

**GOVERNMENT DECISION ON AN OPERATING LICENCE FOR A DIGITAL MOBILE
COMMUNICATIONS NETWORK IN THE 450 MHz FREQUENCY BAND**

Date 22 June 2005

Registration number 737/32/2005

APPLICANTS

Cubio Networks Oy Ltd (Cubio)

Digita Oy (Digita)

Elisa Oyj (Elisa)

Finnet Laajakaistaverkot Oy (Finnet)

LynxNet Oy (LynxNet)

Oy Nordisk Mobiltelefon AB (Nordisk Mobiltelefon)

Saunalahti Group Oyj (Saunalahti)

SUMMARY OF DECISION

The operating licence is granted to **Digita Oy**, on the grounds and conditions set out below.

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GROUND AND REASONS FOR THE DECISION

1. Background

1.1. Introduction and structure of the decision

Under this decision a licence is granted to one applicant for the operation of a digital mobile communications network in the 450 Mhz frequency band. The aim and purpose of the operating licence is to promote the supply of high-speed data connections particularly in sparsely populated regions, in remote areas, in the archipelago, in holiday homes and other similar areas that do not have access to fixed broadband services, and further to increase the supply of high-speed telecommunications links independently of the user's location. The decision will resolve which of the seven applying companies best satisfies the requirements for granting an operating licence as set out in the Communications Market Act. Because of the high level of technological sophistication involved, it is useful at the outset to provide some background information. This background discussion will also explain how the operating licence procedure relates to the Government's broadband strategy. Furthermore, it describes the characteristics of the frequency band and looks at alternative end-uses and technologies. The next chapter on the handling of the matter provides a description of the different stages of the application process. The chapter dealing with the applications runs through the assessment of the applicant companies, reviews the technologies proposed and looks at the plans for developing the network. It also describes the content of the applications, as presented by the applicants in their summaries. The chapter on the legal provisions applied explains the content of the law in force. There is a brief discussion of how these legal provisions are applied to the applicants, and finally the end-result of the decision is stated.

1.2. The Government's broadband strategy

According to the Government resolution on Finland's national broadband strategy (dated 29 January 2004) and the resolution on the revision of the national broadband strategy (3 February 2005), the Government's strategy is to promote competition within and between all communications networks; to promote the provision of electronic services and content; and to continue to develop special support measures in areas where there is insufficient demand for the commercial supply of broadband facilities. All households should have access to affordable broadband connections. Today around 97 per cent of Finnish households have access to broadband over a fixed network connection.

The aim of the strategy is that by the end of 2005, all technologies included, there should be one million broadband subscriptions in the country, most of them on connection speeds of at least 2 Mbit/s; that high-speed, regionally comprehensive and affordable telecommunications connections are accessible to all people in the country; and that Finland has become well-established as one of Europe's leading nations in terms of the use and availability of high-speed data communications. Furthermore, the strategy expects that by the end of 2007, broadband accounts for more than 90 per cent of all Internet connections in Finland and that the connection speed of the most widely used broadband service is at least 8 Mbit/s; and that Finland emerges as one of the world leaders in the use of high-speed data communications links.

To promote the attainment of these goals, the Government is committed to supporting the growth of content and service production; to removing obstacles to competition in the broadband market; and to developing a mobile broadband network that flexibly complements fixed broadband.

The growth and development of content and service production shall be supported in line with the broadband strategy among other things by promoting the adoption of Internet telephony (VoIP) and Internet multimedia (MmoIP). It is important that all the latest services in the information society are available to all people in all places and at all times. Service development, then, requires connection technologies that support the use of the latest services.

Through its decision to reallocate the 450 MHz frequency band, the Government has committed itself to addressing the broadband service needs of people living in sparsely populated areas. The actual connection may be regarded as a basic broadband service, Internet telephony and Internet multimedia are examples of additional services.

One of the key conditions for the successful implementation of the national broadband strategy is the removal of obstacles to competition. In the case of the fixed network the problems have mainly stemmed from the market structure where the network owner and broadband service provider often have been one and the same operator. In many countries this has created an undue workload for communications and competition authorities as well as market courts. In the development of mobile broadband Finland is keen to avoid the same mistakes that have been made in the fixed network market. In the mobile network the strategy objective of becoming a world leader in the use of high-speed telecommunications connections can be achieved by creating an open competitive market for service provision.

1.3. Release of the frequency band and assessment of potential new uses

The first generation analogue mobile communications network (NMT450) operated on the frequency bands of 453.000 – 457.475 MHz and 463.000 – 467.475 MHz. When the network operator (Sonera) closed down the network at the end of 2002, the frequencies were released for other uses.

The Finnish Communications Regulatory Authority set about to assess the potential new uses of the frequency band. In the process it requested the views and comments of a wide range of interested parties that were called upon to submit their proposals on the type of new systems and applications for which the released frequency bands should be made available.

In the first round of requests for comment in 2002, the emphasis was mainly on the frequency needs of closed private networks (Private Mobile Radio networks, PMR) intended for business and other professional uses. According to the comments received, there was a shortage of frequencies in the 450 MHz band for PMR networks, and therefore additional frequencies should be allocated to these needs.

In the second round of requests for comment in 2004, the proposals received also identified frequency needs in PMR networks operated by commercial telecommunications companies (Public Access Mobile Radio, PAMR) as well as in the kind of public mobile communications networks for which the present operating licence is intended.

The Ministry of Transport and Communications also canvassed views and opinions on frequency needs in a hearing arranged in early 2005, which was backed up with a request for written comment. These statements gave priority to frequency needs in a public mobile communications network.

According to the Government resolution of 3 February 2005 on the revision of the national broadband strategy, steps are now needed in Finland to increase investment in the development of mobile broadband solutions that flexibly complement fixed network broadband. The public sector is responsible for establishing a communications policy that will create an environment conducive to the development of mobile broadband.

In its resolution the Government also required that the eventual decision on the reallocation of the frequency band released from NMT 450 services takes into account the needs for broadband services in sparsely populated areas.

