 6: Measurement of the dependent variable.

Variable	Constructs	Items
Frequency of Use	Overall Frequency	How often do you use the EPE?
Type of Use	Information Seeking	How often do you browse the message forum on the EPE?
		How often do you browse the blog on the EPE?
		How often do you browse the wiki on the EPE?
		How often do you browse the media gallery / library on the EPE?
	Communication	How often do you post or answer a question in the message forum on the EPE?
		How often do you use the chat on the EPE?
		How often to you use the private messaging function on the EPE?
	Participation	How often do you write a blog entry on the EPE?
		How often do you upload a file to the media gallery / library on the EPE?
		How often do you write something in the wiki on the EPE?

The items in the questionnaires are questions for which the respondents are asked to indicate the frequency that is most applicable to their behaviour on a 6 point Likert scale. (0 = never, 1 = less than once a month, 2 = once a month, 3 = once a week, 4 = once a day, 5 = several times a day).

3.5.3 New Variables

In order to be able use some of the variables shown above in a statistical analysis, several new variables have to be created in SPSS. These new variable are additive scales of the items they consist of. The new variables are presented in the following.

¹⁶ It should be noted that Eynon & Malmberg also use the item “reading a blog” to measure participation. In this study, however, reading a blog will be considered as information seeking behaviour (Eynon & Malmberg, 2011).

3.5.3.1 Type of Use

The first group of these computer variables relate to the type of use. The users have indicated in the questionnaire how often they perform certain activities on the EPE. These activities relate to either information seeking behaviour, communication behaviour and participation behaviour. Accordingly, Table 7 shows of which separate variables the variables information seeking, communication and participation consists.

Table 7: Variables measuring the type of use.

Variable	Consists of:
Information Seeking	Freq_Forum_Browse Freq_Blog_Browse Freq_Wiki_Browse Freq_Gallery_Browse
Communication	Freq_Forum_Post Freq_Chat Freq_Priv
Participation	Freq_Blog_Post Freq_Gallery_Post Freq_Wiki_Post

3.5.3.2 User Characteristics

The second group of variables measures the independent variables relating to user characteristics (as opposed to network characteristics) as formulated in the hypotheses. Table 8 shows the composition of the variables performance expectancy, effort expectancy, social influence, facilitating conditions, attitude towards using technology, skills and alternative systems.

Table 8: Variables measuring user characteristics.

Variable	Consists of:
Performance Expectancy	Use_Job Use_Info Use_Benefits
Effort Expectancy	Use_Time_Rev ¹⁷ Use_Learn_Rev Use_Easy Use_Access
Social Influence	Use_Important Use_Colleagues Use_Contribution
Facilitating Conditions	Use_Help Use_IT Use_Instruction Use_Compatibility Use_SM_They
Attitude Toward Using Technology	Use_Pleasant

¹⁷ The variables Use_Time and Use_Learn were reverse coded into the variable Use_Time_Rev and Use_Lern_Rev.

Skills	Use_SM_I Use_Skills_IT Use_English_Write Use_English_Read
Alternative Systems	Use_Security Use_Exchange

3.5.3.3 Cronbach's Alpha

In order to check whether the items of which the variable consist correlate to each other well enough, their Cronbach's Alpha's will be calculated. An alpha bigger than 0.75 indicates that the questions of which the variables consist correlate to each other very well. Table 9 shows an overview of the variables, the number of items included in the variable and the Cronbach's Alpha's of the questions of which the variables consist:

Table 9: Computer variables: Number of items and Cronbach's Alpha

Variable	# items	Cronbach's Alpha
Performance_Expectancy	3	0.824
Effort_Expectancy	4	0.736
Social_Influence	3	0.638
Facilitating_Conditions	5	0.661
Attitude	1	-
Skills	4	0.493
Alternative_Systems	2	0.494
Dep_Frequency	1	-
Dep_Information	4	0.904
Dep_Communication	3	0.804
Dep_Participation	3	0.823

As Table 9 shows, the alpha's for effort expectancy, social influence and facilitating conditions are lower than 0.75. This is probably due to the fact that the variables consist of relatively few items. Even though the alpha is smaller than 0.75, all alpha's are higher than 0.6 and therefore it can be assumed that the questions correlate reasonably well. Table 9 also shows that the variables skills and alternative systems not only score below 0.75, but even only around 0.5. In the case of skills this is probably due to the fact that the one variable refers to two different types of skills, namely IT skills on the one hand and English language skills on the other hand. These do not necessarily go hand in hand with each other. In the case of alternative systems the problem is probably that the variable consists only of two items. However, even though the scores are rather low, they are still around 0.5. Therefore, the variables will be accepted for the analysis. Nevertheless, the fact that the alpha's are not as high as they should be, should be kept in mind as a limitation of the analysis.

3.5.4 EPE Evaluation

For the second part of the research, the formerly dependent variable (EPE use) now becomes the independent variable. The dependent variables are the (perceived) costs and benefits of the EPE use. The perceived costs and benefits are measured by the following open-ended questions in the questionnaire and during the interviews:

1. What do you consider the main benefits that the EPE has brought to your network?
2. What do you consider the main disadvantages that the EPE has brought to your network?

Moreover, it is another aim of the study to provide an evaluation of the EPE. For this purpose, the following open-ended questions are included in the questionnaire and the interviews:

3. What do you consider the strongest feature(s) of the EPE?
4. What do you consider the weakest feature(s) of the EPE?
5. If you could, how would you change the EPE?

For a summary overview of how each of the research questions will be answered, consult Appendix D.

4. Results

Questionnaires

On June 28th 2012 a questionnaire was sent out by e-mail to all registered users of the EPE platform, based on a user list that was compiled on May 14th 2012 (see appendix A for complete questionnaire). The questionnaire was accompanied by an introductory e-mail sent out in the name of a Europol staff member who is likely to be known by name to the registered users because of her support activities on the EPE (see appendix B for the introductory email). After a month, on July 24th 2012 a reminder was sent out to all users, except those who had already replied or whose e-mail address turned out to be invalid. All completed questionnaires that were received before September 1st 2012 were considered in the analysis.

In total, there were 1519 registered users on May 14th 2012. 41 of these users turned out to have invalid email addresses. Therefore, 1478 registered users have received the questionnaires. Of these 1478 registered users, 18 indicated that they would not complete the questionnaires. Reasons for this included that the user already participated in the interviews, had an administrator role or that the user had never actually used the EPE. By September 1st 2012, 333 completed questionnaires were received, which amounts to a completion rate of 22.5%.

In the questionnaire, the respondents were asked to give their personal information (including, gender, age group, country/organization, platform membership and user type¹⁸), information on EPE use and their evaluation of the EPE. At the end the users were given the possibility to add any additional remarks they might have.

Interviews¹⁹

From June 2012 until September 2012, 9 interviews have been conducted. The interviews were all conducted face-to-face in the Europol headquarters in The Hague. The interviews usually lasted between 20-40 minutes and were structured according to a pre-defined interview outline (see appendix C for the complete outline). During the interview, the interviewer took notes on a laptop which afterwards were converted into a text. Among the interviewees were members of six different platforms, including law enforcement areas such as witness protection, motorcycle gangs, E-scan, financial crime, payment card fraud and environmental crime. Normal users as well as users with managerial roles were interviewed. The interviewees were asked for personal information (gender, age, country/organisation, user role, and platform membership^{20,21}), the EPE use of the network as a whole, network characteristics and their personal evaluation of the EPE.

¹⁸ Note that “EPE User since” was also included in the questionnaire. However, because of the vague formulation of the question and the vague answers it generated, it was decided to leave it out for the analysis. It will not be considered in the remainder of the thesis.

¹⁹ For a summary overview of the interview responses, please see appendix G.

²⁰ Note that “EPE User since” was also included in the interviews. However, because of the vague formulation of the question and the vague answers it generated, it was decided to leave it out for the analysis. It will not be considered in the remainder of the thesis.

²¹ Please note that the names of the interviewees were not recorded because of the sensitiveness of law enforcement area they are active in.

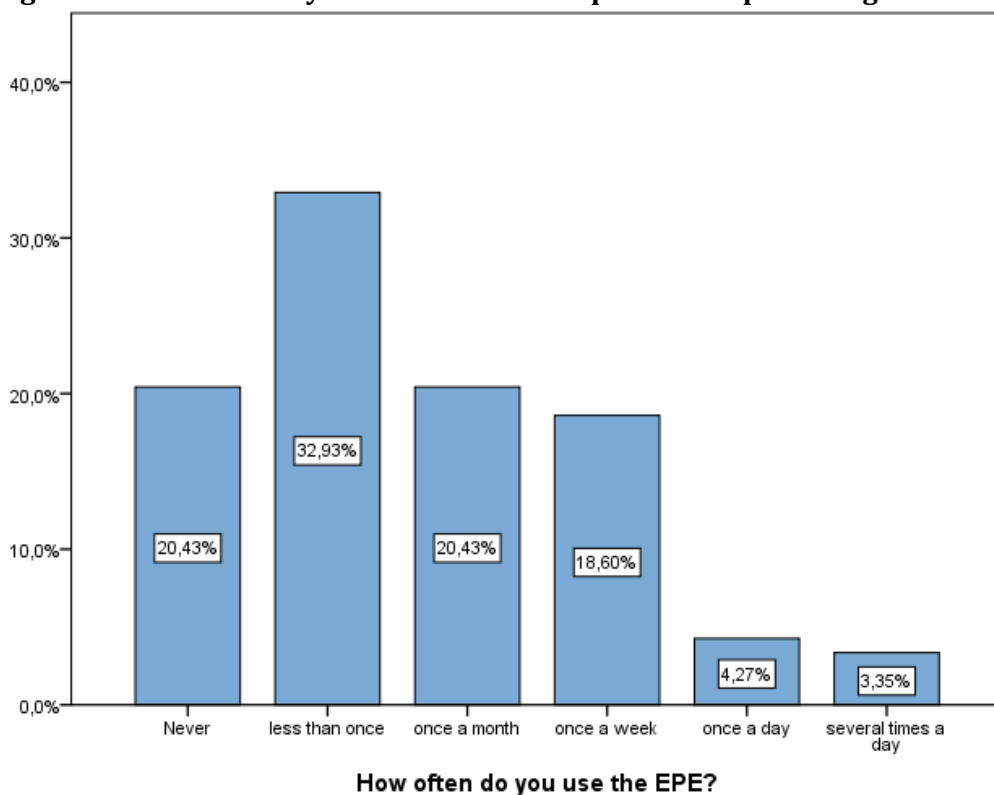
4.1 EPE use

4.1.1 Questionnaires

The overall frequency of use was measured by the question “How often do you use the EPE? The answers were measured on a Likert scale, ranging from “never”, “less than once”, “once a month”, “once a week”, “once a day” to “several times a day”.

The overall frequency of use as indicated by the registered users in the questionnaire is portrayed in Fig. 5. The figure shows that 20% of the users indicated that they never used the EPE, while 33% of the users indicated that they used the EPE less than once a month, 20% of the users indicated that they used it once a month, 19% once a week, 4% once a day and only 3% several times a day.

Figure 5: How often do you use the EPE? Frequencies in percentages.



The mean of the overall EPE use is 1.63 on a scale of 0 to 5. This means that on average, the EPE is used approximately a little less than once a month.

4.1.2 Interviews

With regard to the question **how active the participation in the EPE** is, six respondents indicated that the participation was low or close to zero. One of these respondents indicated that he thought this was normal in such a young environment and that once the users got more comfortable, the participation would increase. Another respondent indicated that the participation on her platform went to zero because Europol did not have enough resources anymore to maintain the platform. Two respondents indicated that they did not know the extent

of the participation²² and one respondent indicated that the participation was quite good. Moreover the respondent outlined that the users also actively contributed to the content of the website.

In response to the question whether they can distinguish **particular patterns** regarding the participation on the EPE, five respondents indicated that it was usually a small group of the same users who always participate while the other users do not. Two respondents indicated that they did not know. One respondent specified that all users send their contributions to an assigned Europol staff member who then uploads the information on the EPE. Another respondent indicated that all users contributed on the platform equally.

4.2 Purposes of EPE use

4.2.1 Questionnaires^{23,24}

4.2.1.1 Information Seeking

The extent to which the registered users use the EPE for information seeking purposes was measured by four questions, namely ‘How often do you browse the message forum on the EPE?’; ‘How often do you browse the blog on the EPE?’; ‘How often do you browse the wiki on the EPE?’; and ‘How often do you browse the media gallery / library on the EPE?’, each employing the same Likert scale as indicated above.

The users’ frequency of browsing the message forum is shown in Fig. 7. 44% of the users indicated that they never used the EPE, 26% that they used it less than once a month, 16% once a month, 11% once a week, only 2% once a day and less than 1% several times a day.

The users’ frequency of browsing the blog on the EPE is presented in Fig 8. 61% of the users indicated that they never used the EPE, 20% less than once a month, 11% once a month, 6% once a week, 2% once a day and no one indicated that they browsed the blog several times a day.

Fig. 9 shows how often the registered users browse the wiki on the EPE. 61% indicated that they never used the EPE, while 18% indicated they did so less than once a month, 10% once a month, 8% once a week, 2% once a day and less than 1% browse the wiki several times a day.

Fig. 10 shows the users’ frequency of browsing the media gallery / document library on the EPE. 40% of the users said that they never browsed the media gallery /document library, 28% less than once a month, 18% once a month, 11% once a week, 2% once a day and no one does so several times a day.

Table 10 presents the mean scores for the information seeking items.

Table 10: Mean scores for information seeking items

Item	Mean	Scale
How often do you browse the message forum on the EPE?	1.02	0-5
How often do you browse the blog on the EPE?	0.67	0-5

²² Note that two respondents did not know the answers to this and other questions due to a division of tasks within their network. As managers they are responsible for the user management, but not involved with the actual running of the platform.

²³ See appendix E for the graphical displays of the findings.

²⁴ It should be noted that all „not applicable“ are treated as missing values in the SPSS analysis.

How often do you browse the wiki on the EPE?	0.72	0-5
How often do you browse the media gallery / library on the EPE?	1.06	0-5

4.2.1.2 Communication

The extent to which the registered users use the EPE for communication purposes was measured by three questions, namely 'How often do you post or answer a question in the message forum on the EPE?'; 'How often do you use the chat on the EPE?'; and 'How often do you use the private messaging function on the EPE?'. For each question the same Likert scale was used as indicated above.

The findings for posting or answering a question in the message forum are presented in Fig. 11. 67% of the users indicated that they never posted or answered a question in the message forum on the EPE. 19% do so less than once a month, 9% once a month, 4% once a week, less than 1% once a day, and no one indicated that they do so several times a day.

Fig. 12 shows the users' frequency of using the chat on the EPE. 80% of the users said they never used the chat, 14% do so less than once a month, 4% once a month, 1.5% once a week and less than 1% once a day. No one indicated that they did so several times a day.

Fig. 13 shows that 77% of the users never use the private messaging function on the EPE, while 16% do so less than once a month, 6% once a month, 2% once a week and 1% once a day. No one indicated that they used the private messaging function several times a day.

Table 11 presents the mean scores for the communication items.

Table 11: Mean scores for communication items

Item	Mean	Scale
How often do you post or answer a question in the message forum on the EPE?	0.52	0-5
How often do you use the chat on the EPE?	0.28	0-5
How often do you use the private messaging function on the EPE?	0.36	0-5

4.2.1.3 Participation

The extent to which the EPE is used for participation purposes was measured by three questions, namely 'How often do you write a blog entry on the EPE?'; 'How often do you upload a file to the media gallery / library on the EPE?' and 'How often do you write something in the wiki on the EPE?'.

Fig. 14 shows how often users write a blog entry on the EPE. 83% of the users indicated that they never use the blog, 12.5% less than once a month, 3% once a month, 2% once a week and no one indicated that they wrote a blog entry several times a day.

The frequency of registered users uploading files to the media gallery / library is shown in Fig. 15 74% of the users indicated that they never uploaded files, 15% less than once a month, 10% once a month, 2% once a week and again no one indicated that they uploaded files several times a day.

Fig. 16 shows that 85% of the users indicated that they never wrote anything in the wiki, 9% indicated that they wrote something in the wiki less than once a month, 5% once a month, 1% once a week, less than 1% once a day and no one indicated that they wrote something in the wiki several times a day.

Table 12 presents the mean scores for the participation items.

Table 12: Mean scores for participation items

Item	Mean	Scale
How often do you write a blog on the EPE?	0.23	0-5
How often do you upload a file to the media gallery / library on the EPE?	0.40	0-5
How often do you write something in the wiki on the EPE?	0.23	0-5

4.2.1.4 Comparison

Table 13 shows the means of the different purposes of EPE use. The means indicate that when the EPE is used, it is mainly used for information seeking purposes, followed by communication and participation behaviour. Nevertheless, the means indicate that for all purposes the EPE is on average used between never and less than once a month.

