
Editorial

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1 Introduction

In this special issue of the *International Journal of Private Law (IJPL)*, the focus is on the legal aspects of mobile commerce and pervasive computing. The guest editors, Pernille Wegener Jessen and René Franz Henschel, have been the leaders responsible for the project ‘Legal aspects of mobile commerce and pervasive computing: privacy, marketing, contracting and liability issues’,¹ financed by the Danish Research Council for Independent Research; Social Sciences. The project has been conducted in close cooperation with the Department of Computer Science, Aalborg University, Denmark² and the Danish software company Geomatic.³ Furthermore, the project has invited experts from around the world to contribute to the research. The reason for this is obvious: ‘problems of international dimension truly requires international efforts’.⁴

A series of seminars has been conducted as part of the project. In connection with one of the seminars, the project leaders were invited by the editor-in-chief of *IJPL*, Sylvia Mercado Kierkegaard, to put out a call for papers in *IJPL* on topics falling within the scope of the project. The reply was positive, and the guest editors would like to thank *IJPL* for this excellent opportunity to share the results of the project. In the truly international spirit of *IJPL*, this special issue includes articles by researchers from universities in Australia, Belgium, Brazil, Denmark, Italy and the USA.

Here, we look briefly at the aims and main topics of the project, and in this connection we introduce the different articles in this special issue.

2 Legal aspects of mobile commerce and pervasive computing – interaction between law, the industry and technical sciences in order to find better solutions

It is well known that mobile commerce and pervasive computing create new commercial opportunities. At the same time, they raise problems in relation to the legal framework that surrounds them. The purpose of the present project has been to identify and analyse

the legal aspects of privacy, marketing, contracts and liability in mobile commerce and pervasive computing networks, and to present solutions to the problems which the analysis reveals. This has primarily been a legal research project with its basis in European law, but it has also involved computer science and the industry as well as comparisons with legal systems outside Europe, e.g., the USA and Brazil.

First, it has been the basic assumption of the project that in order to identify, properly analyse and present solutions to the problems, the factual background has to be clarified and clearly understood. Therefore, the project has involved close interaction between legal science and computer science in order to fully understand the basic concepts and problems.

Second, the project has involved the industry which creates the technical foundations for mobile commerce and pervasive computing networks. The cooperation with the Danish software company Geomatic has thus been an important part of the project. The aim of this cooperation has been to add analytical depth to the project and to see if there might be a basis for the research to influence how the industry actually solves the technical problems connected with mobile commerce and pervasive computing. Thus, it has also been the aim of the project to create an innovative and interdisciplinary research environment. At the same time, this has hopefully laid the foundations for future research projects in which the different sciences and the industry can gain further knowledge.

Third, the purpose has been to analyse the problems of legal regulation which often lags behind technical developments, thus, creating legal problems and/or legal uncertainty for companies and users. The research shows that it might be possible to solve this by means of a coordinated response of a legal, technical and self-regulatory nature.⁵

3 The methodological challenges of the project

Combining legal science, technical science and industry in a project to propose new solutions are not without methodological challenges. The project has its theoretical basis in traditional legal dogmatics, which means that the results of the research must be relevant for the ordinary courts of the legal system, as a kind of prognosis of future outcomes of cases with the same facts as the research is based upon. This approach takes its starting point in a description, systematisation and interpretation of existing legal sources and it therefore also sets the basic method of the project.⁶ This theory and method have been necessary for working out proposals for the evolution of legal regulation to cope with the future challenges of mobile commerce and pervasive computing systems.

However, as the project involves legal researchers from a business school environment, computer science and the industry, the research also uses an interdisciplinary and pro-active method, in the sense that the solutions should be presented in a way that allows the industry to prevent legal problems arising. This has necessitated close cooperation between the different sciences and the industry. The seminars have thus been intended to serve as a forum for debate and discussion about the different key subjects and for the exchange of knowledge and ideas in an interdisciplinary environment, e.g., on technical solutions to legal problems and on self-regulation. The organisation of the project, together with the seminars and the call for papers, has thus constituted a very important part of the method adopted to achieve its aims.

4 The interaction between an industrial PhD and a legal PhD

An important part of the project has been the publication of a PhD thesis which analyses the legal issues of marketing in a mobile and pervasive computing environment.⁷ An industrial PhD student has also been involved in the present project. The aim of the industrial PhD project has been to analyse the computer science and business aspects of mobile commerce and pervasive computing from a marketing perspective and to present a valid business case.⁸ This project has also involved ethical, social and legal considerations. There has been close cooperation between the industrial PhD student and the PhD student affiliated to this project doing legal research, so that both projects include an interdisciplinary approach. This cooperation has resulted in an interdisciplinary article authored by the two PhD students.⁹

5 The main topics of the project – privacy, marketing, contracts and liability issues

Four different topics represent the key issues in the discussion of m-commerce (i.e., commerce using mobile phones) and pervasive computing. There is a high degree of interaction between these topics.