1.4. The Communications Regulatory Authority's views on the use of the frequency band

According to the Finnish Communications Regulatory Authority existing and new PMR networks will need additional frequencies of 2 x 1.2 MHz from the released 450 MHz frequency band. Furthermore these networks will soon be gaining access to new frequencies from another, 160 MHz frequency band. These frequencies will be released as the police and fire services join the new, digital radio network for public authorities' communications (VIRVE) and the railways get their own digital mobile communications network (GSM-R) to replace the old analogue radio systems.

In the Finnish Communications Regulatory Authority's assessment most of the released frequency band, 2 x 3.2 MHz, can be reallocated to mobile communications. The exact frequency and bandwidth can only be established when it is known what radio technology the operating licence holder will be using and when the necessary studies have been completed to ascertain compatibility with other radio networks in the 450 MHz frequency band.

1.5. Typical characteristics of the frequency band

One of the characteristics of radio waves is that signal path attenuation increases towards higher frequencies. Mobile communications networks are cellular networks whose coverage area (cell size) depends among other things on the frequency they use. The higher the frequencies used in mobile communications networks, the smaller the cell size of the individual base transceiver station. In mobile communications the base station cell size is restricted primarily by the small size of mobile terminals, which for technical reasons are unable to send out signals at the same levels of transmission power as base stations. A large-cell mobile communications system requires fewer base stations to build up its geographic coverage than small-cell systems operating at higher frequencies. It follows that a large-cell system is also a more cost-effective solution in sparsely populated areas. On the other hand, networks based on this principle are unable to carry the same volume of traffic as small-cell mobile communications networks operating at higher frequencies, and they cannot support the same amount of subscribers. The costs of increasing the coverage area of a mobile communications network using the 450 MHz frequency band released from the NMT 450 network are therefore appreciably lower than is the case with mobile networks based on the 900 and 1,800 MHz frequency bands or in the case of mobile networks using UMTS technology and the 2 GHz frequency band.

1.6. Alternative uses of the frequency band and radio technologies

1.6.1. CDMA450 and Flash-OFDM

The applications filed for the operating licence have proposed to develop mobile communications systems using CDMA450, TD-CDMA and Flash-OFDM technologies. TD-CDMA is not, however,

put forward as the primary technology in any of the applications. The technological assessments below are based on information presented in the applications and their appendices about Flash-OFDM and CDMA450 as well as on information available on the Internet (www.cdg.org, www.qualcomm.com and www.flarion.com).

1.6.2 Technical characteristics

In a CDMA450 system the radio interface, i.e. the connection between the terminal device and the base station, is based on CDMA (Code Division Multiple Access) technology. In this system radio transmissions using the same channel are coded in such a way that they can only be received in a device that can open the code. Base stations and mobile terminals use separate bandwidths to send and receive signals. The bandwidth of one radio carrier wave is 1.25 MHz. This means that the frequency band that according to the Communications Regulatory Authority is available can accommodate two carrier waves, complete with the necessary interference guard bands. There are different versions of the CDMA450 technology. The first, so-called 1x technology is mainly suited for voice traffic. The second version, known as 1xEV-DO technology, is optimised for data communications. The third version, 1xEV-DV technology, can be used for both voice and data on the same carrier wave. The highest theoretical downlink speed (i.e. from base station to mobile terminal) with 1x technology is 153-307 kbit/s, depending on the version; with 1xEV-DO technology either 2.4 Mbit/s or 3.1 Mbit/s, again depending on the version; and with 1xEV-DV technology 3.1 Mbit/s.

In Flash-OFDM technology, the radio interface is based on Orthogonal Frequency Division Multiplexing. Here the radio transmission consists of several carrier waves, which are allocated as necessary between current users for data communications. The same method of modulation is used in fixed ADSL Internet connections and in digital radio and television networks. The acronym Flash is a registered trademark of the individual who developed the technology and stands for Fast Low-latency Access with Seamless Handover. Like CDMA450, the system is based on frequency division duplex, i.e. the base stations and mobile terminals use separate bandwidths for transmission and reception. The bandwidth of one radio carrier wave is also 1.25 MHz, which means that the frequency band available could accommodate two carrier waves. The highest theoretical downlink speed from base station to mobile terminals is 3.2 Mbit/s.

Although both these technologies support theoretical data transfer speeds of up to more than 3 Mbit/s, the true transfer speeds are considerably lower; in both systems the figures are in fact less than 1 Mbit/s.

Flash-OFDM networks are based entirely on packet architecture and they use the same connection protocol (TCP/IP) as the Internet. CDMA450, then, is based on mobile phone network architecture. The system was originally designed for circuit voice transmission; its packet switching features were added on later. In a circuit-switched connection, the connection remains open throughout the transmission regardless of whether there is any data movement. A packet-switched connection, on the other hand, only occupies the capacity that is needed to complete the transfer and is therefore much more economical, especially in data communications which instead of a steady flow is often characterised by short spurts of data. This basic difference lies behind both other technical differences between the systems and differences in data transfer and user numbers.

Flash-OFDM technology supports around 125 simultaneous active users, while the number in CDMA450 systems is between 16 and 30. Since a certain number of users are always on hold at any

point in time, a Flash-OFDM system can in practice have around 1,000 simultaneous users within the area of one antenna, a CDMA450 system around 100 users. In both technologies one cell or base station in this kind of cellular network will usually have three antennas.

The maximum number of simultaneous users and the quality of service depend crucially on the system's response time. In Flash-OFDM technology the response time averages 50-70 milliseconds, in CDMA450 technology the figure is at least 150-250 milliseconds. The response time is particularly significant in situations where the application requires a short response time in order to work properly (and in some cases to work at all). Examples of such applications include Internet telephony (VoIP) and especially online computer games (MMoIP). For the end-user, a short response time concretely means a shorter transfer delay and also faster connection set-up. Excessive response times, on the other hand, will mean slower start-up and data transfer and possibly cause the application to work ineffectively. In the case of an Internet phone call, for example, this would mean reduced voice quality or a connection that intermittently breaks up. If there is too big a discrepancy between the response time required by the application and the response time supported by the system, the application will not work at all.