Table 13: Purposes of EPE use - Means

Purpose	Mean	Scale
Information Seeking	0.87	0-5
Communication	0.39	0-5
Participation	0.29	0-5

4.2.2 Interviews

With regard to the **features that are used most often**, the message forum was indicated by four respondents, the document library and the blog by three respondents, the wiki by two respondents, and the media gallery (pictures), private messaging and polls each by one respondent. In response to the question **why the EPE registered user use the EPE**, finding information was indicated by six respondents, getting questions answered by experts in the field was indicated by three respondents, finding (information on) national counterparts was indicated by two respondents and the wish to have a ready-made online community at their disposal was indicated by one respondent.

4.3 Factors influencing EPE use

4.3.1 Questionnaires

4.3.1.1 Overall Frequency of Use

In order to test H1 – H7, that is, whether performance expectancy, effort expectancy, social influence, facilitating conditions, attitude towards using technology, skills or alternative systems can explain the overall use of the EPE by the registered users, a two-sided multiple regression analysis has been performed. Table 14 presents the summary of the results of the analysis.

Table 14: Model summary linear regression analysis of overall EPE use

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.656 ^a	.430	.405	.958

The R value measures the correlation “between the observed value and the predicted value of the criterion variable” (Palgrave, n.d.). In this case the R value is .656 which is relatively high. The adjusted R-Square value, however, is the most useful variable for determining the usefulness of the model (Palgrave, n.d.). In this case it shows us that the model accounts for 40.5% of the variance in the dependent variable, which is an acceptable value that indicates that the model is rather useful.

Table 15 gives more information on each predictor variable included in the model. The Beta values are measures “of how strongly each predictor variable influences the criterion variable” (Palgrave, n.d.). The higher the Beta value, the stronger the influence. A large absolute t value and a small Sig. (p) value indicate “that a predictor variable is having a large impact on the criterion variable” (Palgrave, n.d.).

Table 15: Coefficients linear regression analysis of overall EPE use.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-2.576	.584		-4.412	.000
	Performance_Expectancy	.105	.046	.187	2.287	.023
	Effort_Expectancy	.107	.033	.260	3.208	.002
	Social_Influence	.076	.045	.126	1.682	.094
	Facilitating_Conditions	.099	.032	.274	3.122	.002
	Attitude	-.181	.127	-.114	-1.428	.155
	Skills	-.048	.036	-.089	-1.314	.191
	Alternative_Systems	.106	.066	.118	1.605	.111

a. Dependent Variable: How often do you use the EPE?

The green colour-coding shows those variables which are significant at the $p < 0.05$ level. The yellow colour-coding shows those variables with a positive t- but insignificant Sig. values. The orange colour-coding indicates those variables with negative t values.

In this case, the Beta values show that facilitating conditions have the strongest impact on the model (.274), followed by effort expectancy (.260), performance expectancy (.187), alternative systems, social influence (.126) and alternative systems (.118). The t and Sig. values show that facilitating conditions, effort expectancy and performance expectancy all have a significant influence on the dependent variable at the $p < 0.05$ level.

As mentioned above, a two-sided test has been performed. However, as we are looking for a relationship with a specific direction, it is also possible to perform a one-sided test for those variables with a positive t-value. A one-sided test for social influence yields a Sig. value of 0.047 which is also significant at the $p < 0.05$ level.

However, it should be noted that two of the predictor variables yield negative Beta and t values, namely attitude and skills. Even though no significant negative relationship between attitude and skills on the one hand and overall EPE use on the other hand has been found, it is still relevant to have a look at the potential underlying reasons for the negative Beta and t values.

One of these negative correlations can be explained in a logical way: It could be reasonable to assume that someone who has relatively advanced computer and English language skills is less likely to use the EPE because the system might seem too basic and the English spoken too bad (because of the many non-native speakers). Advanced computer users might get frustrated by the slowness of the website or the sometimes too cumbersome actions required. Advanced or native English speakers might find it difficult to understand the language spoken on the EPE or simply mistake the inadequate language for inadequate knowledge.

However, it does not seem logical that finding the system pleasant to use (Attitude toward using technology) would make it less likely that a user uses the EPE. Therefore it would make sense to have a closer look at the respondents to whom the inverse relationship between positive attitude and negative use applies. Table 16 presents an overview of the overall EPE use by attitude.

Table 16: Overall EPE use by attitude towards using technology.

		Using the system is pleasant.					Total
		strongly disagree	disagree	neutral	agree	strongly agree	
How often do you use the EPE?	Never	3	2	21	3	2	31
	less than once	4	10	61	23	2	100
	once a month	2	3	30	31	1	67
	once a week	0	6	23	28	2	59
	once a day	0	1	4	8	1	14
	several times a day	0	2	4	2	3	11
Total		9	24	143	95	11	282

Highlighted in orange is the cluster of those respondents that can be said to be responsible for the negative relationship between attitude and overall EPE use. In the following, the questionnaires of those respondents in the cluster will be re-examined for clues as to why they do not often use the system even though they indicate that they find it pleasant to use. Special

attention is paid to platform membership and comments made in the open questions that seem relevant to their infrequent use of the EPE²⁵.

Of the 54 respondents in the cluster, 21 have not indicated their platform membership. For them it can therefore not be considered whether their infrequent use of the platform despite their positive attitude can be explained with the expected frequency of the use of a specific platform. However, eight of these respondents with unknown platform memberships made comments that contain clues as to the reasons of the infrequent platform use. One respondent for example suggested that the EPE should allow for more languages to be used on the platform. Another respondent expressed the wish that the EPE's message forum looked more like a normal forum. One respondent suggested that more resources should be used to have more up-to-date content on the platform. Three respondents indicate that they had had problems accessing the platform; on the one hand because of the difficult password, and on the other hand because of the national organisation's IT infrastructure that does not allow access to the EPE. Lack of time was also mentioned twice as a reason for infrequent use. It was also mentioned that the EPE is only one of many content management systems that each require time and effort on the part of the user.

Four respondents in the cluster indicated that they are members of the gang experts' platform. All of them gave relevant comments. Two respondents indicated that they (and others) were just beginning to use the platform and needed more time to get used to it. Another respondent indicated lack of time as the main reason for not accessing the EPE. The fourth respondent said that he changed positions within the organisation and therefore was not the person responsible for gang related crime anymore.

Four of the respondents of the cluster are members of the financial crime network. One of them complained of a lack of updates on the platform and the second one indicated that the EPE is only useful for a very small part of his or her job and that e-mail is often the preferred way of communication.

Of the four respondents who are members on the environmental crime network, one complained of his or her organisation's IT infrastructure that put a barrier on the use of the EPE. Two other users complained of the lack of participation by other users which left the EPE with no additional benefits for the users. The fact that the EPE is yet another content management system and the difficult access due to the complicated password were also mentioned.

The difficult access as well as the lack of participation was also mentioned by one of the three respondents who are members of the universal messaging format platform. Another of these respondents also indicated the wish to receive e-mail notification for updates on the platform.

Of the eleven respondents who are members of the special tactics platform, one suggested that there should be one person with the dedicated task to upload information on behalf of the users because many users are reluctant to do so themselves. Another respondent explained that his or her organisation's IT infrastructure did not allow for the use of internet on professional computers. Another user suggested that a more pleasant online environment should be created. The lack of participation was also mentioned by one respondent, as well as the fact that the EPE is difficult to use without any specific training. It was also mentioned that there has not been a lot of need to use the EPE yet and that many users still prefer e-mail as a means of communication. One respondent indicated that there was a general distrust in the security of

²⁵ See appendix F for a summary overview of the platform memberships and comments made by those respondents in the cluster.

the system. Moreover it was mentioned that the EPE is only relevant for a certain job in very specific cases, therefore it might not be necessary to use it that often.

The one respondent who is a member of the payment card fraud network indicated that he or her himself was not yet on a sufficient level of technical expertise to share his knowledge on the platform. There were six respondents from three additional platforms, but they did not give any helpful comments.

In conclusion it could thus be said that there is probably no direct negative correlation between attitude towards technology and frequency of use. Instead, it seems that even if users find the system pleasant to use, this attitude is apparently not strong enough to overcome other relevant factors, such as lack of time, relevancy for the job, preferences for different means of communication, the lack of e-mail notifications of updates, the fact that the EPE is only one of many content management systems, difficulties to access the problems (due to the password as well as national organisation's IT infrastructure) which have a bigger impact on frequency of use.

The fact that some users do not use the EPE very frequently despite their positive attitude towards the system can also be explained by more platform specific reasons. These will be explained in section 4.5 when the differences between the networks are dealt with.

4.3.1.2 Information Seeking

In order to make the analysis a bit broader, the relationship between the seven factors and the three purposes of EPE use (information seeking, communication and participation) is also assessed. Again, a multiple regression analysis is performed. The results of the analyses are reported below.

Table 17 presents the model summary of the multiple regression analysis of overall EPE use and information seeking.

Table 17: Model summary linear regression analysis of information seeking

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.629 ^a	.395	.368	3.093

The figures show that the R is with a value of .629 relatively high. However, also in this case it is best to have a look at the adjusted R² value in order to get a better insight into the usefulness of the model. In this case the R² value is .368 which means that the model accounts for 36.8% of the variation in the dependent variable, which is lower than the value of the previous model but still relatively high.

Again, additional insights can be gained by having a look at the different factors of the model and what their effect is on the dependent variable. Table 18 shows the coefficients of the multiple regression analysis between information seeking and overall EPE use.

Table 18: Coefficients linear regression analysis of information seeking

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-10.944	1.927		-5.678	.000
	Performance_Expectancy	.283	.153	.158	1.850	.066
	Effort_Expectancy	.145	.108	.113	1.341	.182
	Social_Influence	.362	.146	.190	2.482	.014
	Facilitating_Conditions	.342	.102	.298	3.338	.001
	Attitude	-.061	.414	-.012	-.147	.883
	Skills	.008	.117	.005	.071	.943
	Alternative_Systems	.145	.216	.051	.671	.503

a. Dependent Variable: Information Seeking

Of the seven factors, facilitating conditions has the strongest impact on the model (.298), followed by social influence (.190). These are also the two only values for which a significant effect could be found – as opposed to the model for overall use in which performance expectancy, effort expectancy and facilitating condition (but not social influence) were found to have a significant effect on the model.

In this case, performance expectancy and effort expectancy as well as skills and alternative systems show a positive correlation, which is however not significant on the $p < 0.05$ level. Attitude again shows a negative (but not significant) correlation, which can probably be explained by the same reasons as elaborated on above.

As above, the test performed here is two-sided. For a one-sided test, which is also possible here, the Sig. value for performance expectancy (.033) also shows a relationship between performance expectancy and information seeking which is significant at the $p < 0.05$ level.

1.1.1.1 Communication

The model summary of the regression analysis between the seven factors and communication behaviour is presented in Table 19.

Table 19: Model summary linear regression analysis of communication

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.528 ^a	.279	.248	1.889

With a value of .538 the R value is still rather high but lower than in the previous two models. The same holds true for the R^2 value of .248 which indicates that the model explains 24.8% of the variance in the dependent variable. A telling reason for the lower explanatory ability of the model could be the level of variation in the dependent variable which is especially low for the variable communication.

Table 20 presents to what extent each of the seven factors influence the overall model.

Table 20: Coefficients linear regression analysis of communication

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-5.137	1.143		-4.494	.000
	Performance_Expectancy	.054	.091	.055	.590	.556
	Effort_Expectancy	.096	.065	.134	1.464	.145
	Social_Influence	.241	.090	.229	2.684	.008
	Facilitating_Conditions	.177	.063	.279	2.816	.005
	Attitude	-.229	.255	-.082	-.898	.371
	Skills	.039	.071	.042	.553	.581
	Alternative_Systems	-.018	.132	-.011	-.136	.892

a. Dependent Variable: Communication

As the figures indicate, the facilitating conditions again have the strongest effect on the model (.279), again followed by social influence (.229). Their influence is also significant on the $p < 0.05$ level. Furthermore, performance expectancy, effort expectancy and skills show positive correlations, however, these are not significant at the $p < 0.05$ level. In addition to attitude towards using technology, alternative systems now also shows a slightly negative correlation. However, because the t value is so close to zero and the sig. Value is so big, showing a very low significance, it is not warranted to assume an inverse relationship between alternative systems and communication behaviour.

1.1.1.2 Participation

The model summary of the multiple regression analysis between the seven factors and participation behaviour is presented in Table 21.

Table 21: Model summary linear regression analysis of participation

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.523 ^a	.274	.242	1.664

The figures presented are very similar to those presented for communication behaviour. As the R^2 value shows, the model still explains 24.2% of the variation in the dependent variable. Again, the lower explanatory ability of the model could be cause by the low level of variation in the dependent variable.

The influence of the separate variables on the overall model is presented in Table 22.

Table 22: Coefficients linear regression analysis of participation

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			
1	(Constant)	-4.255	1.012		-4.206	.000
	Performance_Expectancy	.109	.082	.125	1.338	.183
	Effort_Expectancy	.006	.058	.009	.097	.923
	Social_Influence	.222	.079	.240	2.829	.005
	Facilitating_Conditions	.191	.055	.343	3.466	.001
	Attitude	-.411	.222	-.167	-1.851	.066
	Skills	.008	.062	.010	.134	.894
	Alternative_Systems	.022	.116	.016	.190	.850

a. Dependent Variable: Participation

Again, the figures look very similar to those of the communication multiple regression analysis. Again, facilitating conditions (.343) and social influence (.240) have the strongest influence which is also significant at the $p < 0.05$ level. As in the case of information seeking, performance expectancy, effort expectancy, skills and alternative systems all show positive but insignificant correlations. Attitude still shows a negative but not quite significant correlation that can still be reasonably explained by the factors mentioned above.

One noteworthy difference between these figures and the previous ones however is that the influence of facilitating conditions has increased from values around 2.5 to almost 3.5 which means that facilitating conditions are still more important for participation behaviour than for overall use as well as information seeking and communication behaviour.

1.1.1.3 Conclusion

With regard to performance expectancy, we can see that there is a positive and significant relationship between performance expectancy and overall EPE use. When using a one-sided test, there is also a positive and significant relationship between performance expectancy and information seeking. However, for performance expectancy and communication and participation behaviour, only a positive correlation but no significant relationship can be found. Nevertheless, based on the analyses presented above, **Hypothesis H1** (If a registered user's performance expectancy is relatively high, his EPE use is likely to be relatively high, too. If, however, a registered user's performance expectancy is relatively low, his EPE use is likely to be relatively low, too) **can be tentatively accepted.**

With regard to effort expectancy, we have found a positive and significant relationship between effort expectancy and overall EPE use. However, for effort expectancy and information seeking, communication and participation only a positive correlation but no significant relationship could be found. Nevertheless, **Hypothesis H2** (If a registered user's effort expectancy is relatively high, his EPE use is likely to be relatively low. If, however, a registered user's effort

expectancy is relatively low, his EPE use is likely to be relatively high) **should be tentatively confirmed.**

When only a one-sided test was used, a positive and significant relationship between social influence and overall EPE use was found. For social influence and information seeking, communication and participation, positive and significant relationships were also found for the two-sided tests. Therefore, **Hypothesis H3** (If the **social influence** on a registered user with regard to the EPE is relatively positive, his EPE use is likely to be relatively high. If, however, the social influence on a registered user with regard to the EPE is relatively negative, his EPE use is likely to be relatively low) **can be tentatively confirmed.**

For facilitating conditions and overall EPE use, a positive and significant relationship has been found. This was also the case for facilitating conditions and information seeking, communication and participation. The significance of the relationship even increased for participation behaviour compared with overall use, information seeking and communication behaviour. In conclusion, **Hypothesis H4** (If the **facilitating conditions** which a registered user experiences with regard to the EPE are relatively positive, his EPE use is likely to be relatively high. If, however, the facilitating conditions which a registered user experiences with regard to the EPE are relatively negative, his EPE use is likely to be relatively low) **can be tentatively accepted.**

Attitude and overall EPE use, information seeking, communication and participation behaviour all show negative, albeit insignificant, correlations. Therefore, **Hypothesis H5** (If a registered user's **attitude toward the EPE** is relatively positive, his EPE use is likely to be relatively high. If, however, a registered user's attitude toward the EPE is relatively negative, his EPE use is likely to be relatively low) **must be rejected.**

Skills and overall EPE use show a negative but insignificant relationship. The correlations between skills and information seeking, communication and participation are all positive but remain insignificant. Consequently, **Hypothesis H6** (If a registered user's **skills** with regard to the EPE are relatively advanced, his EPE use is likely to be relatively high. If, however, a registered user's skills with regard to the EPE are relatively basic, then his EPE use is likely to be relatively low) **cannot be confirmed.**

With regard to alternative systems, positive but insignificant correlations between alternative systems and overall EPE use, information seeking and participation behaviour have been found. For alternative systems and communication, a negative but still insignificant relationship has been found. Therefore, **Hypothesis H7** (If a user's preference to use **alternative systems** rather than the EPE is relatively high, his EPE use is likely to be relatively low. If, however, a user's preference to use alternative systems rather than the EPE is relatively low, his EPE use is likely to be relatively high) **should be rejected.**

1.1.2 Interviews

4.3.2.1 Exchange Conditions

Three respondents indicated that the network cooperation on the EPE was low even though their network does in fact need specialised equipment. At the same time, two respondents

indicated that the network cooperation on the EPE was low and that their network does not need specialised equipment. The difference between these two groups is not big enough to suggest that **asset specificity** influences network cooperation via the EPE.

