

## **Background material for the PRESS RELEASE on third-generation mobile radio systems:**

### **IMT-2000 / UMTS**

With the third-generation mobile radio systems within the IMT-2000 family of standards, it will be possible for a large number of consumers to use personal, mobile and broadband services at data transmission rates of up to 2 Mbit/s. In addition to existing voice telephony and data transmission services, the range of IMT-2000/UMTS services can also include new broadband multimedia applications, including video. These services will form a solid basis for e-commerce in Switzerland.

IMT-2000/UMTS meets the mobile user's requirement for location-independent, customised access to the many different current and future multimedia services (Internet/Intranet, videotelephony, online shopping, e-commerce, video-on-demand, etc.).

The initial preparatory work for the award of IMT-2000/UMTS licences (International Mobile Telecommunications 2000 (IMT-2000) / Universal Mobile Telecommunications System (UMTS)) was performed by OFCOM, on behalf of the Federal Communications Commission (ComCom) as early as 1998, and a situation analysis was published on the [www.bakom.ch](http://www.bakom.ch) website. In the spring of 1999, a public consultation was carried out and interested parties were able to express their opinions on the various questions relating to the granting of IMT-2000/UMTS licences in Switzerland. In August 1999, ComCom decided to grant four national licences by auction. In December, the first drafts of tender documents were discussed with interested parties in a workshop. The results of this workshop were taken into consideration in the definitive version of the tender documents, in so far as this was possible. The call for tenders was formally opened on 14 March 2000. The deadline for the submission of application documents was 31 May 2000. OFCOM received 10 applications for participation in the sale by auction of 4 national IMT-2000/UMTS licences within the time limit. After checking of the application documentation by OFCOM, ComCom decided that all of the applicants could be allowed to take part in the auction. Therefore a further important step was taken in the awarding of third-generation mobile radio licences in Switzerland. In view of the extraordinary growth in the number of mobile users and the expected high demand for mobile data services, it is important to ensure, as early as possible, that the required resources are made available.

## **Award of IMT-2000 / UMTS licences in other European countries**

With its timetable for awarding licences, Switzerland is in line with the European trend, as most western European countries will be calling for tenders for UMTS between 1999 and 2001:

<b>Country</b>	<b>Procedure</b>	<b>Awarding of licences</b>
<b>Finland</b>	<b>Criteria-based competition</b>	<b>March 1999</b>
<b>Spain</b>	<b>Criteria-based competition</b>	<b>March 2000</b>
<b>UK</b>	<b>Auction</b>	<b>April 2000</b>
<b>Germany</b>	<b>Auction</b>	<b>August 2000</b>
<b>Italy</b>	<b>Auction 1)</b>	<b>September 2000</b>
<b>Netherlands</b>	<b>Auction</b>	<b>July 2000</b>
<b>Sweden</b>	<b>Criteria-based competition</b>	<b>4th. Q. 2000</b>
<b>Switzerland</b>	<b>Auction</b>	<b>November 2000</b>
<b>Austria</b>	<b>Auction</b>	<b>November 2000</b>
<b>Portugal</b>	<b>Criteria-based competition</b>	<b>1st. Q. 2001</b>
<b>France</b>	<b>Criteria-based competition</b>	<b>2nd. Q. 2001</b>

- 1) Combination of auction and competition based on criteria

### **IMT-2000/UMTS award procedure**

The award of the IMT-2000/UMTS licences is based on a two-stage procedure. The first phase involves checking whether the applicants meet the legal requirements for the award of a licence, as well as other conditions or preselection criteria. If a candidate meets these conditions, he is admitted to the second phase, the auction proper. In order to ensure that the winners of IMT-2000/UMTS licences will comply with the stipulations concerning co-use of sites, coverage and national roaming, these requirements have been included as preselection criteria in the IMT-2000/UMTS tender documents.

### **The IMT-2000/UMTS licences**

By 2002, the entire frequency band specified for IMT-2000/UMTS will be available in Switzerland. The invitation to tender relates to four licences, each comprising 2 x 15 MHz for Frequency Division Duplex (FDD) operation and an additional 5 MHz for Time Division Duplex (TDD) operation. This frequency allocation will allow operators to build hierarchical networks and economically handle the radio traffic which is generated. In Frequency Division Duplex (FDD) mode, two separate (paired) frequencies are used for a duplex connection, one for the connection from the mobile station to the base station (uplink) and one for the connection from the base station to the mobile station (downlink). In TDD operation, only one frequency is required for a duplex connection from the base station to the mobile station (unpaired frequencies).

The licences are valid for 15 years from 1.1.2002 and authorise the operator to set up and operate national IMT-2000/UMTS networks and provide the corresponding services. The minimum bid per licence has been set at CHF 50 million.

IMT-2000/UMTS networks can provide the entire range of mobile telephony services, from simple messaging via voice telephony to high-quality data services. Those services which only require low transmission rates (e.g. voice telephony) can also be provided via existing GSM networks. A

deliberate decision was therefore taken not to impose stringent coverage obligations, and the licence specifies only a minimum mandatory coverage of 50% of the population by the end of 2004. More extensive coverage may be achieved by further network expansion with the licensee's own infrastructure or by the conclusion of roaming agreements. Operators therefore have the possibility of building up their networks where there is a demand for the corresponding services.

