Neutral Citation Number: [2012] EWCA Civ 567

Case No: A3/2011/2018 & 2018(Y)

IN THE COURT OF APPEAL (CIVIL DIVISION)
ON APPEAL FROM THE HIGH COURT OF JUSTICE
CHANCERY DIVISION (PATENTS COURT)
The Hon Mr Justice Floyd
[2011] EWHC 1470 (Pat)

Royal Courts of Justice
Strand, London, WC2A 2LL

Date: 10/05/2012

Before:

LORD JUSTICE LAWS
LORD JUSTICE ETHERTON
and
LORD JUSTICE KITCHIN

- -

Between:

Nokia OYJ (Nokia Corporation)	**Claimant/ Appellant**
- and -	
IPCom GMBH & Co KG	**Defendant/ Respondent**

- -
- -

Richard Meade QC and James Abrahams (instructed by Bird & Bird LLP)
for the Claimant/Appellant
Iain Purvis QC and Brian Nicholson (instructed by Bristows)
for the Defendant/Respondent

Hearing dates: 27/28/29 February 2012

- -

Approved Judgment

Lord Justice Kitchin:

Introduction

1. This is an appeal by Nokia from the judgment of Floyd J of 16 June 2011 whereby he held IPCom's European Patent (UK) 1 841 268 ("the patent" or "the 268 patent") partially valid and infringed by certain Nokia mobile phone devices referred to as the A1 and the A2. He found that certain other Nokia devices did not infringe. He also gave IPCom permission to amend the patent to cure its partial invalidity.

2. By this appeal, Nokia challenges the finding of the judge that the patent was valid in its amended form, and his finding that it was infringed by the Nokia A2 device.

3. Nokia is a well known designer and manufacturer of mobile phones. IPCom is the owner of the telecommunication patent portfolio developed by Robert Bosch GmbH ("Bosch"). In the 1990s, Bosch invested very substantial sums in research into mobile telecommunication technology which led to what has now become IPCom's patent portfolio.

4. This is the latest round in a long running dispute between the parties. The patent was divided out of another of IPCom's patents, European Patent (UK) 1 186 189 ("the 189 patent"). The 189 patent was revoked by Floyd J following a judgment dated 18 January 2010 ("the 189 judgment") in other proceedings between the parties. An appeal against the judge's refusal to permit IPCom to amend the 189 patent was unsuccessful.

5. Nokia brings this appeal with the permission of the judge, save in respect of the issue of obviousness over the common general knowledge. As to that, by order dated 1 November 2011, I adjourned the application by Nokia for permission to appeal to the hearing of the substantive appeal. We heard full argument on the point from Mr Richard Meade QC on behalf of Nokia and from Mr Iain Purvis QC on behalf of IPCom and I think it is therefore appropriate formally to grant permission and address the issue on the merits.

6. The issues on this appeal are therefore:

    i) Is the patent invalid for added matter?

    ii) Is the patent invalid for obviousness over the common general knowledge?

    iii) Is the patent invalid for obviousness over the prior art mobile telephone system called GSM/GPRS?

    iv) Is the patent invalid for obviousness over a document called Farsta?

    v) Is the patent invalid for insufficiency?

    vi) Does the Nokia A2 device infringe the patent?

Technical background and common general knowledge

7. The judge identified the skilled addressee of the patent as an engineer or team of engineers concerned with developing mobile phones for use in the UMTS mobile telecommunications standard, and in particular with developing systems for controlling access to an uplink channel, that is to say, from mobile phone to base station, called the random access channel or RACH. This is a shared channel which is used by all the mobiles in a base station's cell to ask the network, via the base station, for a dedicated channel when they want to make a call, receive a call or use one of the other available facilities such as internet browsing.

8. The RACH can accommodate some degree of simultaneous access attempts but, should demand become too great, user signals may collide with each other with the result that only some and, on occasions, hardly any, will manage to get through. This competition for the RACH is called "contention" and when two or more users block each other, this is called a "collision".

9. The skilled addressee would have known that one of the ways of dealing with contention on the RACH is to limit the mobiles' attempts to request access to it. This is done by the base station broadcasting to the mobiles in its cell rules for RACH access. This it does on a channel called the broadcast control channel or BCCH. Two well known sets of rules for limiting access to the RACH are the "lottery" and "access classes". They were described by the judge in his 189 judgment in these terms:

> "*Contention on a shared channel*
>
> > 194. Where the uplink from a mobile station is a shared random access channel, there is a danger of collision between users' signals, allowing stronger signals through and preventing weaker ones. This competition is called "contention". It can be tackled in numerous ways. One set of ways in which the problem is tackled is by restricting access to the channel.
>
> *The "lottery"*
>
> > 195. One well known way of restricting access to the channel involved a form of lottery. "Lottery" is not a term of art, but is a convenient term to provide an analogy for what is done. Each mobile station generates for itself a random number and compares it with a value sent by the network. A "win" can be defined as generating a random number greater than or equal to the transmitted value. So, for example, the possible transmitted numbers could be 1 to 10, and the random numbers could be 1 to 9. If the base station transmits a 10, no mobile will get onto the channel, but if it transmits a lower number than 10 an increasing proportion of mobiles can get on. At busy times the access can be throttled back to prevent collision. At very low usage times the transmitted value could be 1, and all mobiles would get access.
>
> ….