Two respondents indicated that the network cooperation on the EPE was low while there was a steady demand for their services. One respondent indicated that the network cooperation on the EPE was low while there was no steady demand for the network's services. The other respondents did not indicate unambiguous answers to the question. Therefore, the evidence does not support the hypothesis that **demand uncertainty** influences network cooperation via the EPE.

Three of the respondents indicated that the network cooperation on the EPE was low while there was frequent interaction between the network members. On the other hand, three respondents indicated that the network cooperation on the EPE was low while there was no frequent interaction between the network members. Moreover, one respondent indicated that the network cooperation on the EPE was high in the absence of frequent interaction between the network members. Thus, there is not enough evidence to support the hypothesis that **frequency** influences network cooperation via the EPE.

In conclusion, therefore, the **hypothesis H8** (If a network's exchange conditions are relatively positive, the network's use of the EPE is likely to be relatively high. If, however, a network's exchange conditions are relatively negative, the network's use of the EPE is likely to be relatively low) **must be rejected**.

4.3.2.2 Network Feasibility

Only one respondent indicated that the network cooperation on the EPE was high while the communication was easy as well. Five respondents indicated that the network cooperation on the EPE was low despite the fact that the communication between the network members was easy. Therefore it cannot be said that **communicative proximity** influences network cooperation in the hypothesised (positive way). The evidence would rather suggest that communicative proximity is inversely related to network cooperation via the EPE.

Only one respondent indicated that the network cooperation on the EPE was high while there was no conflict of norms and values. Five respondents indicated that the network cooperation on the EPE was low despite the absence of conflicts of values and norms. Consequently, the idea that **shared values & norms** positively influence network cooperation on the EPE must be rejected. The evidence rather suggests an inverse correlation between shared values and norms and network cooperation via the EPE.

Again, only one respondent indicated that the network cooperation on the EPE was high while there was high willingness to invest resources. Three respondents indicated the network cooperation on the EPE was low despite the fact that the network members' willingness to invest resources was high. The other respondents could not unambiguously estimate the network members' willingness to invest resources. Consequently, the idea that **willingness to invest resources** influences network cooperation via the EPE is not supported.

With regard to the network members' willingness to give up some responsibility, the interview respondents' answers were not unambiguous enough to be safely considered at this point. With regard to the network members' willingness to share credit, in one case the network cooperation in the EPE was high while the willingness to share credit was high as well. Four respondents indicated that the network cooperation via the EPE was low even though the network members' willingness to share credit was high. Consequently, the hypothesis that the **willingness to give up some sovereignty** influences network cooperation via the EPE in a positive way cannot be supported. Instead, the evidence rather suggests an inverse correlation.

In conclusion, therefore **hypothesis H9** (If network cooperation is relatively feasible, the network's use of the EPE is likely to be relatively high. If network cooperation is relatively unfeasible, the network's use of the EPE is likely to be relatively low) **must be rejected**.

1.2 EPE Evaluation

1.2.1 Questionnaires

Table 23 presents the topics that were mentioned by the respondents in the evaluation part of the questionnaire. The range of topics mentioned by the respondents is indicated by the categories shown below. The questionnaire responses can be categorised into the following categories: Information, community of experts, security, non-use, website functionality, accessibility, user-friendliness, and other.

The colour-coding of the statements shows how often the respective statements were mentioned by the respondents. If the statement was mentioned one to five times, it was coded in orange. If it was mentioned six to twenty times, it was coded in yellow. Statements mentioned more than twenty times were coded in green. The colour-coding serves the purpose of showing the salience of the issues mentioned. Even though the number of statements does not correspond entirely to the number of respondents who made the statements, a statement that was mentioned 15 times was definitely mentioned by more respondents than a statement that was only mentioned twice.

Only the yellow and green-coded statements are further considered in the analysis. The orange-coded statements are considered to be outliers that may skew the analysis into the wrong **direction**.

Table 23: Overview of categories and statements of the questionnaires (evaluation part)

Information	Community of Experts	Security	Non-Use	Website functionality	Accessibility	User-Friendliness	Other
"The quality of the information provided on the EPE should be improved"	"The EPE allows to stay in contact with other experts"	"The EPE is not secure enough"	"The EPE is not used (often) because of the lack/unclarity of benefits"	"The strongest feature of the EPE is the private messaging"	"It should be easier to access the EPE"	"The strongest feature of the EPE are the notifications of updates"	"The EPE does not have disadvantages / weakest features"
"The EPE enables the exchange of experience"	"The EPE helps to find the right national counterparts"	"The EPE should be more secure"	"Infrequent use of the platform is an indication of problems in the network"	"The strongest feature of the EPE is the document library"	"The EPE has a good password policy"	"The weakest feature is the short inactivity period"	"I would not change the EPE (now)"
"The EPE provides low quality information"	"The EPE should make it easier to obtain experts' contact details"	"The strongest feature of the EPE is the security"	"Inactive platforms should be closed"	"The strongest feature of the EPE is the Chat"	"It is (too) difficult to access the EPE"	"Language difficulties make the EPE more difficult to use"	"The EPE does not provide benefits / strongest features"
"The EPE provides high quality information."	"The EPE is too impersonal"		"The EPE should be used more often"	"The strongest feature of the EPE is the wiki"	"The EPE is very accessible (via the Internet)"	"The main disadvantage of the EPE is the lack of (IT) support"	
"The EPE should allow for the exchange of operational data"	"The EPE provides contact details of experts"		"Users do not feel comfortable participating in the EPE"	"The strongest feature of the EPE is the media gallery."	"The EPE should be accessible from mobile devices"	"The strongest feature of the EPE is the IT support"	
"The EPE enables	"The EPE helps building an		"I have never used the EPE"	"The strongest feature of the	"The password	"The EPE is too informal"	

information exchange"	online community of experts"
"The EPE provides (useful) information"	"The EPE offers an international scope"
"The EPE provides (easy) access to information"	"The EPE enables communication within a group of experts"
	"The EPE provides access to (a community of) experts"
	"The EPE enables cooperation between experts"

	EPE is the blog"	policy should be changed"	
"The EPE is not used (often) because of settings at the national workplace"	"The Social Media features are not needed by the users"	"The password policy makes it (too) difficult to access the EPE"	"The strongest feature of the EPE is the ease of use"
"The EPE is not used (often) due to lack of time"	"The weakest feature of the EPE is the wiki"		"The EPE is not user-friendly"
"The EPE is not used (often) because of its (ir)relevance for the job"	"The weakest feature of the EPE is the media gallery"		"The EPE is (too) difficult to use"
"The EPE is not (well) known"	"The weakest feature of the EPE is the private messaging"		"Users need explanations/instructions for using the system"
"The EPE is not being used by the experts"	"Users prefer alternative communication channels"		"The EPE is (too) slow"
"I cannot answer the questions adequately"	"The EPE does not work properly"		"There should be notifications of updates"

because I have not (often) used the EPE (yet)	
	"The strongest feature of the EPE is the message forum"
	"The EPE is yet another content management system"
	"Some technical issues of the EPE must be improved"

"The main benefit of the EPE is that it is a ready-made product"
"I would change the EPE by making it more user-friendly"

1.2.2 Interviews

When asked about the **main benefits** of the EPE for the network, the availability and exchange of information was mentioned by five respondents. The easy accessibility (via Internet) of the EPE was mentioned by two respondents. The fact that everything is concentrated in one place which offers space for interaction was mentioned by two respondents as well. The possibility to find contacts was mentioned by one respondent, as was the possibility to have real time contact with other experts. The possibility to share information easily, that idea that the EPE increases the network's respectability, the fact that the system is quick and the provision of answers to users' questions were each mentioned by one respondent. One respondent indicated that the system yielded no benefits so far.

Regarding the main **disadvantages** that the EPE has brought to the network, three respondents indicated that there are no disadvantages. The password policy was mentioned by two respondents. The other disadvantages mentioned were: English as main working language, mentality of doing things the old way, notifications in junk mail, very slow, user management too difficult, system is not flexible, managers' rights not sufficient to perform their task, sub-optimal technical implementation of the system, EPE is rather social media than document library²⁶, EPE is not set up for information sharing, wiki is not user-friendly, and the EPE does not allow sharing operational data.

With regard to the **strongest features** of the system, two respondents indicated that the EPE is a good/well-structured environment. The possibility to upload images (and videos) was also mentioned by two respondents. Other strong features mentioned were the fact that the system is easy to use, enables mutual learning, is an important database, and it provides the network with a strategic advantage over similar networks. The blog, image gallery, message forum, and chat were also indicated as strong features. Two respondents indicated that the EPE does not have any strong features.

On the other hand, the respondents also indicated the **weakest features** of the system, including the fact that three respondents indicate that the EPE is not user-friendly. While one of the three means the EPE in general, another one specifically mentions the message forum and yet another one the wiki. Two respondents indicate that the EPE is (based on) a weak content management system. Other weak features mentioned include the content, low level of participation, difficulty to find contact details, no direct communication between users and technical developers, suitability for social media rather than library, password policy, underdeveloped private messaging function, no automatic subscription, features displayed in menu not being used, and the lengthy user authorisation.

When asked how the respondents would **change the EPE** if they could, several suggestions were made, including sending out regular news letters, more activity on the platform, more sophisticated library, more academic approach, EPE needs to be part of someone's job description, make it faster, EPE should be designed more like Facebook, managers should be given more rights, managers should stimulate participation more, registration process should become easier, the flagging (of inappropriate behaviour) option should be removed, access restrictions should be changed, social media pressures should be removed, automatic subscription should be the standard, password policy should be changed, EPE should be made

²⁶ The complaint that the EPE is too much social media oriented must be understood before the background that this particular network was moved from a different content management system to the EPE. The old content management system was a document library and this is also the purpose for which the EPE is being used by this community. The network does not (yet) have the aim to use social media.

available on mobile devices, and the EPE should have a more modern lay-out. One respondent indicated that nothing should be changed because the EPE is still a very young environment. Finally, several **additional comments** were made throughout and after the interview. One respondent indicated that for bilateral communication other channels (such as e-mail or telephone) are used rather than the EPE. Moreover it was mentioned that many people do not trust the EPE to share information. Another comment made by two respondents was that the EPE users are mainly in age groups which did not grow up with computers and therefore lack IT experience and skills. Another problem pointed by two respondents was the lack of English language skills which impeded participation on the platform. Another respondent highlighted that the real difficulty is to make the users contribute on the platform. While the respondent thought that managers should play a more active role in running the community, he realised that the lack of personnel and interest in the system makes this difficult. One respondent emphasised the importance of having an already existing community of experts as a driving force behind the community on the online platform. Another respondent pointed out that many of the registered users on his platform have never even used it. It was also suggested there should be more advertisement and awareness-raising for the EPE. Finally, one respondent mentioned the problem that the users are not motivated enough and lack the time to use system. Moreover, he stated that the EPE might be too difficult for normal users to use without training.

1.2.3 SWOT Analysis

The data analysed above have yielded many insight into how registered users of the EPE evaluate the system. In the following their evaluation will be reported as a SWOT assessment, that is, a presentation of the strengths, weaknesses, opportunities and threats of the EPE. It should be noted that the SWOT assessment provides an **overview of the respondents' assessments of the EPE's strengths, weaknesses, opportunities and threats**. Of course, these might differ from the EPE's actual strengths, weaknesses, opportunities and threats or from someone else's assessment.

Figure 6: SWOT assessment summary

Strengths

- Exchange and provision of & easy and universal access to useful, high-quality information
- Provision of experts' contact details
- Access to international online community of experts
- Communication & cooperation within group of experts
- Ready-made, easy to use product
- Secure
- Message Forum
- No disadvantages/weakest features
- no need to change the EPE (now)

Weaknesses

- Low quality information
- Not used by experts
- The password policy makes it (too) difficult to access the EPE
- Not user-friendly
- (Too) slow
- No benefits/strongest features

- Exchange of operational data should be allowed
- Some technical issues should be improved
- EPE should be available from mobile devices
- Password policy should be changed
- Instructions for using the EPE should be provided
- There should be notifications of updates

- The EPE is not secure enough
- Settings at national workplace prevent use of EPE
- Irrelevance for job prevents use of EPE
- Lack of time prevents use of EPE
- EPE is not (well) known
- EPE is just another content management system

Opportunities

Threats

With regard to the EPE's perceived **strengths**, it is interesting to see that the main strengths as perceived by the registered users are in line with what the EPE was set out to be: a secure platform to facilitate information exchange among experts. The users in fact appreciate the possibility offered through the EPE to exchange and (universally) access useful and high-quality information in a secure way. Moreover, the EPE is used to obtain contact details of experts and enables direct communication and cooperation within a group of experts. Another perceived advantage of the EPE is that it is an already existing ready-made product that can be customised to the network's needs. One of the functionalities that the EPE offers that is appreciated most by the users is the message forum. It is also an indication of the EPE's strengths that many users indicate that the EPE has no disadvantages or weakest features and that it is not necessary to change the EPE at the moment.

With regard to the perceived **weaknesses** of the EPE, the registered users point out that the information provided on the EPE is of low quality (e.g. out-dated, irrelevant). Moreover, they find that the EPE is not really used by the experts, in the sense that they see no visible participation on the site, no one or only the same people upload documents and the social media features remain largely unused. There are also many complaints with regard to the password policy which makes it very difficult and sometimes even impossible to access the EPE. Users report that they are not able to remember their passwords and that they are sometimes suddenly not able to log in anymore for reasons not understandable to them. Users also complain that the EPE as a website is not very user-friendly, which can refer to the lay-out or the functionalities of the website or the fact that it is not clear to the users what they are expected to do, once they are logged in. Users also complain about the fact that the system is very slow. Finally, many users indicate that they do not find that the system has any benefits or strongest features.

The users see **opportunities** for the EPE in allowing operational data to be exchanged via the system. Moreover, they suggest that some technical issues should be improved (e.g. relating to the uploading or downloading of documents or the time-out mechanism that logs users out after a certain time of inactivity). Some registered users also point out the additional benefits that could be gained by making the EPE also available from mobile devices such as blackberries, smart phones and tablets. Many users are strongly in favour of changing the password policy in a way that would make the EPE more accessible. As the situation is at the moment the password that a user can choose for him has to fulfil certain criteria (such as the inclusion of numbers, special characters, upper case letters etc.). However, many users find it difficult to even create such a password because they do not understand the criteria which the password has to fulfil (probably because they are given in English only)²⁷. Moreover, the users find it (too) difficult to remember such a password. This as well as the fact that the password expires every two months and has to be changed by the users, often leads to consequence that users stop using the EPE because they do not understand why they cannot log into the system anymore or because they simply find it too burdensome to spend so much effort on the password. This issue should be considered as a high priority, not only because it was mentioned by many users, but also

²⁷ It should be noted that Europol has considered giving an example of a password in order to demonstrate the application of the password criteria, but has decided against doing so because it is considered very likely that most users will just use the example password or only slightly change it, which would of course constitute a security threat.

because many users named as a direct consequence of this problem that they stopped using the system altogether.

Another suggestion made by the users was that instructions for using the EPE should be provided to them in order to help them understand and use the platform. Moreover, they suggested that there should be notifications of updates via e-mail. While there is currently the possibility to subscribe to certain functionalities of the platform (such as the wiki or a particular message forum thread or category), it is currently not the case that the users are subscribed to everything by default. This means that either the users have to log in regularly to check the website for updates for themselves, or the platform managers have to explain to the users how they can subscribe and convince them to do so. The calls for e-mail notifications suggest that many users would prefer to be subscribed by default.

The main **threats** to the EPE identified by the users are the concern that the EPE might not be secure enough, for example because it is available via the open internet instead of via a secure line as is usually the case in law enforcement. Another threat is the fact that there are systemic factors which prevent the use of the EPE, including settings at the national workplace, irrelevance of the EPE for the job and lack of time. While lack of time may be a very common phenomenon in professional life and maybe even more so in the law enforcement area, it can be a threat if the users do not see compelling reasons to use a system despite the lack of time. Related to this is fact that the EPE is often perceived as just another content management system which brings the burden of additional user names and passwords and the obligation to check in regularly. With regard to the settings at the national workplace, especially some UK users report that their work environment poses considerable obstacles to using the EPE that effectively lead to a zero use of the system even though the users want to use the system. Users for example report that there is only one shared internet computer which has also to be used in current investigations (which means that using the EPE is a comparatively low priority). Others report that they get the registration link on a different computer than the computer on which they can access the EPE, so they have to retype the whole link on the computer with internet access. Moreover, users report that they do not use the EPE because the content is not relevant to their jobs, for example because of a recent change in position or termination of work.