Work is currently underway to develop new versions of both these technologies that are expected to offer far superior performance compared to the current versions. However it is impossible to know exactly what these new features will include, and therefore any comparison of those features is bound to remain sketchy and tentative. Even the measurement and comparison of existing features involve uncertainty factors that tie in with the independence of whoever is conducting the measurements.

1.6.3 Market situation and equipment manufacturers

There are several CDMA450 manufacturers in the market and various applications are in productive use. Current knowledge of network features is based on practical experience. Flash-OFDM technology has been in the market only for a relatively short time and so far applications have only been developed by the company behind the technology itself (Flarion Technologies). However the situation is now changing as the company has signed an agreement of cooperation with a major hardware manufacturer (Siemens). This agreement is considered highly significant for Flash-OFDM technology. It is likely that there will be more such agreements in the near future, and that other manufacturers will enter the market.

Both technologies involve the risk that commercial interest will begin to wane at some stage of development and that this will slow down the development effort. In this regard the situation with CDMA450 technology is somewhat more easy to predict in that it is in more widespread use (albeit primarily in voice traffic) than Flash-OFDM technology and it has been in the market longer.

1.6.4 Current status of standardisation

In keeping with the Act on Radio Frequencies and Telecommunications Equipment, harmonised standards are currently being developed for equipment and terminals using CDMA450 technology. Work with Flash-OFDM equipment has not yet advanced to this stage. Nonetheless even in the absence of harmonised standards it is possible to introduce new equipment into the market by using a registered inspectorate to ascertain compliance with current requirements.

1.7. Use of frequency band in Europe and elsewhere in the world

In the European plan for frequency allocation and utilisation (CEPT/ERC report 25), the 450-470 MHz frequency band has been designated primarily for PMR and PAMR networks. A footnote to the plan, however, states that parts of this band may also be used for mobile communications networks on a national basis. In many countries the band is in fact allocated to PMR and PAMR networks in keeping with European allocation table. There are five European countries – Russia, Romania, Belorussia, the Czech Republic and Portugal – that currently have commercially operated mobile communication networks in the 450 MHz frequency band. At year-end 2004, these networks had a total of some 400,000 subscribers. The networks are based on CDMA450 technology. In Norway (2004) and Sweden (2005), operating licences for the frequency band have been auctioned to mobile network operators. It is expected that other European countries will also be opening mobile communications networks in this frequency band. Outside of Europe, the frequency band is used for various different purposes, i.e. the use of these frequencies is not harmonised.

2. The handling of the matter

2.1. Opening the frequency band for operating licence applications

The operating licence was opened for application by public announcements in Helsingin Sanomat (28 Feb 2005), Hufvudstadsbladet (28 Feb 2005), Virallinen lehti (4 March 2005) and in the Official Journal of the European Communities (4 March 2005). Furthermore, the announcement was posted on the Ministry of Transport and Communications website (28 Feb 2005). Additional information was published on the Ministry website on 7 March 2005 as described in the announcement proper. The deadline for the applications was at 4.15 pm on 29 April 2005.

2.2. Information given in the call for applications

The call for applications explained that the aim of the operating licence is to promote the supply of high-speed data connections particularly in sparsely populated regions, in remote areas, in the archipelago, in holiday homes and other similar areas that do not have access to fixed broadband services, and further to increase the supply of high-speed telecommunications links independently of the user's location. The operating licence was not tied to any single technology, but applicants were invited to detail the technology they would propose to use.

2.3. Information requested in the call for applications

According to the call for applications, applicants were to describe the technology they would be using to develop the radio network at the level of detail considered necessary and to provide all necessary information on interconnecting traffic with other networks. Furthermore, it was required that the licence application states the information referred to in section 1 of the Ministry of Transport and Communications decree on the contents of operating licence applications and telecommunications notifications. This decree requires that applicants submit the following information and details:

- 1) applicant's contact information;
- 2) extract from the Business Information System or corresponding information on the applicant;
- 3) applicant's ownership status;
- 4) description of network services;
- 5) operating area;
- 6) description or plan of communications network;
- 7) assessment of the investments required and financing plan;
- 8) assessment of business growth and development in the first five-year period; and

9) other information relevant to assessing the applicant's status with respect to the requirements for granting the operating licence.

The account of the applicant's ownership status was to provide all information on companies and individuals owning the applicant as well as on companies owned by the applicant in so far as this information was relevant to the consideration of the application

The description of network services was to be as detailed as necessary. It was also to indicate the intended capacity of the network services (i.e. their maximum number of users) as well as the transfer speeds and capacities of the data connections provided for each year during the period from 2005 to 2010.

The description of the communications network was to include a sufficiently detailed plan of the network coverage area from 2005 to 2010 as well as the following technical data on the radio system:

- 1) the radio technology used;
- 2) bandwidth/carrier wave;
- 3) estimate of the interference guard band required between the carrier waves, and between the carrier wave and systems in adjacent frequencies, and
- 4) typical transmission power, typical base station antenna set-ups and estimates of base station coverage area.

Assessments of the investments required by the operation, financing plans and business development during the first five years were to cover the period from 2005 through to the end of 2010.

Furthermore, the application was to include the following information and details:

- 1) applicant's most recent financial statements;
- 2) pricing estimates for various network services such as fixed connections and connections independent of user location;
- 3) estimate of average data transfer speed available for individual terminal devices, assuming that there are 30 terminal devices on one carrier wave in one cell within a radius of 3 km;
- 4) estimate of the maximum connection distance available for a terminal device with its own internal antenna and for a device with an external antenna, within a normal base station set-up;
- 5) an assessment of how the applicant's network would promote the above aims of the Government's broadband strategy;
- 6) an assessment of how telecommunications operators working independently of the applicant could make use of the network, taking account of any services provided by the applicant company itself; and
- 7) a summary of the main points of the application.

2.4. Request for further information

Applicant companies that had put forward alternative radio technologies in their application were e-mailed on 10 May 2005 with a request to notify by 2 pm on 16 May 2005 their first choice of technology. The e-mail was also sent as a carbon copy to those applicants who had put forward just one technology.