5.1 Privacy

Protection of privacy and personal data poses great challenges to the knowledge society. The evolution of m-commerce and pervasive computing inevitably involves both opportunities and risks for customers and other users. An immense amount of information is processed, collected, stored, combined, transferred and used for various purposes, including contracts, profiling, marketing, payment, etc. The increased possibility of collecting and using all kinds of information about individuals poses serious privacy risks, not just for data related to individuals but also for the autonomy of individuals, regardless of whether the data are considered personal or not. Today, the information collected may be used and combined in ways that customers cannot anticipate, are not informed about and have no possibility of preventing.

An important part of the research project has been to explore the EU legal framework for protecting privacy and personal data, especially in the context of using information for mobile marketing and behavioural advertising. In this regard, it has been important to make a comparative analysis of the legal frameworks of both EU and US law. Even though these legal systems share many common features, there are also fundamental differences in their approaches and in the legislative tools applied to privacy and data protection – differences that are extremely interesting in the context of gathering ideas about future developments in regulatory and self-regulatory approaches to privacy protection.

Privacy and data protection in the EU is at a very high level and is shaped in a way that is intended to be technologically neutral. Despite this, the researchers involved in this project have repeatedly found that even though the protection is framed so as to try to anticipate privacy and data protection issues arising from technological developments, it

still does not provide an adequate level of protection in all situations in accordance with the underlying purposes and aims of privacy and data protection law.

Privacy and data protection law will simply always be one or more steps behind technological development, and the question arises as to whether we should rethink the approach taken to the legal protection of privacy and data protection in order to overcome the problems arising from technological developments, or whether we should put our trust in other measures, such as the development of privacy-enhancing technologies or self-regulation.

Profiling is a major challenge to privacy and data protection, due to the immense amount of information circulating in the m-commerce and pervasive computing environments. Behavioural advertising practice uses profiling technologies to generate highly-targeted advertising to mobile customers, based on computer-generated profiles. Such practice raises privacy concerns, not only with regard to the protection of personal data, but also with regard to the right to personal autonomy and liberty.

As part of the project, Nancy J. King and Pernille Wegener Jessen have published two articles on the profiling of mobile customers.¹⁰ Taking a comparative approach, these articles evaluate the adequacy of the level of protection provided by EU and US regulatory and self-regulatory regimes with regard to the profiling of mobile customers for behavioural advertising purposes.

The subject of marketing and profiling is further pursued in the article by Nancy J. King in this issue, 'Why privacy discussions about pervasive online customer profiling should focus on the expanding roles of third-parties'. In this article, Nancy J. King explores the important roles which network advertising associations, consumer databases, data mining services and advertising exchanges play in the online behavioural advertising industry. This third-party involvement raises consumer privacy and data protection concerns, which are not properly addressed in either EU or US law, and the article makes recommendations for regulatory reforms specifically for third-party involvement in the behavioural advertising industry in order to enhance consumers' privacy and data protection.

Geo-location data is a distinguishing element of m-commerce, and this is considered in Pernille Wegener Jessen's article in this issue, 'Should geographic location data be regarded as sensitive? – some thoughts'.

The possibility for mobile marketers to target mobile customers more precisely and efficiently, and the privacy and data protection implications arising from this, has also been the subject of the PhD thesis of Evelyne Beatrix Cleff.¹¹

5.2 *Marketing*

The second issue dealt with by the project is marketing. Evelyne Beatrix Cleff's PhD dissertation, referred to above, was set against the background of uncertainty: is existing law applying to mobile advertising adequate to protect consumer's privacy? In attempting to answer this question, five articles have been compiled in the dissertation, examining the adequacy of existing EU and US laws designed to protect consumer privacy with respect to mobile advertising.¹² The articles are interrelated in the sense that they all discuss fair information practices associated with

mobile advertising, based on an enhanced disclosure-consent approach. The dissertation proposes solutions that ensure consumer privacy in mobile advertising, as well as encouraging the growth of the m-advertising market by promoting consumer trust and confidence.

Overall, the dissertation makes several suggestions for legislative changes that should be adopted in both regimes because they will improve the protection of consumer privacy in m-advertising. In addition, the different articles have worked towards a regulatory solution in the form of a coordinated legislative, self-regulatory and technical approach that will adequately protect consumer privacy while being flexible enough to adapt to changes in technology and market strategies.

At the moment, there is a regulatory imbalance between the EU and the US, which may create legal barriers to global mobile commerce. The suggested coordinated approach could be used to create universally respected rules for working towards global solutions. This is because it relies on widely recognised fair information practice principles, and uses all the tools available (i.e., legislation, self-regulation and technology).