> *Access classes*
>
> 197. Systems in which certain classes of user (user classes or access classes) could be restricted from access were also well known. For example class barring, under which a mobile of a particular class would be barred from access absolutely, was a feature of the GSM/GPRS system. …
>
> *Transmission capacity*
>
> 198. Bandwidth is a scarce resource in any mobile telephone system. Designers of such systems would try to arrange matters so as to minimise the amount of data that had to be sent routinely. One common general knowledge way of limiting the amount of data to be sent is the use of single bit flags, which alert the mobile to the fact that data is coming. This allows the network only to send the data when the flag is set."

10. As the judge explained, the skilled addressee would also have known of the various mobile telecommunications standards including, specifically, GSM, GSM/GPRS and IS-95. GSM used class barring. GSM/GPRS and IS-95 used both class barring and the lottery but combined them in different ways. In GSM/GPRS, the second generation or "2G" modification of GSM, there was first, class barring and second, survivors of the class barring could be subjected to the lottery.

11. By the date of the application for the patent the UMTS standard was in contemplation. This is a third generation or "3G" system.

12. The judge summarised the common general knowledge in relation to UMTS in these terms at [10]:

> "UMTS is a code division multiple access system (CDMA). The details of CDMA do not matter for present purposes except in very limited respects. One aspect of CDMA is that of frequency sharing between channels. This means that there is at least the potential for channels to interfere with each other. Interference is a function of the load carried by the channel. A second point is that it was envisaged at the priority date that, in UMTS, the use of the RACH would not be restricted to the sending of channel requests. It would also be used to send small data packets. Thirdly, it was clear that UMTS would offer multiple services, including voice and at least one type of data service. These are points which are relied on by Nokia to suggest that a random access scheme for UMTS required more in the way of flexibility than was necessary for earlier schemes."

The disclosure of the application

13. At the hearing of the appeal, Nokia quite properly focused on the disclosure of the application, this being the basis for their various added matter objections. For

convenience, the parties used a translation of the priority document for the 268 patent which, as we were told, is in the same form as the application as filed, WO 00/54534.

14. The application is entitled "Method for allocating access rights to a telecommunications channel to subscriber stations of a telecommunications network and to a subscriber station". It then provides a description of the "prior art" which includes, at paragraph [0002], reference to an earlier German patent application which used class barring but did not use a lottery.

15. There follows a description of the "Advantages of the invention". The first paragraph, [0005], mirrors claim 1 of the application and, as the judge held at [24], would be achieved by the lottery-based approach to access which was common general knowledge at the date of the patent. The paragraph concludes:

> "This access control uses a minimum of transmission capacity for transmitting the information signals, since it is effected merely by transmitting the access threshold value."

This, Mr Meade submitted, conveys to the skilled reader that an important aspect of the invention is the provision of a system which saves transmission capacity, a recurring theme throughout the application.

16. Paragraph [0006] continues:

> "The measures cited in the subclaims permit advantageous developments of and improvements to the method specified in the independent Claim 1."

The reader is therefore told that the subclaims contain various optional elements which are not necessary for the invention in its widest form but which may provide additional advantages.

17. The application then provides, at paragraph [0007], a description of control based upon user class. It says:

> "This permits subscriber stations of a prescribed user class to be authorized to use the telecommunications channel even if the random distribution by means of access threshold value would not authorize them to access this telecommunications channel. Thus, by way of example, subscriber stations for emergency services, such as the police or the fire brigade, can be associated with such a prescribed user class and can then access the telecommunications channel with priority irrespective of the random distribution by corresponding access threshold value information."

18. This paragraph therefore introduces the notions of restricting access based on a lottery and granting access based on prescribed class. However, it is not clear whether they may be combined and, if so, how this may be done. In short, this wording is apt to describe both the "10 bit" and "13 bit" embodiments to which I shall shortly come.

19. The application then proceeds to describe advantages of various different combinations of features. Paragraph [0008] introduces the concept of priority threshold values, the so called "P" bits. These provide what Mr Meade described as an additional layer of discrimination in the form of a priority lottery.

20. Paragraph [0009] describes a further concept, the subject of claim 4 of the application. Here the evaluation unit in the mobile checks whether the access authorization data comprise subscriber service information which indicates whether access to a telecommunications channel is enabled for the purpose of requesting particular telecommunications services. In colloquial terms, this is a description of a system for communicating to the mobile which services can be requested via the RACH. This is said to save transmission capacity because, for each of the pre-selected user classes, only the specified services can be requested. It is a description of what are referred to later as the "D" bits.

21. Finally, in this regard, I should refer to paragraph [0010]. This contains a general description of a system in which the access authorization information comprises either an access threshold value or access class information, but not both together, so allowing a reduction in the required transmission capacity.