The requested information was received by the deadline from Digita, Elisa, Nordisk Mobiltelefon and Cubio.

2.5. Oral consultation with equipment manufacturers

Two separate hearings were arranged to consult equipment manufacturers on the competing radio technologies. In the first hearing on 20 May 2005, representatives of Siemens Osakeyhtiö and Flarion Technologies were consulted on Flash-OFDM technology. In the second hearing on 6 June 2005, representatives of Lucent Technologies were consulted on CDMA450 technology.

2.6. Oral consultation with applicants

On 1 June 2005 invitations to an oral hearing on 9 June 2005 were sent out to all applicants, giving them an opportunity to elaborate on their applications.

All applicants attended the hearing.

3. Applications

3.1. Cubio

3.1.1 Company background

The applicant company was founded in 2005 to operate the proposed mobile communications network under the operating licence granted herein. The applicant is a fully owned subsidiary of the Finnish company Oy Cubio Communications Ltd (Cubio Communications). Cubio Communications is owned by the Luxembourg holding company Complus Holding S.A. Cubio Communications also has subsidiaries in Sweden, Russia and Lithuania. In Finland Cubio Communications provides various voice and data services over both fixed and mobile networks. In the Finnish mobile media market Cubio Communications acts as a service operator, providing its services via another telecommunications company's network.

3.1.2 Radio technology proposed and other plans

The applicant proposes to use CDMA450 technology. Part of the network resources would be allocated to voice traffic. The proposed network would cover 99 per cent of the population by mid-2006, including Åland. The applicant company has indicated in its applications that the network would also be open to outsiders and that telecommunications companies working independently of the applicant would have access to the network under equal and non-discriminatory conditions.

3.1.3 Applicant's summary of the main points of the application

(deleted from translation)

3.2. Digita

3.2.1 Company background

The applicant company is a Finnish subsidiary fully owned by TDF Nordic Oy, which is part of the TDF Group. The TDF Group has companies in France and elsewhere in Europe. The Group

operates mobile communications networks as well as terrestrial television and radio networks. The applicant company itself has no significant holdings. The applicant is the network operator responsible for Finland's nationwide radio and television networks. It has an operating licence to run three bundles of digital television channels. Furthermore, the applicant has an operating licence for a nationwide and local digital radio network. The applicant does not operate on the mobile media market.

3.2.2 Radio technology proposed and other plans

The applicant's first choice for radio technology is Flash-OFDM. Following a pilot stage launched in 2005, the coverage of the proposed network would expand in three stages. In the first stage in 2006, the applicant would provide for basic coverage in eastern and northern Finland; and then in 2007 and 2008, for central and southern Finland. In 2007 and 2008, the network would be completed and services upgraded. The applicant has indicated in its application that the network would be open and made available to outside telecommunications companies independent of the applicant under equal and non-discriminatory conditions. The applicant has also indicated it does not act as a service provider and has no intention of doing so in this network either.

3.2.3 Applicant's summary of the main points of the application

(deleted from translation)

3.3. Elisa

3.3.1 Company background

The applicant is a company that has been listed on the Helsinki Stock Exchange since 1997. The company's biggest owners are private households (about 35%); other major owners include general government, private business companies and financial and insurance companies. The company is a major player in the Finnish communications market, providing a wide range of telephone and data services over fixed and mobile communications networks. The applicant has an operating licence for a nationwide GSM mobile network and for a third generation mobile network. In the Finnish mobile communications market the applicant acts both as a network operator and as a service provider on its own network.

3.3.2 Radio technology proposed and other plans

The applicant's priority choice for radio technology is Flash-OFDM. The network built by the applicant would cover 20 per cent of Finland's land area in 2006, 40 per cent in 2007, 60 per cent in 2008, 70 per cent in 2009 and 90 per cent in 2010. The applicant has indicated in its application that the network would be open to outsiders and that telecommunications companies independent of the applicant would be able to make use of the network under equal and non-discriminatory conditions.

3.3.3 Applicant's summary of the main points of the application

(deleted from translation)

3.4. Finnet

3.4.1 Company background

Part of the so-called Finnet group, the applicant company is a subsidiary owned by Finnet Ltd. The Finnet group consists of 37 local telephone companies, Finnet Ltd and Finnet Association. Finnet Ltd and its subsidiaries are responsible for the group's national business operations. Finnet Ltd is owned by Finnet's telephone companies. The Finnet group is a major player in the Finnish communications market, providing a range of voice call and data services over fixed and mobile networks. It has an operating licence for a nationwide GSM mobile network and for a third generation mobile network. In the Finnish mobile communications market the applicant acts both as a network operator and as a service provider on its own network.

3.4.2 Radio technology proposed and other plans

The radio technology proposed by the applicant is Flash-OFDM. The proposed network would cover 67 per cent of Finland's total land area by 2006, 94 per cent by 2007 and 97 per cent by 2008. Further construction of the network from 2009 would be determined by the market situation. The plan is to start constructing the network from sparsely populated areas. Coverage would spread to larger population concentrations and towns only in the second stage in 2007. This explains the rapid expansion of the geographic coverage in the early stages. The applicant has indicated that the network would be open to outsiders and that telecommunications companies independent of the applicant would have access to the network under equal and non-discriminatory conditions.

3.4.3 Applicant's summary of the main points of the application

(deleted from translation)

3.5. LynxNet

3.5.1 Company background

The applicant company was founded in 2005 to operate the proposed mobile communications network under the operating licence granted herein. The company has not yet been registered. Its founder members are four private individuals, all of whom have extensive experience of the electronics and telecommunications industry and teleoperations. The applicant does not own any other companies.

3.5.2 Radio technology proposed and other plans

The radio technology proposed by the applicant is Flash-OFDM. The proposed network would cover 30 per cent of Finland's total land area by 2006, 70 per cent by 2007 and 90 per cent by 2008. Further construction of the network from 2009 would be determined by the market situation. It is not made clear in the application whether the network would be open for use by outside telecommunications companies independent of the applicant under equal and non-discriminatory conditions. However in the oral hearing the applicant has indicated that this would in fact be the case.