The third-generation mobile radio systems are also designed, using appropriate terminals, to allow roaming with second-generation (GSM) systems. Granting four IMT-2000/UMTS licences will bring into the market at least one new operator, who does not have the benefit of any existing (e.g. GSM) network infrastructure and who will therefore be at a disadvantage compared to IMT-2000/UMTS operators who have an existing GSM infrastructure (existing operators). Existing operators will therefore be obliged to make their GSM networks available to a new operator via national roaming, if they obtain an IMT-2000/UMTS licence. This will give a new operator the opportunity to offer his customers good coverage for second-generation services as soon as the network starts operation, thereby reducing his disadvantage. In addition, this is expected to generate further impetus for the mobile telecommunications market in Switzerland. To prevent the roaming recipient from simply acting as a service provider by reselling airtime, he will be expected to have made certain investments. Consequently the obligation in respect of national roaming will apply only from the time at which he has achieved a population coverage of at least 20% with his own network infrastructure. Moreover, the obligation to offer national roaming ends on 31.12.2007.

The IMT-2000 family includes five standards for the air interface. UMTS and the corresponding UTRA (UMTS Terrestrial Radio Access) air interface constitute the European variant of the IMT-2000 family. Although frequency co-ordination at national frontiers is only regulated for the UMTS air interface (UTRA) at the European level, the candidates are free to decide which standard of the IMT-2000 family they wish to use for their network. This ensures that competition can take place regarding the choice of standards, so that the best standard will win out.

### **Auction procedure**

The auction will be carried out electronically and decentrally via the Internet, which will allow bidders to make their bids from their own head offices. The four licences will be awarded in a Simultaneous Ascending Auction (SAA). In other words, all four licences will be sold by auction at the same time in an auction with a number of rounds. In the first few days, OFCOM will only run a few rounds per day, but this will increase to a higher number later. Basically, the Swiss solution is similar to the procedure employed for the UMTS auction in the UK. In this way, it should be possible to ensure that all four licences are awarded at a price that is as similar as possible.

OFCOM will oversee the administration and control of the auction. Charles Rivers Associates will take care of the auction from a technical point of view. The auction server is located in Boston (USA). After individual rounds are completed, the current results will be published on an Internet site accessible to the public. The web site address will be made known before the auction.

The start of the auction is scheduled for 13 November 2000. Depending on the bidding pattern of the bidders, the duration of the auction is expected to be between two and four weeks.

## **Auction rules**

Given below is a short summary of the most important points of the auction rules.

### Bid format

To submit bids, bidders simply select from a limited number of bids that will have been specified in advance by OFCOM. The lowest of these bids corresponds to the current highest bid plus the minimum increment (smallest permissible increase in bid). The other possible bids are made up of the current highest bid and a multiple of the minimum increment. If the current highest bid is, for example, CHF 100 million and a minimum increment of 10% has been specified, then the minimum bid for the next round will be CHF 110 million, whereby the bidders are free to make a bid higher than the current highest bid by a multiple of the minimum increment (in this example, possible bids are CHF 110, 120, 130, up to a maximum of CHF 190 million). On the one hand, this procedure prevents errors when making entries and, on the other, stops bidders from transmitting certain signals that could lead to collusive behaviour by entering a specific bid, which could have a negative influence on the fair running of the auction.

### Rounds and standing high bid

The auction will be carried out in a series of rounds. A round can be sub-divided into two phases. In the first phase, bidders submit their bids with the public excluded. In the second phase, the standing high bid (or current highest bid) for each of the four licences is notified, and the bidder in question is revealed. It is planned to publicise all the bidders and the amounts of their bids submitted in the relevant round.

### Minimum opening bids

The minimum opening bid for a licence is CHF 50,000,000. Therefore, in the first round, the lowest possible bid that can be made for a licence is CHF 50,000,000.

### Minimal bid increments

The minimal bid increment is the minimum amount by which a bid must be higher than the current standing high bid, for it to be accepted as the new standing high bid. The minimal bid increment will be defined as a percentage between 1% and 100 %.

Minimal bid increments are necessary to keep the auction moving forward. As a rule, they are lowered towards the end of the auction. The amount of the minimal bid increment for the next rounds will be made known by OFCOM's auction administrators at the latest on the day before the next round.

### Activity rule

Every bidder must be active during the auction to ensure that a bidder is unable to prevent the progress of the auction. If this is not the case he will lose his right to take part.

The activity rule is regarded as having been satisfied in three cases:

- a) If the bidder has a standing high bid in the previous round.
- b) If the bidder submits a valid bid.
- c) If the bidder uses a waiver.

### Waiver

Each bidder receives four waivers at the start of the auction. A waiver makes it possible for a bidder to not take part in a round of the auction, without having the standing high bid of the previous round.

A waiver is used if a bidder a) does not have the valid standing high bid in the previous round and b) has not submitted a valid bid in the current round. Thanks to the use of a waiver, the bidder does not lose his right to take part in the auction, even though he is not actively bidding in the relevant round.

