

Regulatory Issues for Mobile Grid Computing in Europe

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Extended Abstract

With the ongoing development of grid systems from research-driven high-performance computing towards mobile grids [1]—essentially next-generation business grids that allow for pervasive access—, technical implementation efforts need to be complemented by identifying the key set of relevant **regulatory determinations**. The uprise of an integrative technology and new systems require existing regulations to be revisited with a widened perspective. This is mainly due to the fact that mobile grids integrate many different regulatory viewpoints on telecommunications, grid computing, and end-consumer markets [10]. Thus, in addition to telecommunications and data conveyance regulations, which are typically determined in a service-neutral manner, abstracted from application domains, regulations on value added services have to be investigated as well.

Careful analysis of relevant regulatory issues for communications and value added services provided through the mobile grid is of high importance, since these services are targeted at offerings in a competitive environment [11]. End-consumers conclude **contractual agreements** with mobile grid solution providers. Such a contractual relation—technically implemented by Service Level Agreements (SLA) and Service Level Specifications (SLS)—forms the legal frame governing the general set-up for legal compliance of commercially offered mobile grid services. While communications services have a long tradition to be offered in a commercial context, value added grid services lack this background.

Accordingly, the preliminary study [12] on regulatory issues for mobile grid computing in the European Union (EU) performed a comprehensive relevance assessment of the EU regulatory framework for electronic communications (eCommunications framework¹). The eCommunications framework was selected as a candidate for the **relevance assessment** as it constitutes the most prominent set of directives applicable to communications networks and services covering the areas of competition, market access, and universal service as well as consumer and privacy protection.

This study provided indications on whether the regulatory framework covers grid-based service provision in a meaningful way. Moreover, an assessment was conducted on how well stakeholder requirements are reflected in the framework. This resulted in formalized relations between regulatory principles and corresponding mobile grid business roles. Stakeholders

were grouped into two **distinct roles types**, a service consumer and a service provider role type. The first type subsumes service user, requestor, and customer roles, whereas the latter includes mobile grid-specific provider roles for network service, grid services, and grid applications.

The conducted relevance assessment revealed that those provisions outlined in the eCommunications framework most significantly affect network service providers. This is due to the framework's exclusive focus on communications and network services, whereas value added services—also referred to as Information Society services [3][4]—are addressed marginally. Consequently, grid service providers, grid application providers as well as the respective service user, requestor, and customer roles are affected by the regulatory framework in side-aspects only. This lead to the overall conclusion that the eCommunications framework is only partially relevant for mobile grids, so that further European legislations need to be investigated in order to determine the full set of relevant regulations.

Driven by those insights gained, this paper pursues a **comprehensive study** identifying the key mobile grid regulations on an European level. Focus is put on regulatory determinations affecting those areas neglected by the eCommunications framework, namely the areas of value added services in mobile grids and determinations governing relations between service consumers and service providers. This study, thus, addresses the potential for open and unregulated mobile grid applications and services markets as it was indicated in the previous study due to the lack of eCommunications determinations ensuring fundamental consumer rights and competition efficiency for value added services. Such unregulated markets may challenge business opportunities and chances for a European leadership in mobile grid services.

In order to gain comparable results, an approach similar to the preliminary study [12] is adopted. Candidate regulations for relevance assessment are identified and characterized. Candidates are pre-selected from the European Commission's listing on Information Society policies portal [2]. For that purpose, policies governing consumer protection, electronic commerce, copyright and related rights, cybercrime, and data protection constitute the main range for determinations to be considered ex ante, while policies on communications services, mobile devices, and equipment are not considered in order to avoid overlapping with the first study. Pre-selected policies undergo in a second step the established relevance assessment procedure, which determines the appropriate level of relevance for the introduced mobile grid business roles and for recognized principles of law. This leads finally to **overall conclusions** on how well future mobile grid application and service markets are covered by European regulations.

1. The eCommunications framework consists of five directives, the framework directive 2002/21/EC [7], the authorization directive 2002/20/EC [6], the access directive 2002/19/EC [5], the universal service directive 2002/22/EC [8], and the directive on the processing of personal data and privacy in the telecommunications sector 2002/58/EC [9].

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