3.5.3 Applicant's summary of the main points of the application

(deleted from translation)

3.6. Nordisk Mobiltelefon

3.6.1 Company background

The applicant company is a subsidiary owned by the Norwegian company Nordisk Mobiltelefon AS. Nordisk Mobiltelefon AS, for its part, is a subsidiary of the Swedish-based Nordisk Mobiltelefon AB. Nordisk Mobiltelefon AB holds the operating licences for the 450 MHz network in Sweden and Norway. The companies do not operate in the Finnish mobile communications market.

3.6.2 Radio technology proposed and other plans

The radio technology proposed by the applicant is CDMA450. Part of the network resources would be allocated to voice traffic. The proposed network would cover 80 per cent of Finland's land area by mid-2006, including Åland. The applicant has indicated that the network would be open to outsiders and that telecommunications companies independent of the applicant would have access to the network under equal and non-discriminatory conditions.

3.6.3 Applicant's summary of the main points of the application

(deleted from translation)

3.7. Saunalahti

3.7.1 Company background

The applicant is a company that has been listed on the Helsinki Stock Exchange NM-list since 2000. Major shareholders include investment companies, financial and insurance companies and private businesses. The applicant is a major player in the Finnish communications market, providing various voice call and data services over fixed and mobile communications networks. The applicant is a so-called virtual operator in the Finnish mobile communications market, providing its services over the networks of telecommunications operators.

3.7.2 Radio technology proposed and other plans

The radio technology proposed by the applicant is Flash-OFDM. The network's geographic coverage would spread out in two stages. In the first stage in 2005-2008, the network would be built to cover sparsely populated areas and small population centres. By the end of 2006 there would be 230 base stations in small population centres. Furthermore, a total of 150-160 base stations would be built in sparsely populated areas in 2005-2010 to serve some 50,000 subscribers. In the second stage in 2007-2010, some 300 base stations would be built in more densely populated areas and along major transport routes to serve some 100,000 subscribers. The applicant has indicated that the network would be open to outsiders and that telecommunications companies independent of the applicant would have access to the network under equal and non-discriminatory conditions.

3.7.3 Applicant's summary of the main points of the application

(deleted from translation)

4. Legal provisions

The material requirements for granting an operating licence for a mobile communications network are set out in section 9 of the Communications Market Act (393/2003).

According to section 9 subsection (1), a licence shall be granted if the applicant has sufficient economic resources to meet the network operator obligations and the licensing authority has no justifiable reason to suspect that the applicant will violate the provisions of the Communications Market Act, the Radio Act (1015/2001, currently the Act on Radio Frequencies and Telecommunications Equipment), the Act on the Protection of Privacy in Electronic Communications (516/2004) or any other act on telecommunications.

Subsection (2) contains a provision concerning a public authority network, which is not relevant to the matter at hand.

Subsection (3) says that if a licence cannot be granted to all applicants due to the scarcity of radio frequencies, it shall be granted to applicants whose operation best promotes the purposes laid down in section 1 of the Communications Market Act.

According to section 1 of the Communications Market Act, the objectives of the Act are to promote the provision and use of services within communications networks and to ensure that communications networks and communications services are available under reasonable conditions to all telecommunications operators and users throughout the country. A further objective of the Act is to ensure that the opportunities available for telecommunications in Finland accord with the reasonable needs of users and that they are competitive, technologically advanced, of a high quality, reliable and safe, and inexpensive.

The assessment of material requirements in the Communications Market Act takes place in two main stages that are somewhat different in nature.

First, on the basis of section 9 subsection (1), a decision is made on the applicant's general competence to meet the network operator obligations. If the applicant fails to meet these requirements, the application is rejected on this ground and the requirements set out in section 9 subsection (3) will not be considered. The application can also be rejected on the basis of section 9 subsection (1) when there is only one applicant. The purpose of the regulation is to prevent a licence being granted to an applicant that on the basis of the information received is not in the position properly to manage the obligations of a network operator. If the applicant meets the material requirements set out in section 9 subsection (1) and there are no other applicants, the operating licence shall be granted to that applicant. If the number of applicants that meet the requirements of section 9 subsection (1) exceeds the number of licences available, the applications shall be assessed in the light of the requirements set out in section 9 subsection (3).

Section 9 subsection (1) of the Act requires first of all that the applicant has sufficient economic resources to meet the network operator obligations. A licence-holder not only gains the right to construct a network, but also an obligation to construct and maintain the network. This is the specific obligation intended in the reference to network operator obligations. Therefore, in the assessment of whether the applicant has sufficient economic resources, special consideration must be given to the costs arising from the construction of the network for which the current licence is granted. Economic resources refer in this provision not only to the applicant's own resources, but also to the applicant's opportunities to gain outside funding. The type of outside funding is irrelevant to the decision at hand. It may be obtained through an ordinary bank loan, an increase in

share capital, public sector subsidies, or some other financial instrument. The key consideration in decision-making is the credibility of the plans and information submitted by the applicant. Apart from the applicant's solvency, other factors that may influence the assessment include information on the applicant's credit standing, the positive impacts of the licence granted on the applicant's financial position, and the eventual income generated from operations launched under the operating licence. The assessment involves uncertainty factors and therefore it is necessary to exercise caution in the application of this provision. In practice the significance of the provision varies from case to case. If the applicant is a new operator with no previous presence in the Finnish telecommunications market, it is necessary to give careful attention to this criterion. In the case of a listed company with an established track record in the industry, it may be assumed that this criterion is fulfilled if there are no special reasons to doubt the sufficiency of the applicant's economic resources.

The second requirement set out in section 9 subsection (1) of the Act concerns the authority's assessment of the applicant's proper and irreproachable future behaviour. Not just any improper behaviour would constitute grounds to reject an application, but the suspected infringement has to be in violation of the provisions of the law or an omission related to those legal provisions. Furthermore, the Act in question has to be either specified in the provision or some other Act governing telecommunications. The provision effectively implies an assessment of the likelihood of a future violation of the law. Not just any suspicion would constitute grounds to reject an application, but the suspicion has to be reasonable and based on outwardly observable facts. An example of such a factor might be any known previous breaches of the law by the applicant and an assessment made on this basis about the applicant's future behaviour.