Another threat to the EPE is the fact that it is not well known throughout the law enforcement community which means that the user group is still comparatively small and users cannot just ask their colleagues for help with the system (if they are stuck) but have to contact Europol, which might be perceived as an additional burden. Moreover, if only few people use the system the probability that the use of the system will be perpetuated because of peer pressure or word-of-mouth is likely to be low.

As becomes visible in Fig. 6, the evaluations of the respondents are sometimes directly opposed to one another. For example, while some name the high quality of the information as one of the EPE's strengths, others name the low quality of the information as one of the EPE's weaknesses. This might seem very contradictory. In fact, it can in part be explained by the fact that different users are members of different platforms and of course, the quality of the information provided on the platforms can differ a great deal. However, there are also contradictions that cannot be explained by differing platform memberships, such as the fact that security is seen as one of the EPE's strengths on the one hand but also has one of the threats to the EPE on the other hand. Naturally, the security settings of the EPE apply to all users of the EPE, regardless of their specific platform membership(s). The fact that some users applaud the high security of the EPE

while others call for more security can probably explained best by the fact that the users come from different professional backgrounds. One network for example was migrated from a yahoo group to the EPE. Of course, for these users the EPE must seem like a security heaven. Other networks in practice even have special arrangements because their identities must even be hidden from some of their own national authorities. These users are then more likely to call for additional security features, such as second factor authentication.

Often, the concerns for security involve balancing security concerns versus usability concerns. The issues surrounding the password policy are a good example for this. While in principle all users want a secure network, many users feel that this should not effectively prevent the users from accessing the system. What exactly constitutes user-friendliness, however, differs greatly from one user to another. It seems likely that age and computer or social media experience play a role in predicting which type of website or features are perceived as user-friendly or complicated by specific users.

1.3 Differences between networks

The results reported above all refer to the EPE as a whole. However, as a platform of platforms, the aggregated results might hide insights that are only applicable to some of the platforms while not to others. Given the differences between the networks explained in the theoretical background section, it makes sense to look at some variables per platform individually.

Of course, not all respondents that have participated in the questionnaire have chosen to indicate their platform membership. In fact, only 164 respondents did indicate their platform membership in the questionnaire and can therefore be included in this type of analysis. Another 169 respondents chose not to indicate their platform membership. Consequently, before looking into the differences between the platforms more deeply, a notion of caution is in order: Because of the large number of respondents with unknown platform membership and because we do not know why these respondents chose not to indicate their membership, we do not know to what extent and in what direction the data analysed above may be biased.

However, even though we do not know in what specific ways those not having indicated that platform memberships differ from those who have, we do know one major difference between the two groups: Those with an unknown platform membership on average score lower on each use item than those with a known platform membership on average do. The numbers are presented in Table 24:

Table 24: EPE use means by purpose of use: All users, known platform & unknown platform.

Platform	Ov. Use	Information Seeking				Communication			Participation		
		Forum Browse	Blog Browse	Wiki Browse	Gallery Browse	Forum Post	Chat	PM	Blog Post	Gallery Post	Wiki Post
ALL	1.63	1.02	0.67	0.72	1.06	0.52	0.28	0.36	0.23	0.40	0.23
Platform known	2.21	1.49	1.05	1.08	1.46	0.80	0.41	0.52	0.34	0.60	0.35
Platform unknown	1.09	0.66	0.31	0.39	0.58	0.27	0.16	0.20	0.14	0.21	0.12

As Table 24 shows, while the mean of overall use for those with an unknown platform membership is 1.09, the mean for those of whom the platform membership is known amounts to 2.21, compared to an overall mean of 1.63 for all respondents. For each item considered in the table, the same holds true: Those with an unknown platform membership have the lowest means, followed by the means for all respondents, while those for whom the platform membership was indicated score the highest means.

Several reasons may account for this phenomenon. Firstly, some respondents might actually not know their platform membership because they have never actually used the platform or only so sporadically that they forgot. Secondly, it may have to do with the fact that respondents do not want other people to be able to recognise who they are because of their platform membership because they are self-conscious about their minimal use of the platform. In any case, these reasons behind the choice to not indicate the platform membership must remain in the realm of speculation because not one single respondent chose to explain why he or she did not want to disclose their platform membership.

Still, even despite the high number of undisclosed platform memberships, a considerable amount of platform memberships is in fact known and these data still can shed some insights into the differences between the networks. Therefore it makes sense to dig a little deeper. As start, Table 25 presents the means of overall frequency of EPE use by platform membership.

Table 25: Means of overall frequency of EPE use by platform membership²⁸.

Platform	# of Resp.	Never	Less than once a month	Once a month	Once a week	Once a day	More than once a day	Mean
Admin. Approach	2	0	0	0	1	1	0	3.50
CTC	2	0	1	0	1	0	0	2.00
EACT	13	0	3	1	8	1	0	2.54
EC3	1	0	0	0	0	0	1	5.00
ENFSI	7	0	2	3	1	1	0	2.14
ENLETS	2	0	0	2	0	0	0	2.00
EnviCrime	13	3	4	3	2	1	0	1.54
EPGE	15	1	4	3	3	2	2	2.47
E-Scan	4	1	0	1	2	0	0	2.00
Communicators	0	0	0	0	0	0	0	0.00
EPFE	1	0	0	0	0	0	1	5.00
FCIC	21	2	10	6	3	0	0	1.48
IPC	1	0	0	0	0	0	1	5.00
North Africa	2	0	0	1	0	1	0	3.00
Paysafe	16	1	2	3	7	2	1	2.63
PCCC	0	0	0	0	0	0	0	0.00
Pruem	13	1	0	6	3	2	1	2.62

²⁸ It should be noted that the number of respondents presented in Table 25 actually amounts to a total number of 168 respondents. However, this is due to the fact that those respondents who have indicated that they are members in more than one platform are counted twice in Table 25.

Special Tactics	46	2	12	12	16	1	3	2.24
UMF2	5	0	1	2	2	0	0	2.20
Z_Management	4	1	0	0	2	0	1	2.75
Loop	0	0	0	0	0	0	0	0.00

As there are many platforms with only a very small number of respondents, only those platforms with ten or more respondents (those colour-coded in green in Table 25) will be further considered in this section.

Table 26 presents a comparison of the means of the overall frequency of use and the means of the purposes of EPE use by platform membership.

Table 26: Means of purposes of EPE use by platform membership.

Platform	Ov. Use	Information Seeking				Communication			Participation		
		Forum Browse	Blog Browse	Wiki Browse	Gallery Browse	Forum Post	Chat	PM	Blog Post	Gallery Post	Wiki Post
ALL ²⁹	1.63	1.02	0.67	0.72	1.06	0.52	0.28	0.36	0.23	0.40	0.23
EACT	2.54	1.23	1.08	1.47	1.92	1.15	0.38	0.38	0.38	0.77	0.46
Envi-Crime	1.54	0.77	0.77	0.46	0.85	0.46	0.00	0.08	0.31	1.15	0.08
EPGE	2.47	1.93	1.47	1.47	1.73	0.67	0.60	0.33	0.33	0.53	0.60
FCIC	1.48	0.76	0.43	0.50	1.05	0.19	0.29	0.14	0.10	0.29	0.10
Paysafe	2.63	1.87	1.40	1.88	2.20	0.87	0.20	0.44	0.40	0.53	0.47
Pruem	2.62	1.62	1.69	1.77	1.42	0.54	0.17	0.23	0.42	0.67	0.50
Special Tactics	2.24	1.43	0.95	0.84	1.37	0.96	0.61	0.80	0.38	0.51	0.23

Table 26 is colour-coded in the way that means of 0.5 and lower are colour-coded in orange, the means higher than 0.51 up to and including 1.00 are colour-coded in yellow and those means higher than 1.00 are colour-coded in green. The scale ranges from zero to five.

The colour-coding already gives some impressions for which purposes which platforms are mostly used and which features are use most (or least) often. For example one can see that for most platforms, the information seeking features are used most often. These are mostly followed by communication purposes and then participation purposes. With the noticeable exception of the gallery postings which would be expected to fall in the orange spectrum, but which mostly fall in the yellow and in the case of the environmental crime platform even in the green spectrum.

However, apart from looking at these means in this specific way, it also makes sense to look at the numbers in comparison to what is “normal” for all platforms. As we have shown above, those respondents for whom the platform is known (those who are included in this analysis) have higher use means than those with unknown platform membership. Therefore it would not be logical to compare the use means per platform to the use means of all respondents, because

²⁹ All respondents who filled in the questionnaire.

we already know that the latter would be a lot lower. Consequently, it would be more useful to compare the use means that have been calculated for each platform separately to those means that have been calculated for all respondents with a known platform membership. Table 27 shows the mean scores of all respondents for overall use and all purpose of use items, as well as the mean scores for those who indicated their platforms and those platforms with ten or more respondents.

Table 27: Means of purposes of EPE use by platform membership, compared to known platform average.

Platform	Ov. Use	Information Seeking				Communication			Participation		
		Forum Browse	Blog Browse	Wiki Browse	Gallery Browse	Forum Post	Chat	PM	Blog Post	Gallery Post	Wiki Post
ALL	1.63	1.02	0.67	0.72	1.06	0.52	0.28	0.36	0.23	0.40	0.23
Platform known ³⁰	2.21	1.49	1.05	1.08	1.46	0.80	0.41	0.52	0.34	0.60	0.35
EACT	2.54	1.23	1.08	1.47	1.92	1.15	0.38	0.38	0.38	0.77	0.46
Envi-Crime	1.54	0.77	0.77	0.46	0.85	0.46	0.00	0.08	0.31	1.15	0.08
EPGE	2.47	1.93	1.47	1.47	1.73	0.67	0.60	0.33	0.33	0.53	0.60
FCIC	1.48	0.76	0.43	0.50	1.05	0.19	0.29	0.14	0.10	0.29	0.10
Paysafe	2.63	1.87	1.40	1.88	2.20	0.87	0.20	0.44	0.40	0.53	0.47
Pruem	2.62	1.62	1.69	1.77	1.42	0.54	0.17	0.23	0.42	0.67	0.50
Special Tactics	2.24	1.43	0.95	0.84	1.37	0.96	0.61	0.80	0.38	0.51	0.23

In fact, Table 27 shows the same data as Table 26, except that the known platform means have been added. Another difference is the fact that a different colour-coding applied is applied. Table 27 is coded according to the following scheme: Those scores higher than the mean scores of “platform known” are coded in green. Those scores lower than the mean scores of “platform known” are coded in yellow – except for those scores that are more than 0.5 lower than the mean score of “platform known”, those are coded in orange.

Looking at the colour scheme, which compares the known platform scores to the scores of the separate platforms considered in this analysis, reveals that the platforms anti-corruption (EACT), gang experts (EPGE), paysafe, DNA and fingerprint data (Pruem) and special tactics platforms are all used above average. Only the environmental crime and the financial crime platforms are used below average and even well below average as the orange colour-coding shows. For each platform separately, the colour-coding which indicates the difference with the average score for all platforms known, tells us in which way the platform is being used.

Combined, the two tables tell a lot about the differences between the several platforms and in which ways they are being used by the users.

³⁰ All respondents who have indicated one or more platform memberships in the questionnaire.

The **environmental crime** platform patterns in Table 26 show that the information seeking features mostly fall in the yellow spectrum, except for the wiki feature which is used less often. The communication and participation features all fall in the orange spectrum – except for the gallery posts which fall in the green spectrum. This is actually in line with the expected frequency of use of the platform as mentioned earlier. As was mentioned above, the activity on the platform usually increases around meetings of the platform members, in preparation or after a conference. For these events the network members usually share documents with each other, which they do by uploading them to the document library/gallery, which could explain the rather high numbers for this feature, compared to the other features. Compared to the other platforms, as shown in Table 27, the environmental crime platform yields a mean score for gallery posts well above the known platform average and considerably higher than all other platforms considered.

Nevertheless, on all other items, the environmental crime platform is used well below the known platform average. Of course, this is in line with the low overall use of the platform. Another contributing factor might be that those features which are not used by the respondents are disabled on the website. One thing that seems odd, however, is the fact that even though the platform yields a comparatively high gallery post score, its gallery browse score is not only well below the known platform average but also the lowest of all platforms considered. Unfortunately, neither the questionnaires nor the interview conducted with the environmental crime platform manager offer any explanation as to why this might be the case.

In the case of **financial crime**, the patterns in Table 26 show that almost all features fall in the orange spectrum, meaning that they are used only very sporadically. Only the forum browse falls in the yellow spectrum and the wiki browse even in the green spectrum. The rather low use of the financial crime network, especially for the more social media-like features such as communication and participation, is in line with the expected frequency of use for the platform. As mentioned above, the financial crime platform was migrated from a website that was simply designed as a document repository for foreign legislation and for this purpose the network is still being used, despite having been migrated to a social media tool such as the EPE. The low communication means can also be explained by the fact that many network members do not need the EPE more often than once a year when they look for specific information. The same holds true for the participation means. However, these can in addition be explained by the fact that the financial crime network has implemented the structure of having one dedicated Europol staff member who is responsible for uploading everything onto the EPE. The users themselves are to a large extent not even authorised to “participate” in the EPE. Thus, the score could not even be higher with the current systems and settings in place. All in all it is not surprising that the overall use mean of the platform is the lowest of all platforms considered in this section. This observation is also supported when the financial crime platform is compared to the known platform average presented in Table 27. Not one single mean is above average. While most communication and participation means remain close to the (also relatively low) averages, all information seeking means except for the gallery browse are coded in orange, meaning that they are at least 0.5 below average. This is also in line with the reasons mentioned above, namely that the financial crime network is specifically designed as a non-social media website and is often used only about once a year without this necessarily having negative implications for the website.

Table 26 shows that the **anti-corruption platform** shows most green-coded features of all platforms considered in this section. Moreover, while all information seeking features and the forum post lie in the green spectrum, all other features except one lie in the orange field. Only the gallery post feature lies in the yellow spectrum. The somewhat higher use of the gallery post feature is in line with the expectation that this feature is used relatively more often because the network members want to exchange documents in preparation of meetings. The same holds true for the message forum which was also expected to be used more often for discussions related to the working group meetings. These findings are supported by the comparison with the known platform means presented in Table 27. Except for the forum browse mean which is slightly below average, all information seeking means are above average. The communication means are close to the known platform average, with the forum post mean slightly above and the chat and private messaging mean slightly below average. The participation means are all above average, although only very slightly.

The platform on **gang experts** (EPGE) shows one of the higher overall use means. In line with the assumption that this platform is supposed to facilitate the exchange of information and help the network members with problems in their cases, all information seeking features in Table 26 fall in the green spectrum. Also in line with the assumption that the frequency of use increases around conferences for which documents are shared, the gallery post feature is colour-coded in yellow. The message forum and wiki which were assumed to be used most often are also colour-coded in yellow. As the blogs on the platform are mainly written by the platform manager it is not surprising that the blog post feature is colour-coded in orange. It is surprising, however, that the chat feature is colour-coded in yellow, even though there is not focus on direct and instant communication via the platform. One would have expected there to be larger differences between the use of the chat on the one hand and the use of the wiki and forum on the other hand. These findings are partially supported in comparison with the known platform average shown in Table 27. Indeed all information seeking means as well as the chat mean are above average. In addition, however, also the wiki post mean is above average, with a score of 0.6 even the highest of all platforms. This can be assumed to reflect the initial plan of the platform manager to have a wiki on all known motorcycle gangs in Europe to be updated by the platform members themselves. All other communication and participation items are below average, albeit not much.

In line with the expected frequency of use, the **payment fraud** platform mainly shows use for information seeking uses: in Table 26 the information seeking features all lie in the green spectrum. As has been mentioned above, the wiki is used extensively as a knowledge repository. However, because this is mainly a one man endeavour, the wiki post mean is very low and therefore in the orange spectrum, as are all other communication and participation features, except for the forum post and gallery post features. The message forum is mainly used to help each other out with difficult professional cases. The gallery is used relatively often because the experts often share pictures of the technical devices they need assistance with.

Compared to the other platforms, the paysafe platform is used most often, as Table 27 shows. Together with the anti-corruption platform, it has most items that score above average. In fact all information seeking items are above average. The one item that sticks out is the gallery browse item which is not only the highest gallery browse item of all platforms but the highest mean in the whole table. Compared to the other networks, the paysafe members post messages in the forum also more often than the known platform average. The blog and wiki posts are also

above average, however only slightly. This might show that for example the wiki is indeed used more often although not by many different users.