5.3 *Contractual issues*

The third issue concerns contracts in a mobile and pervasive computing environment. The general rules of contract law apply to contracts in a mobile and pervasive computing environment, but at the same time this environment raises new problems. For example, the legal framework has not been regarded suitable for mobile commerce in a traditional SMS-based situation. Due to the limited screen sizes, the information requirements of EU law would require several SMS messages to be sent, which is neither practical nor attractive in regard to price. Therefore, the solutions to the problems in m-commerce and pervasive computing networks might be found either in the present legal framework or in the development of technical solutions by the industry. Alternatives like codes of conduct, trustmarks and special legal symbols have been considered in this project¹³ and G.R. Gangadharan's article, 'From legal code to digital code: making software services rights-aware', analyses whether software licensing could be transformed from being in human readable form to being in machine-readable form in the form of digital code, making software services rights-aware.

In their article, 'A comparative analysis of legal aspects of mobile contracts in Brazil', Carlos Alberto Rorhmann and Miriam de Abreu Machado e Campos analyse, from a comparative perspective, the legal aspects of electronic contracts regarding mobile commerce in Brazil. The article analyses the theoretical basis of the legal systems that influenced Brazilian contract law and how this has influenced the regulation of electronic and mobile contracts in Brazil.

The project has also analysed the problem concerning the rules under which international commercial contracts can be made in a mobile commerce environment. This raises the issue of choice of law and jurisdiction, consumer protection and alternative dispute resolution (ADR). In his article, 'Cross-border litigation and ADR mechanisms in disputes concerning mobile computing in the EU', Andrej Savin discusses how the EU rules on jurisdiction, choice of law and ADR in civil and commercial matters operate in the context of mobile computing. The article first looks at the rules on jurisdiction in

commercial disputes, both between businesses and between businesses and consumers. It then discusses the choice-of-law issues applicable to mobile computing. Finally, there is an examination of ADR as an alternative to the use of the regular courts in transactions involving mobile computing.

Finally, in her article, 'What we know and what we do not know – the legal challenges for international commercial contract formation in pervasive computing environment', Grace Li analyses the issues of international commercial contracts in the context of the coming pervasive computing era and outlines the challenges created by pervasive computing, in particular the issues of jurisdiction and contract fraud. The article suggests that in order to serve the future computing environment better, the legal and regulatory framework should focus on improving the internal monitoring of risks and vulnerabilities, and greater sharing of information about these risks and vulnerabilities. Moreover, the role of government should be to focus on education and training on the care and use of these technologies and the better reporting of risks and responses. The author suggests that a fully embedded computing environment that is safe will need more collaboration between individuals, commercial organisations and relevant government bodies.

5.4 *Liability*

The setting up of systems to facilitate mobile commerce and pervasive computing networks will not necessarily involve just a single party, but the several parties that supply the platforms for the services and transactions. First, there will be suppliers of hardware and software, e.g., mobile devices and software platforms. There will also be the parties that enable the user to use the technology and services, e.g., telephone companies and payment service providers. And finally there will be the parties that supply various services, e.g., games, movies, etc.

The project has analysed the legal bases on which the various parties can have liability to the user and how the parties can have liability to each other. There has also been analysis of how and to what extent the parties can limit their liability to each other and to the user.¹⁴ In his article, in this issue of *IJPL*, 'Payments made by means of mobile phones', Hans Henrik Edlund analyses the liability of payment service providers for executing payment instructions by means of mobile phones and the problems caused by the insolvency of a payer. The article includes references to the new European Draft Common Frame of Reference (DCFR) as well as the Unidroit Principles 2004 and the Principles of European Contract Law (PECL). And in his article, 'Allocating liability in the event of fraudulent use of electronic payment instruments and the Belgian mobile payment instrument PingPing', Reinhard Steennot considers the issues of gross negligence and the burden of proof. The articles conclude that the existing regulation does not solve all problems, and that the problems may be solved either by new regulation or by self-regulation (e.g., in contracts between the parties), which may be better and more realistic in a global context. Finally, René Franz Henschel analysis new self- and co-regulatory instruments on the liability for mobile operators acting as intermediaries when delivering premium rate services. The article concludes, that the new rules improves consumer protection, user confidence and the development of mobile commerce and that they should considered when designing the future rules on the liabilities of service intermediaries.

6 Conclusions and future research

The legal research into mobile commerce and pervasive computing often concludes that legal regulation generally lags behind technological development. This seems to be a general problem which means that there is a lack of legal protection and/or hindrances to technological development caused by the risk of legal uncertainty for users as well as the industry. In many cases, this leads the researchers to conclude that new regulation should be considered. However, this is often combined with a recommendation that any new regulation should be supplemented by self-regulation, e.g., by regulation in the specific contracts or more generally within the industry, such as by codes of conduct or trustmarks. Regulation and self-regulation also have to be supplemented by technical solutions, such as new legal symbols or software that is rights-aware.