Section 9 subsection (3) of the Act contains a provision on the basis of which a licence shall be granted to one or more applicants who satisfy the general requirements. The choice of applicants is based on a competition where the applicants are rank-ordered according to the criteria set out in the provision. The selection criterion is connected in the provision with the promotion of the purposes of the Act. The true content of the selection criterion is thus determined through the detailed list of objectives specified in section 1 of the Act.

The first part of the list of objectives, according to which the objectives of the Act are to promote the provision and use of services within communications networks and to ensure that communications networks and communications services are available under reasonable conditions to all telecommunications operators and users throughout the country, is worded in general terms. Therefore it may be seen as an introductory provision guiding the reader to the general purposes of the Act. In addition it has an independent function in assessing the more detailed goals set out in the sector part of the list of purposes. The first item in the second part of the list of objectives is also important with respect to justifying the operating licence decision: this item states that a further objective of the Act is to ensure that the opportunities available for telecommunications in Finland accord with the reasonable needs of users. The remaining objectives in the list are also important, but they clearly overlap with the one above. It is clear that inexpensive prices are a reasonable need for users. To some extent the rest of the objectives not only overlap with one another (advanced technology and high quality), but also contradict one another (high quality and low price). Indeed in this regard the list of objectives should be seen more as a list of examples of the kind of factors that need to be considered in assessing the users' interests rather than as a definitive list that applicants need to satisfy as fully as possible in order to win the competition. In particular, if the objectives listed are contradictory with one another, their relative weight must be decided by using some other criterion. This criterion should be the above requirement concerning the availability of services and ultimately the reasonable needs of users.

5. Assessment of general requirements (CMA section 9 subsection 1)

5.1. Economic resources

According to section 9 subsection (1) of the Communications Market Act a licence may only be granted on condition that the applicant has sufficient economic resources to meet the network operator obligations. A more detailed explanation of the provision and its application is given under heading 4 above.

The economic resources of Digita, Elisa, Finnet and Saunalahti are sufficient as intended by the law.

Cubio and Nordisk Mobiltelefon have only recently begun operations in Finland and their economic resources are sufficient as intended by the law, particularly when the resources of their owners are taken into account.

LynxNet was founded in 2005 to operate the proposed mobile communications network under the operating licence granted herein. The company has not yet been registered. Its founder members are four private individuals. The applicant has submitted a financing plan that is based initially on funding from an equipment supplier and a private investor and later on income generated from operations. There is no reason to question the viability of the financing plan. On these grounds the economic resources of LynxNet are to be deemed sufficient as intended by the law.

5.2. Justifiable suspicion of illegal activity

According to section 9 subsection (2) of the Communications Market Act an operating licence may only be granted on condition that the licensing authority has no justifiable reason to suspect that the applicant will violate the provisions of the Communications Market Act, the Radio Act (currently the Act on Radio Frequencies and Telecommunications Equipment), the Act on the Protection of Privacy in Electronic Communications or any other act on telecommunications. A more detailed explanation of the provision and its application is given under heading 4 above.

The licensing authority has no justified reason to suspect illegal activities as intended by the law on the part of any of the applicants.

All applicants meet the requirement.

6. Comparison of the applicants (CMA section 9 subsection 3)

6.1. Introduction

Since all applicants meet the requirements set out in section 9 subsection 1 of the Communications Market Act, the comparison implied by section 9 subsection (3) is carried out among all the applicants. The provisions applied are explained in closer detail under heading 4 above.

6.2. Competition

According to section 9 subsection (3) of the Communications Market Act and further to section 1 of the said Act, the operating licence consideration shall take account of how well the applicant's

operation would promote the competitiveness of the opportunities available for telecommunications in Finland.

Competition among telecommunications operators is aimed at ensuring the efficient operation of telecommunications networks, a high quality of services and inexpensive prices. Competition is a tool whose purpose is to promote users' interests. It follows that this criterion ties in closely with all other criteria. Competition can be promoted first and foremost by working to create a situation where there is a sufficient number of equally strong companies in the market that are independent of one another. It may be considered a special characteristic of the present operating licence that it is granted to one operator only. In this case competition may be created between this and other mobile communications networks and on the other hand between the various service providers using this network. The openness of the network is therefore crucial to promoting competition. The decision to grant the operating licence to a company that already has a licence to run a mobile communications network may act to deter competition between different networks.

Nordisk Mobiltelefon and LynxNet are completely new and independent players in the Finnish market. They have acted neither as network nor as service operators in Finland.

Cubio, Digita and Saunalahti are active in the Finnish market, but they have not acted as network operators in the mobile communications market.

Elisa and Finnet both have an operating licence to run a nationwide GSM mobile communications network and a third generation mobile communications network. Both have acted as network operators and service operators on their own network in the Finnish mobile market. Both companies have a considerably stronger position in the current mobile communications market than the other applicants. **Elisa and Finnet** do not meet the requirement of promoting competition as well as the other applicants.

6.3. Inexpensive prices

According to section 9 subsection (3) of the Communications Market Act and further to section 1 of the said Act, the operating licence consideration shall take account of how well the applicant's operation would promote inexpensive prices in the opportunities available for telecommunications in Finland.

The operating licence is granted for the provision of a telecommunications network, not for the provision of services via that network to end users. This must be taken into consideration in assessing how inexpensive the prices are. Inexpensive prices here refers to pricing between the licence-holder and the service provider and to pricing between the service provider and end user. These two prices are related to each other in that wholesale prices between telecommunications operators impact the retail prices between the telecommunications operator and the end user.