Given the stage the network and especially the management of the **Pruem** platform was in at the time of the questionnaires, the relatively high means of use (second highest of all platforms considered in this sections) are rather surprising. It seems logical and in line with the expectations, however, that the figures show that the platform was mainly used for information seeking purposes as the platform is designed to help the network members with implementing a certain system. As the focus of the platform is not on communication and participation, it does not surprise that the figures for these features presented in Table 26 are mostly in the orange spectrum, with the exceptions of the forum post and gallery post features, which indicate that the users also use the platform for asking for help and sharing documents that might be useful for other network members. The fact that the platform is mainly used for information seeking purposes as well as in order to ask for and give help is also supported by the fact that all (but one³¹) information seeking items and all participation items score above average. All communication items score below average.

It is difficult to say whether the data for the **special tactics** platform(s) are in line with the expectations. Firstly because the special tactics groups consist of many separate networks which are all contained in one umbrella term here even though they might differ considerably one from another. Secondly because there is only very limited knowledge available on the special tactics group because of its highly sensitive nature. What can be said is that it does not seem surprising that the overall use of the platform is rather low (evidenced by the rather low overall use mean and the fact that only two features lie in the green spectrum), given the fact that there is probably a lot of mistrust towards social media in general and sharing information with people they might not necessarily know personally. However, given the assumption that there might be a level of mistrust that is high even for law enforcement standards, it seems rather surprising that Table 26 shows that most features still fall in the yellow spectrum and not in the orange one. Also surprising is the fact that special tactics is the only platforms for which all communication means are above average. The blog post items is also above average, albeit very slightly. All other items score below average, even though none is colour-coded in orange.

The results show that even though the differences per purpose might be more or less pronounced per platform, the general finding that the EPE is used mostly for information seeking purposes also holds true for these platforms individually. However, the finding that the EPE is used more for communication purposes than for participation purposes is not true for all of the platforms considered here. The platforms EnviCrime and Pruem show (slightly) higher scores for participation behaviour than for communication behaviour. The means for each of the communication and participation features, however, tend to differ according to the specific characteristics of the platforms and what they are supposed to be used for. The results also show that whether some types of items are used more or less often than the known platform average is mostly in line with the intended and expected type of use of the platform in question.

³¹ The only information seeking item that scores below average is gallery browse. However with a score of 1.42 compared to a known platform average of 1.46 not too much significance should be attributed to this exception.

However, again a note of caution is in order. Despite the fact that differences between the platforms are definitely observable, it should not be forgotten that the differences between the means per platform as well as per website feature are rather marginal. All means calculated remained under the threshold of the value three, which means that on average, all platforms and all features are used less than once a week. Combined with the fact that the data presented above only represent half of the respondents interviewed, and the two groups of respondents differ from one another in a systemic way, this makes any (statistical) analysis of the differences between members of different platforms highly problematic. This is also the reason why no further attempts to (statistically) analyse the questionnaire data per platform is made until more and better data per platform is available.

2. Conclusion

In this last chapter, the conclusions of the analysis conducted above will be presented, followed by some practical recommendations for Europol, a discussion of the limitations of the study as well as the relevance of the study beyond Europol and suggestions for further research.

2.1 Conclusions

The aim of this study was fourfold: To find out to what extent the EPE is being used by registered users, to find out for which purpose(s) the EPE is currently being used, to find out which factors influence whether the EPE is or is not being used and finally, to find out how the registered users evaluate the EPE.

The above has shown that the EPE is used only to a rather limited extent. Only very few users use the EPE more than once a week. Most users use it less often and many users never use it.

The EPE is mostly used for information seeking purposes, followed by communication purposes and to a very limited extent only for participation purposes. The exact extent to which the different features are used, depends, however, on the platform and for which purposes the platform was designed to be used.

These findings are in fact in line with what was expected by Europol before the study was conducted. The general feeling was that the EPE was not being used neither to the extent nor for the purposes (social media participation) it was designed for.

In order to stimulate an increased use of the system, however, it is necessary to find out where the reasons for the low frequencies of use lie. With regard to the factors that have an influence on whether the EPE is being used or not on the level of the individual user, statistical analysis has shown that performance expectancy, effort expectancy, social influence and facilitating conditions each have a significant and positive effect on overall EPE use. Also, performance expectancy, social influence and facilitating conditions are positively and significantly related to information seeking behaviour. Moreover, social influence and facilitating conditions have a positive and significant influence on communication and participation behaviour. These findings are in line with the predictions of Venkatesh's UTAUT model, although it should be kept in mind that the constructs have been adapted to fit the social media dimensions and the EPE in particular more closely.

On the other hand, skills and attitude towards using technology each show a negative albeit insignificant correlation with overall EPE use. The first can be explained by the fact that the EPE is a relatively basic and simple IT system that is used by many users whose first language is not English. This might have a repelling effect on advanced IT users and/or advanced English speakers. Further analysis into the relationship between attitude towards using technology and overall EPE use has led to the conclusion that a positive attitude towards does not weight strong enough in users' considerations to overcome other factors that lead to less use of the EPE.

These insights in particular should lead at least to the question whether the independent variables considered in this study might not have a completely independent effect on the dependent variable.

With regard to the factors that influence whether the EPE is being used on a network level, the analysis of the interviews has led to the conclusion that both hypothesis (concerning exchange conditions and network feasibility) had to be rejected.

With regard to the evaluation of the EPE, the results are mixed and at times contradictory as well. The topics addressed by the respondents were the information exchange, the community of experts, the security, accessibility and the non-use of the EPE, the website functionality, the user-friendliness and the absence of benefits and disadvantages of the website. Within these categories, thirteen salient statements were identified, of which eight concerned positive evaluations and five were negative evaluations. Condensed into a SWOT assessment, several strengths, weakness, opportunities and threats of the EPE as perceived by the users could be identified.

Based on the theoretical background we would have expected the EPE as a social media tool designed for network cooperation to achieve strengths and opportunities such as increased efficiency, collective benefits, time savings, enhanced learning, increased connectivity with other users, facilitation of collaboration processes, and more openness, transparency and self-organisation. Indeed, by pointing out the possibility to exchange and universally access useful information and becoming an insider to an international community of collaborating experts, most of the expectations seem to have been confirmed. However, it remains doubtful, given the communication and participation frequencies, whether the fullest potential of these strengths of the system really has been achieved. Instead the suspicion remains that most respondents are aware of (and therefore name) the potential strengths and opportunities the EPE offers – without, however, deploying them to the fullest.

Given what we have learned from the theory on social media and network cooperation, we also would have expected the EPE to generate weaknesses and threats such as an increased strain on personal and organisational resources (such as time), the difficulty to access and process unstructured and semantically weak data, reduced autonomy, shared resources, increased dependency and transaction costs.

While we can indeed see that the EPE puts a burden on the available resources (as evidenced by the complaints about lack of time), the other expected costs are not reflected in the findings. The most logical explanation for this seems to be the fact that these costs are expected to occur only as a consequence of the actual participation in social media as well as the actual cooperation in networks. However, given the low frequencies of use, especially with regard to communication and participation purpose, it seems doubtful whether this is even really applicable to the EPE.

Looking at the platforms separately, the results reveal that all platforms are indeed mostly used for information seeking purposes. Apart from that, the use of specific features seems to depend on the intended use of each particular platform. This suggests that it might turn out to be sensible for each platform to consider their specific purpose and align their activities and website functionalities more closely to these purposes.

However, it should be kept in mind that the generalisability of the platform-specific results is problematic, given the fact that more than half of the respondents have not indicated their platform membership in the questionnaires and could therefore not be considered in the analysis. Additionally, the differences that could be observed were only very marginal.

Of course, for Europol these findings are not only important for reasons of curiosity or better overview of how a product is being used, but mostly because of reasons of justification how

public funding is being used and what kind of return it brings. Given the frequencies of use presented above, it can be assumed that Europol will have a hard time justifying why European citizens' money is spent on a system that turns out to be hardly used at all. Unless they can show that the system can be considered a success despite the low frequencies of use, Europol should spend considerable resources in improving the system. Some recommendations as to how this can be achieved are presented in the following section.

2.2 Recommendations

The results of the study are relevant for Europol in two ways. Firstly, they offer new and more detailed insights in the extent, purposes and reasons of the EPE use by the registered users. Moreover, they give a more detailed overview of what the users actually think about the EPE on a broad set of topics. Secondly, the study gives a scientifically grounded confirmation of some of the assumptions already made by Europol with regard to the above mentioned topics. While there already was the idea that the EPE was not being used to the extent and for the purposes it was intended to, no one really knew whether this was just an impression and to what extent the impression was true. The same holds true with regard to the factors influencing EPE use and the evaluation of the EPE: Whereas there were assumptions and impressions, no one really knew. The study provides a scientific basis and a justification to take action. The results of the study have already been published on the EPE platform that is dedicated to the managers of other platforms. The purpose of this platform is to share best practices and experience regarding the business or IT product management, community management, user management, or content management of the various EPE platforms. A blog entry was posted announcing that a summary of the results was published with a link to the wiki page where the summary was actually published. The summary had further links to various other displays of results, also displayed in the wiki.

Of course, Europol's eventual aim is to improve the system. Given the results and interpretations presented above, it is recommended that Europol focuses on three action areas, Firstly, it is strongly recommended for Europol to **develop alternative performance indicators** for the success of the system. Until now the success of the platform is mainly measured in very limited quantitative terms (as explained earlier). However, as we have seen that the qualitative data have added a lot of insight to what the quantitative data could not tell, the number of registered users as well as the number of active platforms might say very little about the activity of the platform or about its usefulness. Even within the quantitative dimension it would still be possible to find more meaningful indicators, for example by distinguishing between registered and active users (even though then it would have to be defined what would constitute an active user). One could also include indicators that measure the activity on the platform (e.g. taking into account the number of visits, the number of social activity, downloads, etc.) instead of only measuring how many platforms are open and which areas they cover.

Still, it might be wise to expand the concept of performance indicators to a more qualitative dimension by including measures for user satisfaction. This would prevent the error of conceiving a platform as unsuccessful when it has only few users or when the users visit the platform only very infrequently, even though these users might in fact be very satisfied with the service provided by the EPE. Of course, qualitative measurement is often more complex than

quantitative measurement, but a simple question on the user satisfaction on a quarterly or yearly basis might be achieved easily enough and the achieved added value and insight should clearly outweigh the extra effort.

It might also be necessary to differentiate the (quantitative as well as qualitative) performance indicators per platform, according to the expected frequency of use per platform. Because of the highly differing and specialized nature of the platform an indicator that is meaningful for one platform might make no sense for another. Instead of finding very general but largely meaningless indicators for the EPE as a whole (such as is currently the case), it would be advisable to specify adapted indicators per platform or at least for groups of platforms that are similar with regard to some aspects such as platform size or law enforcement area.

Secondly, it is recommended that Europol invest resources into **improving some features of the system** that are perceived as problematic by the users. This would probably go a long way in decreasing the users' effort expectancy, which has a significant effect on whether users use the EPE or not. Additionally, some of the facilitating conditions which have proven to be influential could be improved as well. It is for example suggested that Europol implements some minor improvements suggested by the users themselves, such as automatic update notifications via e-mail (as default setting of the website instead of the current opt-in subscription mechanism), improvement of the lay-out and structure of the user interface so as to make it more pleasant as well as understandable, improvement of some technical issues and to make sure that the website functions faster. Moreover, Europol could consider providing some additional benefits to the system such as making it available also from mobile devices which would make the system more accessible. Finally, it is suggested that Europol offers more instructions or training to the users so as to better prepare and assist them in using the website. Even though it is often claimed that social media by definition require no training for its users, it should be recognised that this claim might not (or to a lesser extent) be applicable for certain age groups or professional backgrounds.

Finally, when it is not possible to improve some of the weakness or threats to the system, Europol should take actions to **raise awareness** on these issues so as to ensure that the (potential) users' expectations are aligned with the actual possibilities of the system. For example, it is extremely unlikely, at least under the current legal framework, that the EPE can be used for the exchange of operational data. By definition, by being available on the internet, this possibility is precluded from the EPE³². This, however, should be made even clearer to potential users from the outset, also emphasising the fact that it is not a matter of time until this will change, but that this is a feature inherent to the EPE. A similar situation is the case of the complicated password policy. Because of security concerns, it is unlikely that the password policy of the system will be significantly loosened. In order to still maintain a certain degree of user satisfaction, Europol could provide more support with regard to password-related problems and more awareness-raising as to why such a password policy is needed and how users can best deal with it. Another example is the complaint that the settings at the national workplaces prevent the use of the EPE. Of course it is not possible for Europol to influence

³² It should be noted that at the time of writing a version of the EPE has also been made available on Europol's secure network. However, as this entails a significant amount of changes to what characterizes the original internet-based EPE (e.g. universal availability on the internet, access also for non law enforcement personnel etc.), this is not considered to be comparable to an EPE that allows for the exchange of operational data as requested by the respondents in the questionnaires.

certain facilitating conditions such as forcing national competent authorities to provide increased internet access or to remove other (IT-) infrastructure burdens that might make the use of the EPE too difficult. Europol can however warn future users from certain competent authorities where which these problems are known to exist in order to encourage the future users to first tackle these problems at the national level before running into the problems and turning them into Europol's problems. In some extreme cases it might even be preferable to advise the future users to access the EPE from their personal computers only or to entirely refrain from using the EPE as only frustration (and therefore negative advertisement) can reasonably be expected from the exercise.

Of course, Europol should also raise awareness on the strengths that the system can provide. This would especially be important considering the importance of performance expectancy, as supported by the statistical analysis performed above. When future users express the concern that it might be very time-consuming and burdensome to use the system, Europol might point out that many users indicated that the system had no disadvantages for them. Trying it out would therefore have no major disadvantages but hold the potential of many advantages to the user as well as the network. Europol should point out that the EPE has the potential of complementing Europol's other core systems where they face limitations (e.g. because of security provision or political sensitiveness). While still providing enough security, the EPE can provide universal accessibility via the internet and direct access to a large network of experts (also non-law enforcement) and therefore provides added value to existing communication channels in Europe.

Given the importance of social influence on the frequency of EPE use, it is vital for the EPE that Europol invests in raising awareness of and within the system itself. While Europol has been successful in expanded the (registered) user base according to the specified targets, these numbers do not necessarily reflect the number of active users. It should be supposed that there is a considerable number of people who have registered to the EPE (perhaps during a conference) but never actually used it later on. There are also many users who have tried using the EPE but have stopped doing so (for various reasons) but are still counted as registered users. Within the limits of the frequencies of use that can reasonably expected per network, depending on its user group and the purpose of the network or platform, Europol should invest more resources in encouraging and facilitating the use of the platform. It is for example important that the information on the EPE is regularly updated and that the users find something that is useful. In the initial phases of the platform it is especially important that at least one user, preferably more, sets a good example of how the EPE can be used and provide additional value to the users.

2.3 Limitations of the Study

In this section, the findings presented above are critically examined in order to identify limitations and weaknesses of the study which may put the results of the study into perspective.

One of the limitations of the study is the fact that not all of the variables that were constructed through additive scales of individual variables have **Cronbach Alpha's of 0.75 and more**. This means that the variables information seeking, communication and participation are not as internally consistent as one would like them to be. Even though the values are still relatively high, it must be assumed that values of 0.75 and more could have yielded more valid results.

It should also be kept in mind that the **method of data collection** that was chosen in this study might have some drawbacks: in particular the possibility that confounding of the results of the measurement with the type of measurement could occur. For example, those people who do not speak English (well) are not very likely to fill in an English questionnaire in English. The results for the questions about the language skills might therefore be skewed towards the upper end of the spectrum. The same might hold true for registered users with very limited computer skills. Similarly, registered users who have forgotten that they registered to the EPE and/or do not know what the EPE is are not very likely to fill in the form. This might mean that the frequency of use of the EPE could actually even be lower. In the end, however, those registered users who completed the questionnaire can probably be assumed to be representative of the all registered users. It was often possible to deduct from the way the questionnaire responses were formulated what the main motivation for completing the questionnaire for a specific user was. The discernible motivations ranged from appreciation of the EPE, to feeling the professional duty to respond to the questionnaire, embarrassment of never having used the EPE and frustration about the EPE. From this perspective it seems likely that many users with many different use patterns and frequencies and opinions on the EPE are represented in the questionnaire responses.

Finally, another disadvantage of the study was that it was **difficult to get insights for each network separately**. Due to the sensitive nature of some of the law enforcement areas, it was not possible to access the networks for content analysis or even to find a network member willing to talk about the network and the user group. Moreover, the majority of users preferred not to indicate their platform membership in the questionnaires. Therefore, despite what has been shown in section 4.5, there must be a big question mark regarding the relevance of these findings. Because of the large number of respondents with unknown platform membership and because we do not know why these respondents chose not to indicate their membership, we do not know to what extent and in what direction the data analysed above may be biased. It should also not be forgotten that the differences between the means per platform as well as per website feature are rather marginal. All means calculated remained under the threshold of the value three, which means that on average, all platforms and all features are used less than once a week. All in all this makes any analysis of the differences between members of different platforms highly problematic.