Waivers should, on the one hand, enable bidders to stop and deliberate during the auction, for example to discuss their continued procedure with their board of directors, management or bankers. On the other hand, waivers automatically used by the software can in particular avoid a bidder being excluded from the auction in the event of technical problems when bidding or if the submission deadline for a bid expires, even though the bidder fully intended to continue bidding.

### Bid cancellation and withdrawals

Bids can be either submitted or withdrawn during the bidding phase of a round (the first phase of the round). This process can easily be observed by the auction administrators and should make it possible for bids submitted in error to be withdrawn. If the bidding phase is closed, all bid withdrawal is excluded.

### Information revealed

It is planned to publish all of the bids submitted during a round, along with the name of the bidders at the end of each round. This should achieve the highest possible level of transparency and an identical level of information for all bidders.

### Frequency of rounds

The number of rounds per day will be specified by the auction administrators (OFCOM). On the first day, only a few rounds will normally be held. As soon as the bidders are familiar with the auction system, the number of rounds per day can be increased. Towards the end of the auction, if bidders need more time to make decisions, more time can be allocated for each round.

### End of the auction

The auction is ended if, in a round, no new bid is made for any of the four licences and no bidder has used a waiver.

### Telephone bids

Should technical problems arise, telephone bidding will also be allowed.

## GSM

In the transitional arrangements relating to the Law on Telecommunications (LTC), Swisscom AG was given the right to operate a mobile radio network. Swisscom AG has therefore decided in favour of operating its GSM network (Natel D) and termination of the Natel C network. On expiry of the transitional period at the end of 2000, these frequencies (the former Natel C frequencies) will be available for GSM services and have therefore been put out to tender. This relates to a bandwidth of 8.2 MHz in the GSM 900 MHz band. In addition to these frequencies, two further frequency blocks, each of 4.8 MHz bandwidth, in the extended GSM 900 frequency band have also been put out to tender. For the existing operators of GSM 900 networks, and also for Orange Communications SA, which has only 1800 MHz frequencies, there therefore arises an opportunity to obtain additional frequencies (licences) and increase their network capacity. There is also the possibility that a new operator will bid for the licences and construct a fourth national GSM network.

Other frequencies in the 1800 MHz band which are envisaged for GSM networks are currently still in use by the army, which operates the ADS 95 reconnaissance drone system in this band. These frequencies will therefore be available for use from 2004 at the earliest.

The tender documents stipulate that, if the demand proves to be greater than the licences available, the award will take place by auction. The invitation to tender was formally opened on 14 March 2000, in parallel with the IMT-2000/UMTS call for tenders and with the same deadline for submissions. Five applications were received on time by OFCOM for the three GSM licences. After examination of the applications by OFCOM, ComCom came to the decision that all applicants fulfilled the requirements for the allocation of licences. Consequently the demand is greater than the number of licences available, so the allocation of GSM licences will take place by means of an auction.

The same procedure will be applied for the auction of the three GSM licences as was used in the spring for auctioning off the WLL licences. This is a so-called "English auction", during which the licences are sold by auction individually and one after another, with one licence being awarded per day. The auction will take place on the Internet and can be followed on a public web site. It is planned to start this auction on 11 October 2000 with the former Natel C frequencies.

The three GSM licences will be granted for a limited period and will be valid until 31 May 2008. They will thus expire simultaneously with the mobile radio licences granted in May 1998 to diAx AG and Orange Communications SA (Swisscom's GSM mobile radio licence will run until the end of 2007).

If a new operator acquires the licences which are now being put out to tender, he will have until the end of 2002 to guarantee coverage of 50% of the population. If an existing operator acquires one or more licences, compliance with the obligations in respect of coverage will be assessed on the basis of its entire network. The minimum bid for the former Natel C frequencies is CHF 3.8 million. The minimum bids for the licences in the extended GSM band are CHF 1.7 million and CHF 1.8 million respectively.

### **Site co-ordination and co-use**

In order to ensure that environmental concerns are given appropriate consideration with regard to the construction of the new networks, the licences (both the IMT-2000/UMTS and the new GSM licences) stipulate stringent obligations in terms of site co-ordination and co-use. When establishing new sites, operators must comply not only with all the legal provisions regarding area planning, protection of nature and national heritage but also with the provisions of the decree on protection from non-ionising radiation. They must co-ordinate the building of new antenna sites among themselves. Operators are also obliged to notify the cantons of their development plans in good time. A general obligation on operators to co-use antenna sites cannot be imposed, since the conditions of the decree on protection from non-ionising radiation may not be able to be met in the case of co-use of a site by four operators (e.g. in urban areas). The operators are therefore obliged to co-operate, during the development of suitable co-ordination procedures for assessing possible co-use of sites, with regard to the decree on protection from non-ionising radiation, protection of the landscape and the national heritage, and technical feasibility (including economic considerations), and to comply with the procedures which are developed. A working group under the management of OFCOM will work out the appropriate procedures at the time in consultation with the Conference of construction and environment directors, the Office for Spatial Development and the Agency for the Environment, Forests and Landscape.