Clear differences can be seen in the estimates submitted by the applicants. However there are some inherent uncertainty factors in these estimates that are difficult to control. It is also difficult to compare the different estimates one on one. For these reasons the price estimates submitted by the applicants themselves cannot be given decisive importance in the assessment of how this requirement is satisfied. Rather, it is necessary to rely on more general criteria. Competition is the single most important factor that impacts prices. In addition, prices are affected by teleoperator efficiency in the construction and maintenance of the network. Factors impacting efficiency, then,

include at least the operator's know-how and experience of network construction, as well as its access to infrastructure already in place and controlled by the company, such as masts and transmission networks. On the other hand it may be argued that the new entrant in the marketplace has the advantage that it is not burdened by any other operations. In summary, though, it is a fair assessment to say that companies already active in the industry have an efficiency advantage over newcomers.

Elisa and Finnet are major players in the Finnish communications market. Both have extensive know-how and experience of the construction of mobile communications networks and network operations activities.

Cubio, Digita, Nordisk Mobiltelefon and Saunalahti also have know-how that they have built up either abroad or from other than mobile communications networks.

LynxNet presents a difficult case in this assessment because it is a newly established company with no track record. It is unlikely that the level of know-how in the company is as high as in the other applicant companies.

6.4. Advanced technology and high quality

According to section 9 subsection (3) of the Communications Market Act and further to section 1 of the said Act, the operating licence consideration shall take account of how well the applicant's operation would promote the technological sophistication and high quality of the opportunities available for telecommunications in Finland.

To the end-user, a technologically advanced service means better quality. The aim of the operating licence is to promote the supply of high-speed data connections, particularly in sparsely populated areas. It is from this vantage-point that the assessment of technological sophistication needs to be made. The applicants have put forward two different radio technologies.

The differences between the two technologies – Flash-OFDM and CDMA450 – and their technical and other features are described under heading 1.6 above.

Digita, Elisa, Finnet, LynxNet and Saunalahti have based their proposals either exclusively or primarily on Flash-OFDM technology.

Cubio and Nordisk Mobiltelefon have based their proposals on CDMA450 technology and considered it important that part of the network's resources are allocated to voice traffic.

Both technologies and especially the assessment of their future development involve uncertainty factors. To some extent it would be faster to start the construction of the network with CDMA450 technology. This, however, cannot be given decisive importance because the operating licence is granted for a long period of time.

When all the relevant factors are considered as a whole and particularly when the purpose of the operating licence is taken into account, it has to be concluded that Flash-OFDM technology is a better option than CDMA450 technology. This is mainly because of its data transfer characteristics and generally because it is better suited to promoting high-speed Internet connections. Therefore, in

respect to the requirement of advanced technology and high quality, **Cubio and Nordisk Mobiltelefon** do not rate quite as well as the other applicants.

6.5. Reliability and safety

According to section 9 subsection (3) of the Communications Market Act and further to section 1 of the said Act, the operating licence consideration shall take account of how well the applicant's operation would promote the reliability and safety of the opportunities available for telecommunications in Finland.

Apart from the technology adopted, other factors impacting reliability include the teleoperator's ability and success in the construction and maintenance of the network. This, in turn, will depend at least on the company's know-how and experience in network construction and maintenance.

Elisa and Finnet are major players in the Finnish communications market. Both have extensive know-how and experience of the construction of mobile communications networks and network operator activities.

Cubio, Digita, Nordisk Mobiltelefon and Saunalahti also have know-how that they have built up either abroad or from other than mobile communications networks.

LynxNet presents a difficult case in this assessment because it is a newly established company with no track record. It is unlikely that the level of know-how in the company is as high as in the other applicant companies.

6.6. Users' reasonable needs

According to section 9 subsection (3) of the Communications Market Act and further to section 1 of the said Act, the operating licence consideration shall take account of how well the applicant's operation would promote the conformity of the opportunities available for telecommunications in Finland with users' reasonable needs.

As was pointed out under heading 4 above, this requirement overlaps in part with the requirements addressed earlier. These objectives that tie in with users' reasonable needs have been discussed above. As regards competition, inexpensive prices, advanced technology, high quality, reliability and safety, it suffices to refer to what has been said earlier.

Users' reasonable needs, in this provision, refer to the needs of all users regardless of where they live. The reasonable needs of people living in remote areas and in sparsely populated areas must be taken into account. This has been recognized from the outset in the application process where it was made clear that the declared objective of the operating licence is to promote high-speed Internet connections in sparsely populated areas. This objective is also one of the criteria against which the applicants have to be compared and rank-ordered.

In this case the comparison of the applicants involves one major problem. That is, the comparison here is not between the applicants' network coverage of sparsely populated areas or speed of network construction, but rather their plans of network coverage and network construction. These plans involve uncertainty factors that are beyond the applicants' control. Furthermore, in an application process where applicants are rank-ordered to one another, it is known that applicants

have a tendency to put forward rather optimistic and even totally unrealistic plans of construction timetables and coverage areas. Therefore these plans need to be viewed with a measure of caution. The construction plans are an integral and important part of the selection process, but these plans cannot be given decisive importance in deciding how the applicants compare against one another.

The probable timetable for network construction and the future coverage of the network can also be assessed independently of the applicants' plans. One such indirect approach is to look at the speed and coverage that is technically possible to achieve with the radio technology proposed. Furthermore, the outcome will also depend on the efficiency of network construction. Efficiency depends on the same factors as those discussed under 6.3 with respect to inexpensive prices, i.e. at least the operator's know-how and experience of network construction, as well as its access to infrastructure already in place and controlled by the company, such as masts and transmission networks.

Elisa and Finnet are major players in the Finnish communications market. Both have extensive know-how and experience of the construction of mobile communications networks and network operator activities.

Cubio, Digita, Nordisk Mobiltelefon and Saunalahti also have know-how that they have built up either abroad or from other than mobile communications networks.

LynxNet presents a difficult case in this assessment because it is a newly established company with no track record. It is unlikely that the level of know-how in the company is as high as in the other applicant companies.

Digita, Elisa, Finnet, LynxNet and Saunalahti have based their proposals either exclusively or primarily on Flash-OFDM technology.

Cubio and Nordisk Mobiltelefon have based their proposals on CDMA450 technology.

The differences between Flash-OFDM and CDMA450 technologies are described under heading 1.6 above. To some extent it would be faster to start the construction of the network with CDMA450 technology. This, however, cannot be given decisive importance because the operating licence is granted for a long period of time. In terms of coverage there are no significant differences between the two technologies.