The overall conclusion seems to be that it is not for a single actor to solve the legal problems of mobile commerce and pervasive computing. On the contrary, the technological development and need for legal protection and regulation seem to require increasing collaboration between the relevant actors, and solutions to the legal challenges must be found in a coordinated response of statutory regulation, self-regulation by the industry and new technical solutions. This is a process of innovation for all involved. It is hoped that the present research project has not only revealed some of the fundamental questions and suggested solutions to the current problems, but has also helped pave the way for future legal and interdisciplinary research in mobile commerce and pervasive computing. The editors hope that readers will enjoy pleasant and profitable reading of the *IJPL* special issue on mobile commerce and pervasive computing.

Notes

- 1 See the project website at <http://www.asb.dk/article.aspx?pid=19387>.
- 2 Professor Torben Bach Pedersen, PhD.
- 3 <http://www.geomatic.dk>, Head of marketing and communications Hans Ravnkjær Larsen (now at Ignite Denmark).
- 4 Kierkegaard, Sylvia Mercado, in: Editorial, *IJPL*, Vol. 1, Nos 1/2, 2008, p. 1.
- 5 See Cleff, E.B. (2010) 'Effective approaches to regulate mobile advertising: Moving Towards a coordinated legal, self-regulatory and technical response', in *Computer Law and Security Report*, Vol. 26, No. 2, pp.158–169.
- 6 Nielsen and Tvarnø (2005); Retskilder and Retsteorier (2004) p.24.
- 7 Cleff, E.B. (2009) *Mobile Advertising: Proposals for Adequate Disclosure and Consent Mechanisms*, Aarhus School of Business.
- 8 See Gidolfalvi, G. (2007) *Spatio-Temporal Data-mining for Location-Based Services*.
- 9 Cleff, E.B. and Gidolfalvi, G. (2008) 'The legal aspects of location-based mobile advertising platform', *International Journal of Intellectual Property Management 2008*, Vol. 2, No. 3, pp.261–227.
- 10 Profiling the Mobile Customer – Privacy Concerns when Behavioural Advertisers Target Mobile Phones – Part I, *Computer Law and Security Review*, Vol. 26, No. 5, 2010, pp.455–478, and: Profiling the Mobile Customer – Is Industry Self-regulation Adequate to Protect Consumer Privacy when Behavioural Advertisers Target Mobile Phones? – Part II, *Computer Law and Security Review*, Vol. 26, No. 6, 2010, pp.595–612.
- 11 See Cleff, E.B., note 7.

- 12 To provide an overview of the dissertation, the articles are presented in brief. The abstract is from the PhD dissertation, pp.6–8. Full references to the articles can be found on the project website (see note 1). Article I, ‘Regulating mobile advertising in the European Union and the USA’, examines the adequacy of existing EU and US laws for the protection of consumer privacy and personal data with respect to mobile advertising. Article II, ‘Implementing the legal criteria of meaningful consent in the concept of mobile advertising’, evaluates the legal problems of the EU legal framework and potential technical solutions associated with the domain of m-advertising. Article III, ‘The legal aspects of a location-based mobile advertising platform’, envisions a privacy-enhanced model for a location-based mobile advertising platform for a social networking application that is to be compliant with data protection and spam laws in the EU. Article IV, ‘NCTA v FCC – Do commercial free speech justifications trump consumers’ personal data protection rights?’, argues that the answer to shaping the mobile advertising industry is an exposure to US law, and analyses a regulatory framework that is characterised by a complex web of privacy laws that co-exist with self-regulation. Article V, ‘Effective approaches to regulate mobile advertising: moving towards a coordinated legal, self-regulatory, and technical response’, summarises the results of the previous articles in order to propose a regulatory approach that ensures adequate consumer privacy protection in the mobile advertising domain. The article suggests that the adoption of self-regulatory measures and privacy-enhancing technologies coupled with government intervention in form of legislation is the most achievable approach for protecting consumer privacy in this environment.
- 13 See Cleff, E.B. and Henschel, R.F. (2007) ‘Information requirements and consumer protection in future m-commerce: textual information overload or alternative regulation and communication?’, in *The International Journal of Intercultural Information Management* 2007, Vol. 1, No. 1, pp.58–73.
- 14 See Henschel, R.F. and Steenot, R. (2001) ‘The impact of the directive on payment services in the internal market on Danish and Belgian Legislation on fraudulent payment transactions’, in *The International Journal of Private Law* 2010, Vol. 3, Nos. 1/2, pp.179–196.