Even though the above analysis has yielded many insights into the use of the EPE, it seems that there are two more factors which, in hindsight, should have received more attention because they can reasonably be assumed to make relevant contributions to the field of study under consideration.

The first factor is the **expected frequency per network**. The indicated frequencies of use have to be understood before the background of frequencies that can reasonably be expected for each network. A network like the financial crime network whose purpose is the storage of documents in order to make them accessible to all network members, cannot reasonably be expected to have high communication and participation frequencies. Moreover, as a network that has expanded its membership beyond law enforcement officers that are concerned mainly with international financial crime to officers in the regions who only deal with it incidentally even the information seeking and overall frequency should be expected to be relatively low – without

this being an indicator of system failure. It is therefore important to realise that even though the overall frequency of EPE use is shown to be rather low, especially with regard to communication and participation behaviour, this need not necessarily be an indicator of failure of the system. It should be recognised that frequency of use is not always a useful indicator of user satisfaction or usefulness of the system. Instead, investments should be made to explore what the expected frequencies of use for each network are and how these could be used as reference points. Often other indicators such as user satisfaction can be useful to get a better grasp on the question whether the system fulfils its task or not.

The second factor concerns the **professional area in which the website is used**, namely the law enforcement area. The law enforcement environment is different compared to other, more common, professional environments with regard to several aspects, including its focus on secrecy and its tradition of hierarchical structures, which seem to be diametrically opposed to some of the main characteristics of social media, such as transparency and collaboration. One of the problematic consequences of applying social media instruments and ideas to the law enforcement sphere might be an exacerbation of the free-rider problem. While users may be willing to use the platform to access information by others, they might be extremely unwilling to provide information themselves, but not only because of the usual reasons such as lack of motivation, time or necessity, but also and maybe above all because of a major lack of trust in the security of the system and mistrust of what will happen to the information once they post it online. This might be an alternative explanation for the low use frequencies of the platform with at the same time relatively positive evaluations of the system. The explanation could be the fact that many registered users are appreciative of the system in a general way because they see the advantages it can potentially bring, but they personally prefer to not use it because they do not trust it. This would also explain the especially low numbers for communication and participation purposes as the users might be particularly distrustful about who will have access to the information they provide and whether this will have negative consequences for themselves or those persons they are responsible for.

Finally and more generally, it should always be kept in mind that the EPE is only a tool and the use of the EPE should never be a goal in itself. Users do not choose to use the EPE because they want to use the tool but because the tool enables them to do or find something that is useful to them. Or least that should be the case. Because in the end, despite everything that has been researched and explained above, the registered users will only use the EPE if the EPE can offer them something they need. If the platforms fail to do so, even the most elaborate strategies to increase the use of the platform will fail, too. Therefore, making use of the insights provided by this study will only lead to a success if the platforms are simultaneously strengthened in the sense that they provide (enough) substance that the users want to learn about or use.

2.4 Beyond Europol: Suggestions for Further Research

The research of this study is also relevant beyond Europol. The study is relevant because it sheds lights on the difficulties of social media use for purposes other than social activities among “friends”. In the professional realm social media get a different meaning. The differences between the more common social media such as Twitter or Facebook and a professional instance of social media such as the EPE become even more pronounced in not only an

international but also a very sensitive environment such as is the European law enforcement field. Many rules and basic assumptions that apply to regular social media use are not applicable anymore in this area. Simply handing over a tool such as Facebook to a bunch of college kids and watch it expand all by itself, is at best naïve in a setting as the Europol environment. This study helps to understand which pitfalls an organisation intending to use social media for social collaboration might encounter. It also helps to map some of the reactions and concerns social collaboration tools can invoke in their users.

It is suggested that besides finding remedies to the limitations referred to above, future research on social collaboration should focus on highlighting the differences between regular social media and social collaboration more clearly and investigate the consequences that these differences can have for the implementation, development and maintenance of a social collaboration tool. Future research should also investigate empirically the actual costs and benefits of social collaboration as until now it has simply been assumed that social collaboration in itself must be beneficial or it has been assumed that the costs and benefits of social media use (which are also under-researched) are just as applicable to social collaboration.

3. Bibliography

- Avidar, R. (2009). Social media, societal culture and Israeli public relations practice. *Public Relations Review*, 35, 437–439.
- Campus, D. (2008). *Comunicazione politica: Le nuove frontiere*. Gius, Laterza & Figli: Bari.
- Centre for Global Health, Population, Poverty and Policy. (2008). *Fitting Linear Regression in SPSS and Output*. Retrieved November 07, 2012, from <http://www.southampton.ac.uk/ghp3/docs/unicef/workshop5.pdf>.
- Correa, T., Hinsley, A., & Gil de Zúñiga, H. (2010). Who interacts on the Web?: The intersection of users' personality and social media use. *Computers in Human Behavior*, 26, 247–253.
- Cusumano, M. (2011). Technology Strategy and Management: Platform Wars Come to Social Media. The world can absorb more social media sites, but how many? *Communications of the ACM*, 54(4), 31-33.
- Dall'Asta, L., Marsili, M., & Pin, P. (2012). Collaboration in social networks. *PNAS*, 109(12), 4395–4400.
- Davies, S. (n.d.). *Interpreting Regression Output*. Retrieved November 07, 2012, from http://www.simon-davies.org.uk/Interpreting_OLS_Output%28cross-sectional%29.pdf
- Derntl, M., Hampel, T., Motschnig-Pitrik, R., & Pitner, T. (2011). Inclusive social tagging and its support in Web 2.0 services. *Computers in Human Behavior*, 27, 1460–1466.
- DTREG. (n.d.). *Linear Regression*. Retrieved November 07, 2012, from <http://www.dtreg.com/linreg.htm>
- Ellison, N., Steinfield, C., & Lampe, C. (2007). The Benefits of Facebook "Friends": Social Capital and College Students' Use of Online Social Network Sites. *Journal of Computer-Mediated Communication*, 12, 1143-1168.
- EuropeanPoliceOffice. (2011c). *European Police Chiefs Convention 2011*. European Police Office. Retrieved from <https://www.europol.europa.eu/sites/default/files/publications/epcc2011report.pdf>
- Europol. (2011). *Threat Assessment (Abridged): Internet facilitated organised crime*. Retrieved March 8, 2012, from <https://www.europol.europa.eu/sites/default/files/publications/iocta.pdf>
- Europol. (2012). *EPE Europol Platform for Experts (Flyer)*. European Publications Office.
- Eynon, R., & Malmberg, L.-E. (2011). A typology of young people's Internet use: Implications for education. *Computers & Education*, 56, 585-595.
- Feiock, R. (2007). Rational Choice and Regional Governance. *Journal of Urban Affairs*, 29(1), 47-63.

- Fenger, M., & Klok, P. (2001). Interdependency, beliefs, and coalition behaviour: a contribution to the advocacy coalition framework. *Policy Sciences*, 34, 157-170.
- Ferron, M., Massa, P., & Odella, F. (2011). Analyzing collaborative networks emerging in Enterprise 2.0: the Taolin Platform. *Procedia Social and Behavioral Sciences*, 10, 68–78.
- Friedl, J., & Vercic, A. (2011). Media preferences of digital natives' internal communication: A pilot study. *Public Relations Review*, 37, 84-86.
- Gottschalk, P. (2010). *Policing Cyber Crime*. Ventus Publishing ApS.
- Grabowicz, P., Ramasco, J., Moro, E., Pujol, J., & Eguiluz, V. (2012). Social Features of Online Networks: The Strength of Intermediary Ties in Online Social Media. *PLoS ONE*, 7(1), e29358.
- Hanna, R., Rohm, A., & Crittenden, V. (2011). We're all connected: The power of the social media ecosystem. *Business Horizons*, 54, 265—273.
- Hawe, P., Webster, C., & Schiell, A. (2004). A glossary of terms for navigating the field of social network analysis. *J Epidemiol Community Health*, 58, 971-975.
- Hay, C., & Richards, D. (2000). The Tangled Webs of Westminster and Whitehall: The Discourse, Strategy and Practice of Network Within the British Core Executive. *Public Administration*, 78(1), 1-28.
- Herranz, J. (2007). The Multisectoral Trilemma of Network Management. *Journal of Public Administration Research and Theory*.
- Hrastinski, S., & Aghaee, N. (2012). How are campus students using social media to support their studies? An explorative interview study. *Educ Inf Technol*, 17, 451–464.
- Hunton, P. (2011). A rigorous approach to formalising the technical investigation stages of cybercrime and criminality within a UK law enforcement environment. *Digital Investigation*, 7, 105-113.
- Jones, C., Hesterly, W., & Borgatti, S. (1997). A General Theory of Network Governance: Exchange Conditions and Social Mechanisms. *Academy of Management Review*, 22(4), 911-945.
- Kaplan, A., & Haenlein, M. (2010). Users of the world, unite! The challenges and opportunities of Social Media. *Business Horizons*, 53, 59—68.
- Kaplan, A., & Haenlein, M. (2011). The early bird catches the news: Nine things you should know about micro-blogging. *Business Horizons*, 54, 105—113.
- Kietzmann, J., Hermkens, K., McCarthy, I., & Silvestre, B. (2011). Social media? Get serious! Understanding the functional building blocks of social media. *Business Horizons*, 54, 241—251.

- Klok, P.-J. (2012, February 27). *Policy Networks. Powerpoint Presentation, Lecture 2*. Retrieved from https://blackboard.utwente.nl/webapps/portal/frameset.jsp?tab_id=_2_1&url=%2fwebapps%2fblackboard%2fexecute%2flauncher%3ftype%3dCourse%26id%3d_11254_1%26url%3d.
- Komito, L. (2011). Social Media and Migration: Virtual Community 2.0. *JOURNAL OF THE AMERICAN SOCIETY FOR INFORMATION SCIENCE AND TECHNOLOGY*, 62(6), 1075–1086.
- Leopold, H. (2012). Social Media. *Elektrotechnik & Informationstechnik*, 129(2), 59.
- Maier, P. (2010). How has the law attempted to tackle the borderless nature of the internet? *International Journal of Law and Information Technology*, 18(2).
- Malita, L. (2011). Social media time management tools and tips. *Procedia Computer Science*, 3, 747–753.
- Marsh, D., & Smith, M. (2000). Understanding Policy Networks: Toward a Dialectical Approach. *Political Studies*, 48, 4-21.
- Mishna, F., Cook, C., Saini, M., Wu, M., & MacFadden, R. (2011). Interventions to Prevent and Reduce Cyber Abuse of Youth: A Systematic Review. *Research on Social Work Practice*, 21(5). doi:10.1177/1049731509351988
- Niveau, G. (2010). Cyber Pedocriminality: Characteristics of a sample of internet child pornography offenders. *Child Abuse & Neglect*, 34, 570–575.
- Parra-López, E., Bulchand-Gidumal, J., Gutiérrez-Taño, & Díaz-Armas, R. (2011). Intentions to use social media in organising and taking vacation trips. *Computers in Human Behaviour*, 27, 640-654.
- Provan, K., & Kenis, P. (2007). Modes of Network Governance: Structure, Management, and Effectiveness. *Journal of Public Administration Research and Theory*.
- Provan, K., & Milward, H. (2001). Do Networks Really Work? A Framework for Evaluating Public-Sector Organizational Networks. *Public Administration Review*, 61(4).
- Richter, D., Riemer, K., & Vom Brocke, J. (2011). Internet Social Networking: Stand der Forschung und Konsequenzen für Enterprise 2.0. *Wirtschaftsinformatik*, 2, 89-103. doi:10.1007/s11576-011-0265-3
- Smock, A., Ellison, N., Lampe, C., & Wohn, D. (2011). Facebook as a toolkit: A uses and gratification approach to unbundling feature use. *Computers in Human Behaviour*, 27, 2322-2329.
- Steinfeldt, J., Foltz, B., Kaladow, J., Carlson, T., Pagano, L., Benton, E., & Steinfeldt, M. (2010). Racism in the Electronic Age: Role of Online Forums in Expressing Racial Attitudes About American Indians. *Cultural Diversity and Ethnic Minority Psychology*, 16(3), 362–371.

- Stocker, A., & Mayer, H. (2012). Unternehmen und soziale Medien – wie passt das zusammen? *Elektrotechnik & Informationstechnik*, 129(2), 72–75.
- Venkatesh, V. (2003). User Acceptance of Information Technology: Toward a Unified View. *MIS Quarterly*, 27(3), 425-478.
- Wijaya, S., Spruit, M., Scheper, W., & Versendaal, J. (2011). Web 2.0-based webstrategies for three different types of organizations. *Computers in Human Behavior*, 27, 1399–1407.
- Zeitelberger, J. (2012). Management für Organisationen – Jetzt mit 2.0. *Elektrotechnik & Informationstechnik*, 129(2), 76–78.
- Zhong, B., Hardin, M., & Sun, T. (2011). Less effortful thinking leads to more social networking? The associations between the use of social network sites and personality traits. *Computers in Human Behaviour*, 27, 1265-1271.

4. Appendix

A. Questionnaire Template

Dear EPE-User, thank you very much for participating in this survey. The aim of this research, conducted within the scope of a Master Thesis and a traineeship at Europol, is to find out why registered EPE users do (not) participate in the Europol Platform for Experts. Moreover, it will help to evaluate the EPE and therefore offer input for future improvements.

Please note that your responses will be processed in an anonymous way.

Personal Information

Gender:	<input type="checkbox"/> female	Age:	<input type="checkbox"/> 25 or less	<input type="checkbox"/> 26-35
	<input type="checkbox"/> male		<input type="checkbox"/> 36-45	<input type="checkbox"/> 46-55
				<input type="checkbox"/> 56 or more
Country:	Organisation:			
EPE Platform(s):	EPE User since:			
Please indicate if you are a <input type="checkbox"/> Platform Manager, <input type="checkbox"/> Community Manager or a <input type="checkbox"/> normal user.				

Information on EPE Use

Please indicate the frequency that is most applicable to your situation. 0 = never, 1 = less than once a month, 2 = once a month, 3 = once a week, 4 = once a day, 5 = several times a day.

	0	1	2	3	4	5
How often do you use the EPE?						
How often do you post or answer a question in the message forum on the EPE?						
How often do you use the chat on the EPE?						
How often do you use the private messaging function on the EPE?						
How often do you browse the message forum on the EPE?						
How often do you browse the blog on the EPE?						
How often do you browse the wiki on the EPE?						
How often do you browse the media gallery / library on the EPE?						
How often do you write a blog on the EPE?						
How often do you upload a file to the media gallery / library on the EPE?						
How often do you write something in the wiki on the EPE?						

Please indicate to what extent you agree with the following statements.

1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree, n/a = not applicable.

	1	2	3	4	5	n/a
Using the system makes it easier to do my job.						
The information provided on the EPE is useful.						

Participation in the EPE will yield benefits I could not have achieved on my own.						
Using the system takes too much time from my normal duties.						
It takes too long to learn how to use the system to make it worth the effort.						
	1	2	3	4	5	n/a
I find the system easy to use.						
I would use the system more often if I could access it from my smartphone/tablet.						
I can access the system easily.						
People who are important to me professionally think that I should use the system.						
The proportion of colleagues who use the system is high.						
I feel comfortable contributing to the content on the EPE.						
The IT infrastructure at my work place is compatible with the system.						
Specialised instruction concerning the system was available to me.						
Using the system is compatible with most aspects of my work.						
I personally know many people who use social media in their leisure time.						
Using the system is pleasant.						
I regularly use social media (e.g. Facebook, Twitter etc.).						
My computer skills are adequate to use the EPE.						
I feel comfortable expressing myself in English on the EPE.						
I can understand the English language used on the EPE.						
I trust that the EPE is a system that is secure enough for the exchange of non-operational data.						
The EPE is the easiest way to exchange non-operational data with a group of experts.						
I know how to get help if I have a problem using the EPE.						

EPE Evaluation

Please feel free to answer the following questions as detailed as you like.

What do you consider the main benefits that the EPE has brought to your network?

What do you consider the main disadvantages that the EPE has brought to your network?

What do you consider the strongest feature(s) of the EPE?

What do you consider the weakest feature(s) of the EPE?

If you could, how would you change the EPE?

Additional Remarks

If you have any additional remarks or questions, please feel free to express them here.

Thank you very much for filling in this questionnaire! Please send it back to [unit e-mail address]. If you have any questions, please feel free to contact Loraine Busetto via [personal professional e-mail address] or [personal telephone number].

