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# EXECUTIVE SUMMARY

The industry members of the UMTS Forum have studied the charges for granting licences, including spectrum licences, with special reference to UMTS, the third generation of mobile telecommunications systems, and have formulated recommendations from industry to national regulators concerning the use of charges. The regulatory members have followed the study and contributed to it, but cannot be bound by the text and recommendations.

It is recognised that the responsibility for licensing of UMTS networks is strictly within the competence of the national regulators. In this respect this report offers advice from the industry members of the Forum to national regulators. National regulators are invited to respond to the Forum on this report.

A charge generally accompanies the issue and use of a spectrum licence. Traditionally, these charges have been used as a means of financing licence administration costs. Recently, the justification for pricing has sometimes also been to encourage licensees to make the most efficient use of spectrum.

There are some spectrum uses for which charging seems impracticable or impossible. For example, no mechanism for charging for unlicensed use of spectrum, such as wireless PABX or cordless telephones, is likely to be practicable. For certain non-profitable services of general interest, charging seems politically and socially difficult to accept.

It should be noted, however, that terrestrial broadcasting should have the same charging rules as competing telecommunication services at a time when the broadcasting and telecommunication services are converging.

Since the number of potential licensees becomes smaller as the cost of spectrum increases, spectrum pricing can also be used as an instrument for selecting licensees in situations where there is a scarcity of frequencies.

Traditionally, the principle First come, first served is the most widespread and longstanding method of selecting licensees. Comparative bidding, sometimes called a beauty-contest, involves selecting the best applicant according to pre-defined selection criteria. Auction, sometimes called competitive bidding, awards the licence to the applicant that makes the highest bid.

A major risk with auctions is that the prices paid by licensees may become excessive. Market theory predicts that auctions will allocate spectrum to those that value it the most and thus will make the most cost-efficient use of the spectrum. However, this does not necessarily mean that the spectrum will be used efficiently from the end-user's perspective.

Auctions are not a universal solution to all licensing problems, and are not suitable for certain types of licences. The use of auctions as a selection mechanism for granting spectrum licences for satellites, for example, should be strongly discouraged. It would create negative effects such as fragmentation of frequency bands, problems with roaming, and high prices for operators and consumers.


An economic business model demonstrates that where licensing fees exceed administrative costs (e.g. because of auction, or excessive annual fees for the right to use radio frequencies) there is a direct negative effect on the development of UMTS services. The results show that the profitability will be reduced and the payback period lengthened, and this deterioration is particularly marked when the licence fee is at a level of 50 USD per capita.

If liquidity is a constraint for an operator, a licensing system based on annual fees may be preferable, since it allows the operator to spread payments over the period and escape large up-front payments. The lower the income for an operator, the greater the impact of licence fees.

For the mobile industry, high up-front licence charges increase investor uncertainty, and correspondingly decrease investment in the network for a new service such as UMTS. In addition, technology choices may be driven by a short-term focus on recovery of up-front fees rather than a long-term focus on overall growth of the industry. This may have potentially irreversible consequences for service provision.

Experience with the US PCS C-block auctions has shown how high charges can undermine a newcomer's viability when it has to roll out a totally new network starting from zero, while existing operators have the opportunity to reuse their infrastructure. This compromises competition.

High up-front licence charges will not facilitate the best services for UMTS consumers. They would increase the cost of services to consumers, and may price some consumers out of the market altogether. Network coverage obligations may be forgotten as the operator concentrates on getting the maximum revenue from the auction, leaving consumers with an under-developed service. In the licensing and pricing of UMTS spectrum, governments seek to encourage innovative and efficient spectrum usage, and ensure the maximum economic return for the government. High up-front licensing charges will not achieve these goals. Up-front investments that are channelled not to spectrum access, but instead to extensive coverage, marketing programs, high quality systems, robust networks and employee training will result in more effective use of the spectrum, and will in the long-term result in more government income.



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The industry members of the Forum have formulated the following recommendations to national regulators concerning the use of spectrum pricing:

- Spectrum pricing may be used as an incentive for efficient spectrum use, provided that these charges are fair, proportionate, transparent and competition neutral. They should mainly be motivated by cost-recovery and not by maximisation of revenue. The benefits, however, should be carefully weighed against the potential damage on the service.
- When selection of licensees is necessary because of lack of frequencies, the administrative comparative approach should be preferred over auctions or lotteries. Auctions lead to high up-front fees, which will increase the tariffs for the consumers, slow down the development of new, innovative services, such as UMTS services, diminish the infrastructure investments and harm competition. Lotteries provide no assurance that a competent operator will be awarded a licence.
- Spectrum pricing as an instrument of taxation must be avoided, as it will have a direct negative impact on the growth of the telecommunications market and the general economy. Such taxation will in the long run diminish the total income for the State. High market values should be an incentive for regulators to find more spectrum, which will benefit the public more than excessive transfers of money to the public funds.
- Taking into account that the UMTS market still is in a very early stage of development, any regulatory actions regarding UMTS spectrum should be aimed at encouraging investments in UMTS systems. The calculations of the UMTS business case indicate that high fees will have a negative impact. Large down-payments in the beginning of the licence period should be avoided, in favour of charges related to the use of the system, like royalty or annual fees.
- Due consideration should be given to the particular global nature of satellite systems when seeking to establish a suitable mechanism for defining licensing costs and spectrum pricing for the UMTS satellite component.