6.7. Summary and conclusions

Following the above discussion of the requirements set out in section 9 subsection (3) of the Communications Market Act and further in section 1 of the said Act, the applicants can now be divided into two groups: first, the group of those applicants that come out less favourably in the comparison; and second, the group of applicants that do better in the comparison.

The first group includes **LynxNet, Elisa, Finnet, Cubio and Nordisk Mobiltelefon**.

Without any further comment on the rank order among the applicants placed in this group, the main negative factor working against **LynxNet** is that the company is less experienced than the other applicants. In the case of **Elisa and Finnet**, the decision has been influenced by the fact that both already hold licences for second and third generation mobile communications networks. **Cubio and**

Nordisk Mobiltelefon based their proposals on the use of CDMA450 technology, which is less well suited to data transfer than Flash-OFDM technology, which was the other applicants' preferred option. In other respects these applicants did not differ significantly from those placed in the second group.

The second group includes the two remaining applicants **Digita and Saunalahti**.

There are no significant differences between **Digita and Saunalahti** on the criteria of inexpensive prices, advanced technology, high quality, reliability and safety.

As regards the requirement of competition, the first important point is that **Saunalahti** operates in the mobile communications market. However the company is a so-called virtual operator that does not have its own network but uses the network of another operator. **Digita**, on the other hand, is a network operator, but not in the mobile market. Neither of the two have such a strong position in the mobile communications market that the decision could be made by reference to the criterion.

Therefore the decision has to be made on the basis of some other criterion that ultimately relates to the satisfaction of users' reasonable needs. This criterion is the openness of the network.

Network openness is a particularly important consideration because there is no more than one operating licence. The Communications Regulatory Authority cannot designate the licence-holder a company with considerable market power because EC legislation does not in practice recognize this market definition. It follows that the Authority is also not in the position to impose obligations of openness upon the licence-holder by reference to the Communications Market Act. The only way to ensure the openness of the network, therefore, is to take account of this factor upon granting the operating licence.

The **Saunalahti** network would be open to outsiders and be available to telecommunications operators independent of the applicant under equal and non-discriminatory conditions. The **Digita** network would be open and it would be offered for use only to outside telecommunications companies that are independent of the applicant on equal and non-discriminatory conditions. **Digita** does not act as a service provider in today's communication market, nor would it do so in this network. It follows that **Digita's** network would be more open than the networks operated by other applicants.

According to the first sentence of section 1 of the Communications Market Act, the objectives of the Act are to promote the provision and use of services within communications networks and to ensure that communications networks and communications services are available under reasonable conditions to all telecommunications operators and users throughout the country.

The decision to grant the operating licence to **Digita** is most closely in line with the objectives of the Communications Market Act described above.

On these grounds the conclusion has to be reached that among all the applicants, even when the various relevant factors are considered as a whole, **Digita's** operation best supports the objectives set out in section 1 of the Communications Market Act.

END RESULT OF THE DECISION

On the grounds and reasons set out above, the operating licence is granted, on the terms and conditions of the operating licence attached to this decision (Appendix 1), to **Digita Oy**, and the applications of **Cubio Networks Oy Ltd**, **Elisa Oyj**, **Finnet Laajakaistaverkot Oy**, **LynxNet Oy**, **Oy Nordisk Mobiltelefon AB** and **Saunalahti Group Oyj** are rejected.

APPENDICES

- 1 Operating licence
- 2 Appeal instructions (deleted from translation)

APPENDIX 1

OPERATING LICENCE GRANTED BY THE GOVERNMENT FOR A DIGITAL MOBILE COMMUNICATIONS NETWORK IN THE 450 MHz FREQUENCY BAND

Licence-holder

Digita Oy

Network service

The licence-holder has the right to provide a network service over a digital broadband mobile communications network using Flash-OFDM technology.

Frequencies

The licence-holder has the right to carry on the activity for which it has received an operating licence within the frequency band specified in the Government Decree on the plan of frequency band allocations to television and radio operations and licensed telecommunications operations.

In border areas restrictions may be imposed on frequency use with a view to protecting the use of frequencies in neighbouring countries.

Geographic operating area

The licence-holder's geographic operating area covers the whole country with the exception of the region of Åland.

Validity

The operating licence is valid through to 21 June 2025.

Construction obligation

The licence-holder has an obligation to develop a network in accordance with the construction plan made up of the attached construction schedule, coverage map and list of municipalities unless otherwise ordered by the Ministry of Transport and Communications on the licence-holder's application.

The rules of cancellation due to failure to comply with the operating licence are prescribed in Section 12 of the Communications Market Act.

Network openness

The licence-holder has an obligation to offer its network services to all service providers under equal and non-discriminatory conditions.

The licence-holder does not have the right to act as a service provider in the network for which this operating licence has been granted.

Other terms and conditions

In other respects the licence-holder's duties and obligations are set out in the Communications Market Act.

Helsinki, 22 June 2005

Signatures

Appendices to operating licence

Appendices to operating licence

Construction schedule

Coverage maps

First stage, receiver antenna 5 metres above ground level

First stage, receiver antenna 1.5 metres above ground level

Second stage, receiver antenna 5 metres above ground level

Second stage, receiver antenna 1.5 metres above ground level

Third stage, receiver antenna 5 metres above ground level

Third stage, receiver antenna 1.5 metres above ground level

List of municipalities

Construction timetable

According to coverage plans submitted by Digita Oy to the Ministry of Transport and Communications, it is estimated that the three stages of the Flash-OFDM network will be completed as follows:

Stage 1: September 2006

Stage 2: December 2007

Stage 3: September 2009

The stages of network construction are illustrated in the coverage maps and list of municipalities attached.

Network coverage is described in three stages and at two alternative receiver antenna heights, first at 5 metres above ground level and then at 1.5 metres above ground level. Network design is optimised for a reception situation where the customer uses an external antenna for reception, with the antenna placed for example on the roof of the building. The coverage maps do not assume that customer uses a directional reception antenna.