B. Introductory E-Mail (Questionnaire)

Dear EPE User,

You receive this e-mail because you are a registered user of the Europol Platform for Experts (EPE). Within the scope of her traineeship at Europol and her Master Thesis, Loraine Busetto is conducting a study into the reasons why registered users do or do not use the EPE. We would like to find out what benefits the EPE has brought to the users as well as understand the obstacles to the use of the EPE.

We'd appreciate it very much if you could take 10 minutes to respond to the attached questionnaire. We need your input not only if you regularly use the EPE, but also if you do actually not use it. Your feedback is essential for the evaluation of the EPE as much as for its improvement.

After filling in the questionnaire, please send it back to [unit e-mail address]. The results of the research will be published on the EPE in due time. For further questions, please feel free to contact Loraine Busetto via [Europol e-mail address] or [Europol phone number].

Thank you for your help.
With kind regards,

Alessandra Falcinella.

C. Interview Template

Date:

Location:

Personal Data

Name: not necessary

Gender:

Age:

Member State:

Organisation:

EPE User since:

User Role:

In Network / Sub Network:

EPE Use (Network)

- How active is the participation in the network?
- Are there any distinctive patterns to the participation in the network? (in which way is it used? By whom?)
- Which features are used most often?
- Why do you think do the users use the EPE? (What is their main purpose?)

Network Characteristics

- To what extent do you and your network partners need unique/specialised equipment, processes, or knowledge to provide your service?
- Is there a steady demand for the service you and your network partners provide? / Can you and your network partners plan the provision of your services according to your expectations of the demand for these services?
- How frequent is the interaction between the network partners?
- How easy is the communication between the network partners? Are there any major obstacles to the communication between network partners?
- How often do you encounter conflict with your network partners due to differing norms & values? / Do you think that by and large your network partners apply the same norms & values to their work as you do?
- To what extent are you and your network partners willing to invest resources (such as time & money) into the network cooperation?
- To what extent are the network partners willing to give up some authority/responsibility to their network partners?
- To what extent are you and your network partners willing to share credit with your network partners?

EPE Evaluation

- What do you consider the main benefits that the EPE has brought to your network?
- What do you consider the main disadvantages that the EPE has brought to your network?

- What do you consider the strongest features of the EPE?
- What do you consider the weakest features of the EPE?
- If you could, how would you change the EPE?
- Any additional remarks or questions?

D. Answering the Research Questions

Table 28: Answering Research Question 1: To what extent is the EPE being used by the registered users?

Data Source	Variable	Item
Questionnaires	Frequency of Use	How often do you use the EPE?
Interviews	EPE Use	How active is the participation in the network?
		Are there any distinctive patterns to the participation in the network? (in which way is it used? By whom?)

Table 29: Answering Research Question 2: For which purposes is the EPE being used?

Data Source	Variable	Item
Questionnaires	Type of Use	Information Seeking
		Communication
		Participation
Interviews	Type of Use	Which features are used most often?
		Why do you think do the users use the EPE? (What is their main purpose?)

Table 30: Answering Research Question 3a: Which factors influence whether registered users participate in the EPE?

Data Source	Variable	Item
Questionnaires	Performancy Expectancy	Using the system makes it easier to do my job.
		The information provided on the EPE is useful.
		Participation in the EPE will yield benefits I could not have achieved on my own.
	Effort Expectancy	Using the system takes too much time from my normal duties.
		It takes too long to learn how to use the system to make it worth the effort. (-)
		I find the system easy to use.
		I would use the system more often if I could access it from my smartphone/tablet.
		I can access the system easily.
	Social Influence	People who are important to me professionally think that I should use the system.
		The proportion of colleagues who use the system is high.
		I feel comfortable contributing to the content on the EPE.
	Facilitating Conditions	Specialised instruction concerning the system was available to me.
		I know where to get help if I have a problem using the system.
		The IT infrastructure at my work place is compatible with the system.
		I personally know many people who use social media in their leisure time.
	Attitude Towards Using Technology	Using the system is pleasant.
	Skills	I regularly use social media (e.g. Facebook, Twitter, etc.)
		My computer skills are adequate to use the EPE.

		I feel comfortable expressing myself in English on the EPE.
		I can understand the English language used on the EPE.
	Alternative Systems	I trust that the EPE is a secure enough system for the exchange of non-operational data.
		The EPE is the easiest way to exchange non-operational data with a group of experts.

Table 31: Answering Research Question 3b: Which factors influence whether network cooperation via the EPE is likely to occur?

Data Source	Variable	Item
Interviews	Exchange Conditions	To what extent do you and your network partners need unique/specialised equipment, processes, or knowledge to provide your service? To what extent do the network partners provide these?
		Is there a steady demand for the service you and your network partners provide? / Can you and your network partners plan the provision of your services according to your expectations of the demand for these services?
		How frequent is the interaction between the network partners?
	Network Feasibility	How easy is the communication between the network partners? Are there any major obstacles to the communication between network partners?
		How often do you encounter conflict with your network partners due to differing norms & values? / Do you think that by and large your network partners apply the same norms & values to their work as you do?
		To what extent are you and your network partners willing to invest resources (such as time & money) into the network cooperation?
		To what extent are the network partners willing to give up some authority/responsibility to their network partners?
		To what extent are you and your network partners willing to share credit with your network partners?

Table 32: Answering Research Question 4: How do registered users evaluate the EPE?

Data Source	Item
Questionnaire	What do you consider the main benefits that the EPE has brought to your network?
	What do you consider the main disadvantages that the EPE has brought to your network?
	What do you consider the strongest feature(s) of the EPE?
	What do you consider the weakest feature(s) of the EPE?
	If you could, how would you change the EPE?
Interviews	What do you consider the main benefits that the EPE has brought to your network?
	What do you consider the main disadvantages that the EPE has brought to your network?
	What do you consider the strongest feature(s) of the EPE?
	What do you consider the weakest feature(s) of the EPE?

	If you could, how would you change the EPE?
--	---

E. Relative frequencies of information seeking, communication and participation behaviour: SPSS output.

Information Seeking

Figure 7: How often do you browse the message forum on the EPE? Frequencies in percentages.

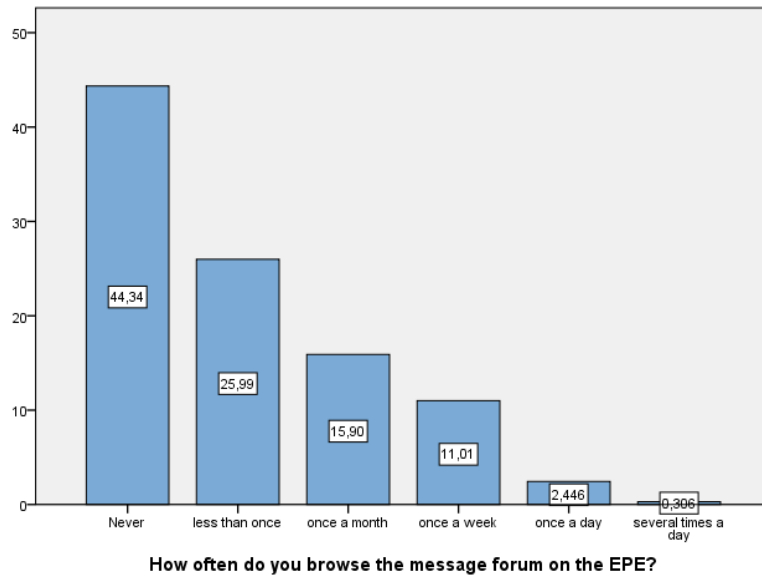


Figure 8: How often do you browse the blog on the EPE? Frequencies in percentages.

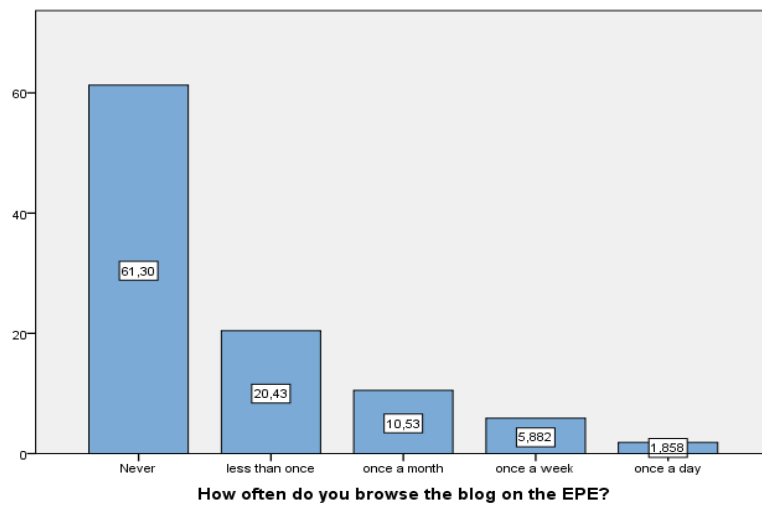


Figure 9: How often do you browse the wiki on the EPE? Frequencies in percentages.

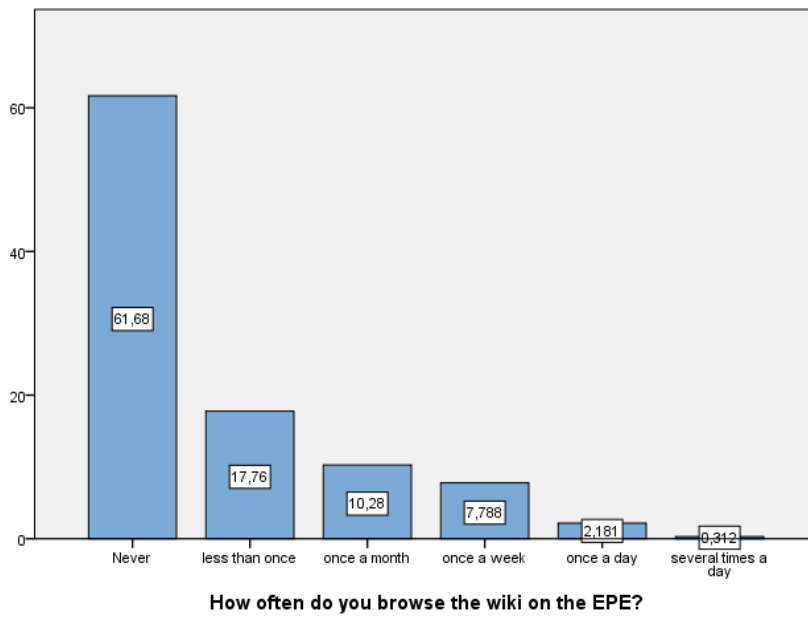
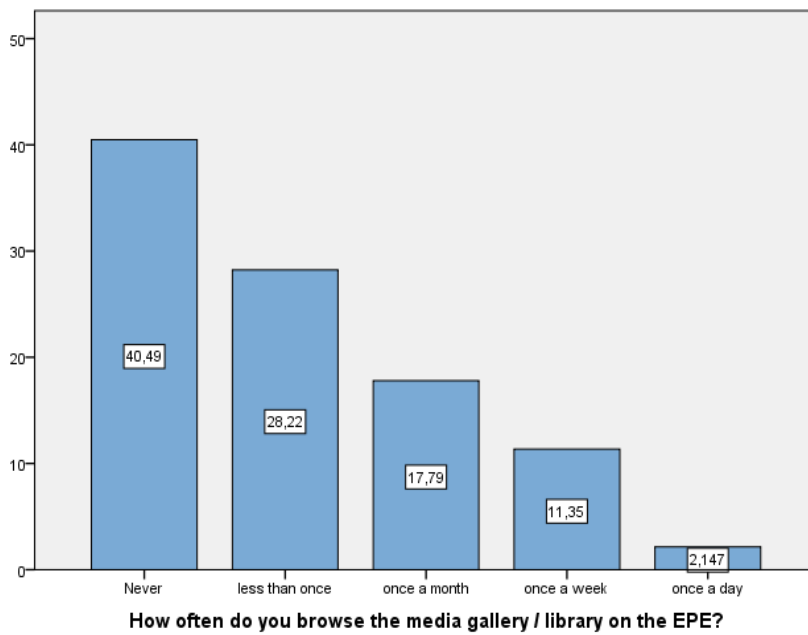


Figure 10: How often do you browse the media gallery / library on the EPE? Frequencies in percentages.



Communication

Figure 11: How often do you post or answer a question in the message forum on the EPE? Frequencies in percentages.

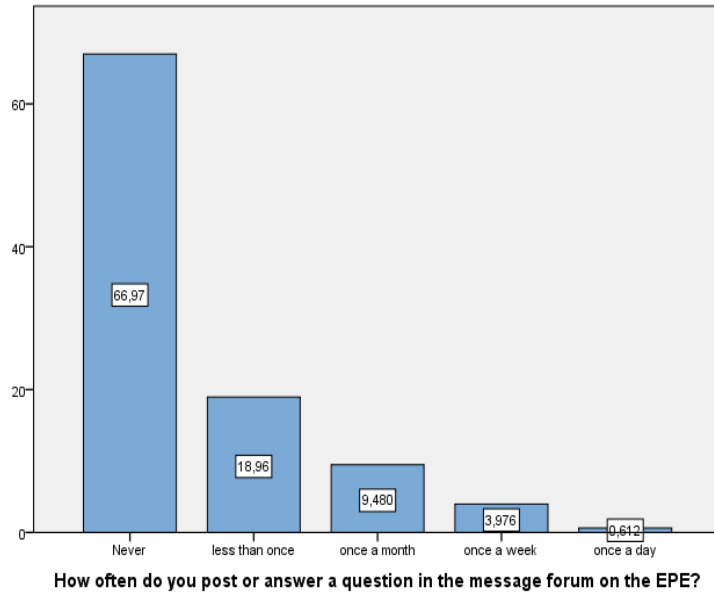


Figure 12: How often do you use the chat on the EPE? Frequencies in percentages.

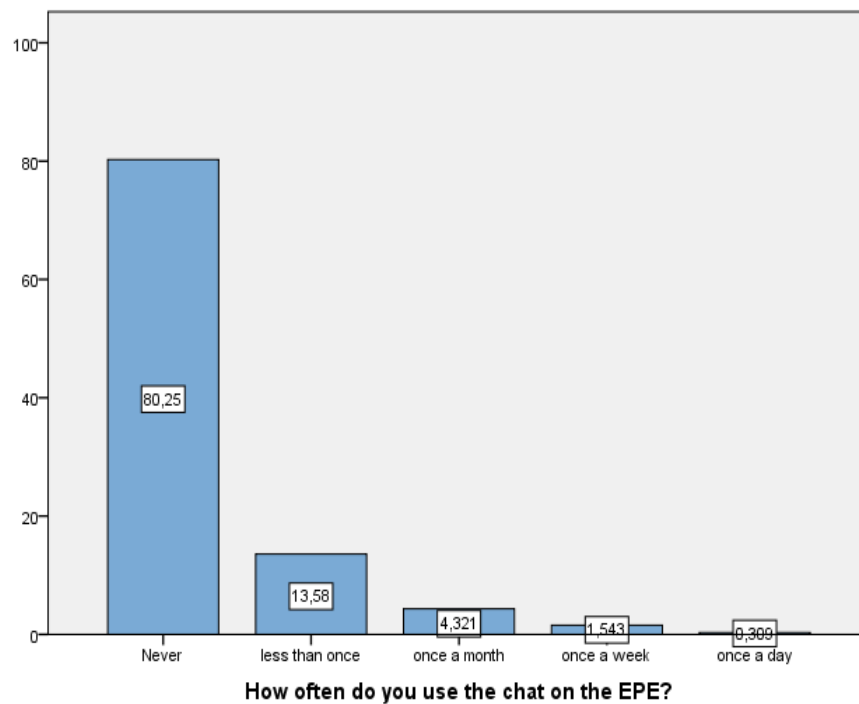
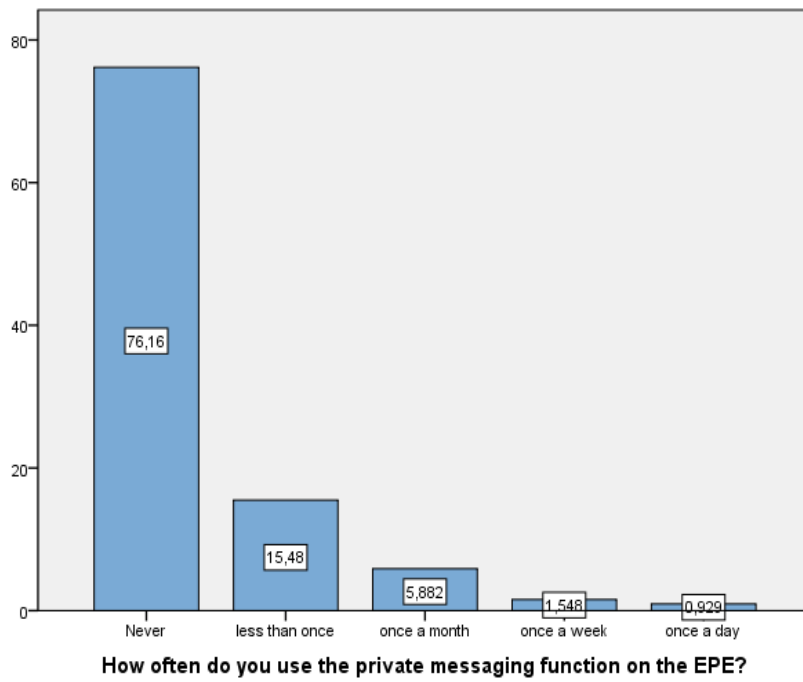


Figure 13: How often to you use the private messaging function on the EPE? Frequencies in percentages.



Participation

Figure 14: How often do you write a blog entry on the EPE? Frequencies in percentages.

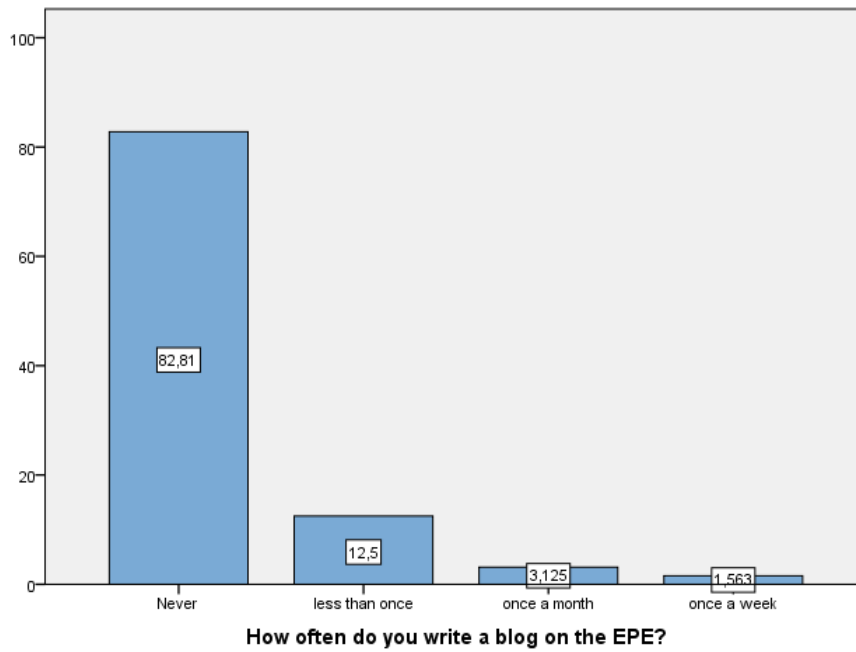


Figure 15: How often do you upload a file to the media gallery / library on the EPE? Frequencies in percentages.

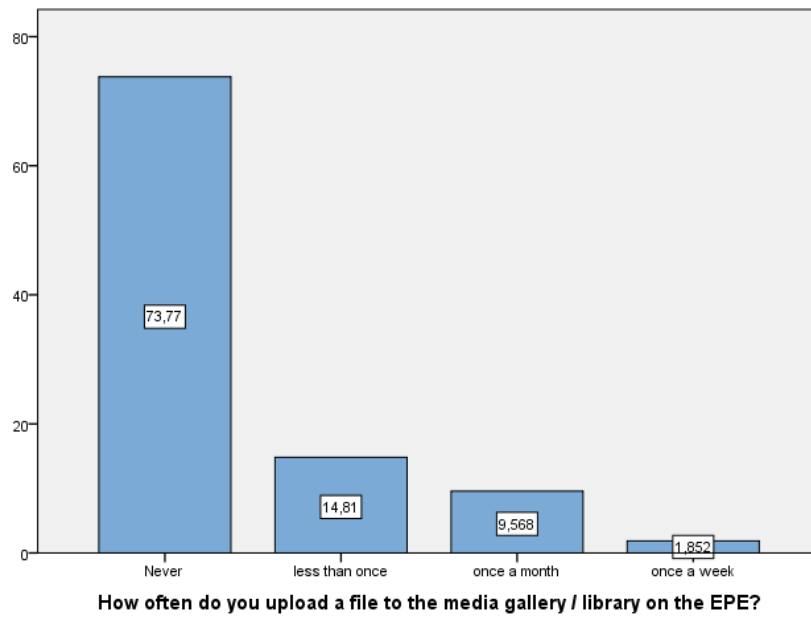
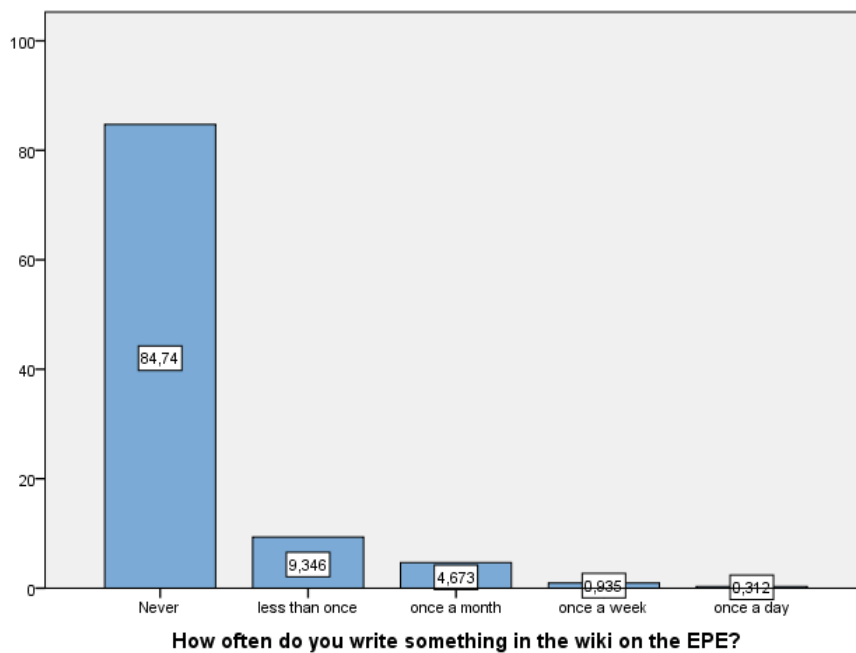


Figure 16: How often do you write something in the wiki on the EPE? Frequencies in percentages.



F. Summary overview of the platform memberships and comments of respondents in the cluster.

Table 33: Platform membership and comments of respondents in the cluster.

Platform	Comment
Unknown (21)	more languages
	Special login
	Forum system, I wish look like a normal forum
	I am sorry to say that I have very rarely used the application; the main reason being it is not some thing I automatically think to use – yes time is also a deciding factor.
	Nothing until now. The tool is still quite new for me and I don't have much time to use it.
	I am just beginning to use the system. I had given it up, because access without any reason was denied. I had quite some problems regaining access. I have now 10 different systems, that each requires it's own password. You get tired from another password, especially as complicated a password, that EPE demands. Quite a science to figure on out. One other problem has been, that our internet connection has been quite sporadic. Often the net connection hasn't worked. That spoils the motivation. But after having spent the first hour in the system I begin to appreciate it. What I still would like to find out is how to get in contact with colleagues from other countries. But I am working on it.
	No disadvantages from the EPE, however my organisations IT infrastructure is very poor and does not allow internet access from my desktop computer. I therefore have to access EPE via a shared internet terminal and this is a very inefficient use of time. With proper internet access on my PC I would access EPE (and other systems) on a more regular basis.
	Dedicate resources to have regular content
Gang Experts (4)	experts need time to get used to the EPE and will really use it in future times
	I HAVE NOT BEEN A USER FOR LONG ENOUGH TO ANSWER THIS ADEQUATELY.
	I have recently changed roles within the Police and as such haven't had time to use the system and I am no longer the SPOC for Organised Motorcycle Gangs within the force.
	I often do not take the time to check the news on the platform due to a lot of work.
Financial Crime (4)	Lack of updates
	EPE would be useful for only a small part of my job. That's why I do not use it. But I like the platform. However, we communicate more by e-mail within our group. Maybe we have the feeling it is the best way to get an answer quickly.
Environmental Crime (4)	In my case, I must go to another office to work with the EPE, and most of times the PC that we have to use with Internet it's being used by someone.
	Because of lack of participation by other users it has not brought specific benefits, We have to manage the content of yet another platform, The lack of participation

	<p>It's brings me an international network of experts, I am not a frequently user, yet. I can't say anything about a weak feature, The access! I'm using a very long and strange password to log in</p> <p>Invite more experts</p>
Universal Messaging Format (3)	<p>Other users are not using it; The password policy is too strong, hard to remember without writing it down; Password policy less strong, then maybe people would access it more.</p> <p>There should be the way to make EPE send email when there are updates in the chosen area of interest.</p>
Special Tactics (11)	<p>I believe most of the users are hesitant uploading information. So an authorized person for the platform would be a good idea.</p> <p>It is undoubtedly a great system and for EuNAT it is in its infancy. My personal problem is that the organisations IT structure does not allow access from desk top computers so I cannot load photographs or interest or documents for perusal. As I cannot put these on my own IT there is no adequate way of performing these functions. I am trying to address these.</p> <p>I would create a more pleasant environment</p>
	<p>A little hard to get used to but I am receiving further Training soon, Users are not active enough (I was one of them once!)</p>
	<p>I've been using EPE for a short period of time and our board is still very "young". For that reason, there haven't been much information and also most of the information is considered very secure. There hasn't been much need to use the EPE yet, but maybe in the future, there is more need and that way there will be more use and information will be changed more freely. Many still think, that it's easier to exchange information via duty emails, 'cause that is more secure and personal.</p> <p>Not sure of disadvantages but European comms are only relevant when dealing with an International Relocation, hence the reason I am a relatively low user. I'm not sure how many people actually fully trust the security either – there is always suggestions/innuendo that others could access communications or discussions.</p>
Pruem (4)	-
ENLETS (1)	-
ENFSI (1)	-
Paysafe (1)	<p>Personally, I'm not (yet) at a technical level (regarding the topic) to contribute content. But not a shortcoming of the platform of course</p>

G. Summary Interviews

Table 34: Summary overview of the interview responses

Respondent Question	1	2	3	4	5	6	7	8	9
Gender	Male	Male	Female	Male	Male	Female	Male	Male	Male
Age	40	45	36	52	26-35	36-45	31	39	26-35
MS / Org.	Estonia	Germany	Europol	Europol	Europol	Europol	Europol	Europol	Europol
User Role:	Normal user	Normal user	Manager Role	Manager Role	Manager role	Manager Role	Manager Role	Manager	Manager Role
Network	Witness Protection	Witness Protection	Law Enforcement Communicat ors	E-Scan	E-Scan	Financial Crime Information Centre	Gang Experts	Environmental Crime	Payment Card Fraud
Active participation ?	Not much (visible) activity.	Low.	Zero. It used to be active but then the responsible unit at Europol ran out of resources.	Not known.	Not known.	Probably only a few days per year.	Not active, no participation.	Lack of participation.	Participation is quite good. Platform is used and updated by users
Distinctive patterns?	Mostly the same people who participate.	Mostly the same people. Mostly those who are involved in training and international cooperation.	Only the responsible Europol unit and 1 UK user contributed.	Not known.	Not known.	Information is sent to one person at Europol who uploads is to the EPE.	Around 6 people who posted in the past.	Mainly only 2 people who contribute.	Everyone provides input, not pattern visible
Features used often?	Message forum, document library	Document library.	Blog and pictures.	Not known.	Not known.	Document library.	Wiki (updated by manager); Message Forum	Message forum and blog	Wiki, message forum, blog, polls, private messaging

Why use EPE?	To find information (regarding other countries)	To find information & to find national counterparts in other countries.	Availability of first-hand material and publications to use in their daily jobs. Information about national counterparts .	Wish for readymade online community instead of developing a new one.	Not known.	Access information in document library.	Information sharing, asking for help	Find answers to questions that have	To access knowledge library, consultation of other experts
Specialised equipment?	Yes, very.	Yes, definitely.	No specialised knowledge is needed. Except English.	Not known.	Not known.	Very specialised skills & knowledge.	Not known.	No.	Depends: Technical experts yes. Police offers no.
Steady demand?	Usually yes, and there is a structured process. But sometimes a fast response is needed.	Possible & necessary to plan in advance. Usually standard procedures are followed.	No steady demand.	Not known.	Not known.	To some extent, but never entirely.	Operational departments: changing demands, strategic departments: steady demand	-	Not known. Probably differs per country.
Frequent interaction?	Very frequent.	Frequent: about 10 meetings a year, weekly e-mail contact.	Not very frequent.	Not known.	Not known.	Very frequent. Daily jobs require them to interact frequently.	Rather incidental interaction	Not very frequent	Meeting on yearly basis, contact via EPE in between.
Easy	Very easy.	Communication	Easy.	Not known.	Not known.	Easy	Easy	Easy	Very easy.

communication?		only happens between people who personally know each other.				communication (essentially English speaking communities).	communication via phone or e-mail		
Value/norms conflict?	No.	No. There are common EU-wide criteria.	None.	Not known.	Not known.	Sometimes there can be confusions regarding norms.	None.	No conflict so far	No conflict.
Willingness to invest resources?	Very high. Because without cooperation most services are impossible to deliver.	Very willing.	Europol is willing but does not have the resources. Other members might be willing, others not.	Not known.	Not known.	Varies. Some have very high, others low.	Yes.	-	Very willing.
Willingness to give up responsibility?	Not applicable. Bilateral agreements are made.	Responsibility is balanced between partners.	Europol would like to share if others were willing to take it up.	Not known.	Not known.	Varies. Regarding technical information yes, regarding established procedures no.	Varies. They may want to give, but expect some in return.	-	Not applicable.
Willingness to share credit?	Not an issue at all.	Principle of reciprocity; no problems at all.	No problem.	Not known.	Not known.	Yes. They are obligated to (share acquired assets)	Not applicable.	Not known.	Not an issue.
Main benefits?	Availability of regularly	Easy to find contacts &	Everything concentrate	No benefits so far.	It provides a space for	tool to display relevant	Idea behind EPE is good.	Well-structured, possibility to	Universal availability via

	updated information	information	d in one place; easy to access & share		interaction.	information, increases network's respectability,	Some helpful replies in MF	exchange knowledge and experiences, direct real time contact, quick	internet. Easily accessible but in secure way. Provision of library of knowledge
Main disadvantages?	None.	None.	English as main working language, mentality of doing things the old way. Notifications sometimes went into junk mail.	Very slow, user management too difficult, password policy, system is not flexible, manager roles do not have enough rights to perform their tasks	Sub-optimal technical implementation of the system.	EPE is rather social media than document library (which FCIS was invented for), password policy not user-friendly for infrequent users	EPE does not work, not set up for information sharing. Wiki is not user-friendly. EPE does not allow sharing operational data	Password policy	No disadvantages.
Strongest features?	EPE is generally a good environment.	Important database. Strategic advantage compared to similar networks because of easy connectivity.	Blog, image gallery, message forum, chat	No strong features.	None.	Possibility to upload images and videos	Possibility to upload pictures	Good structure, easy to use	Mutual learning
Weakest features?	MF could be more user-friendly.	The content & low participation.	Difficult to find contacts of network members.	EPE is a weak content management system.	EPE is based on weak content management system. No	EPE is more suitable for social media than library	Wiki is not user-friendly, password policy, underdeveloped	Some features displayed in the menu are not being used	User authorisation takes too long

					direct communication between users and technical developers. EPE is not user-friendly.		d private messaging function, no automatic subscription		
Change?	Nothing. For the beginning, the EPE is good enough.	Send regular news letters, have more regular posts, more sophisticated library, more academic/scientific approach. EPE needs to be part of someone's job description.	Make it faster. Should be designed more like Facebook.	Managers should be given more freedom to create the webpage on their own.	Managers must stimulate participation. Registration process must become easier. The 'inappropriate behaviour' button should be removed.	Access restrictions should be changed, no social media pressures	-	Automatic subscription, password expiration period should be extended	Make EPE available on mobile devices, make registration with any kind of e-mail address possible, more modern layout
Additional comments?		-For bilateral cooperation (which is frequent in this field) mostly other channels are used. -Many people do not trust the EPE enough to share information. - Most people	One of the main problems was that the users didn't speak English very well. Moreover there is a reluctance to use anything IT	Difficult to establish a network on the EPE. Biggest challenge: how to make the users contribute. Manager should actively run the	It is better to have an existing community as a driving force behind EPE network.		Many of the registered users have never actually used the system	The problem is the motivation of the users and the time available to them to use the platform, EPE might be too difficult to use for normal users, some users are afraid to express	

		are in age groups that have not grown up with computers	or social media related.	community. Problem: lack of personnel and interest in the system.				themselves in English	
--	--	---	--------------------------	---	--	--	--	-----------------------	--