22. The application then continues with a "Description of the exemplary embodiments". Figure 1 shows details from a mobile phone network; figure 2 shows a block diagram of a subscriber station, that is to say a mobile; figures 3a-3c show three different bit patterns which can be used with the invention; and figure 4 shows a flow chart for the way in which an evaluation unit in the mobile of the invention works. It is split into figures 4a-4c.

23. Paragraph [0014] explains that the network operator may supply different telecommunications services. Paragraph [0015] says that these may be made available individually or in combination and paragraph [0016] continues that these services need to be requested by the mobile, and this is normally achieved via the RACH.

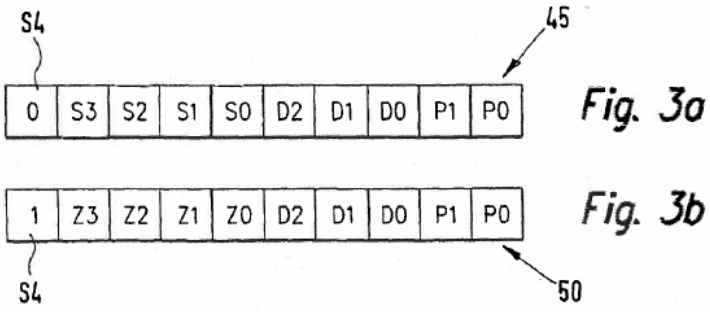
24. Paragraph [0017] says that if two messages collide on the RACH then neither will get through and the base station will be unable to respond. After a prescribed time the mobile will send the message again and this may cause the RACH to become overloaded. Paragraph [0018] explains that it is possible to prevent this overload by restricting access to the RACH by individual mobiles. For example, access to the RACH may only be permitted for particular user classes on a temporarily or permanently privileged basis. Paragraph [0019] then says that the network operator uses information signals transmitted from the base station to inform individual mobiles which rights have been assigned to them.

25. Paragraph [0020] expands that the base station transmits information signals at prescribed times. It concludes that in a first embodiment, the bit pattern can contain information regarding for which purpose and for which mobile stations access to the RACH is permitted – the D bits.

26. Paragraph [0024] contains a description of the mobile depicted in figure 2 and its use in connection with the lottery. It says that a random scatter for access authorization is achieved by sending an access threshold value on the BCCH. The mobile comprises a transmission and reception unit which is connected to an evaluation unit which itself

accesses an access authorization card, such as a Subscriber Identity Module (SIM) card. The information signals transmitted via the BCCH are received by the reception unit. The access threshold value S is then supplied to the evaluation unit. Before any access to the RACH is permitted, the evaluation unit draws a random or pseudo random number R and checks whether this is at least as great as S. If it is, then access to the RACH is permitted.

27. Thus far the application has described controlling access by class and by lottery, but not how they may be combined. Paragraphs [0025]-[0035] contain a description of the first (the 10 bit) embodiment, and one way of combining these concepts. It is depicted in figures 3a and b:



28. Put shortly, access is conferred by lottery (figure 3a) or by class (figure 3b), but not by both together. The judge summarised the description of this embodiment at [33]-[35]:

> "33. These figures represent alternative bit patterns which are transmitted by the network to the mobile stations on a broadcast channel. The first bit in each pattern is an evaluation bit S4. In figure 3a, S4 is 0 and will be used when the network desires to control access by lottery. In figure 3b, S4 is 1 and will be used when it is desired to control access by a class method. When S4 is 0, the following four bits, S3, S2, S1, and S0, are access threshold values. These four bits can be used to transmit 16 different access threshold values to the mobile stations (16 is the number of options that four binary bits gives you). Of course, the same access threshold value will be sent to all the mobile stations. The access threshold value can be set to a greater or lesser value so as to throttle back access to the network.
>
> 34. In figure 3b the evaluation bit S4 is set to 1. In this case the second, third, fourth and fifth bits are not defined as access threshold value bits but rather as access class bits. So this pattern will be used when it is desired to control access by means of access classes. Each of the access class bits Z3, Z2, Z1 and Z0 represents a particular user class. The arrangement is such that if the access class bit has a value zero, then all the

> mobile stations in the associated user class can access the random access channel. If the access class bit is set to 1, then none of the mobile stations in that user class can access the channel.
>
> 35. At the end of paragraph [0033] [corresponding to paragraph [0035] of the application], the specification explains in summary that the S4 bit determines whether the second to fifth bits are interpreted in line with the first bit pattern (figure 3a) or in line with the second bit pattern (figure 3b). It would accordingly be understood that when the specification spoke earlier about granting access irrespective of access threshold value, it could be referring to sending the figure 3b bit pattern, that is to say simply basing access on access class, when there are no received access threshold value bits."

29. In addition to this summary, to which neither side took exception, I would emphasise two aspects of the description. First, the last sentence of paragraph [0025] states:

> "It is possible to arrange for a telecommunications service to be able to be used when the associated telecommunications service bit has been set."

Mr Purvis, on behalf of IPCom, submitted, and I agree, this indicates this feature is optional.

30. Second, paragraph [0033] explains that the evaluation unit in the mobile takes the association with a user class from the SIM card.

31. The second (13 bit) embodiment is described from paragraph [0036] and depicted in figure 3c:

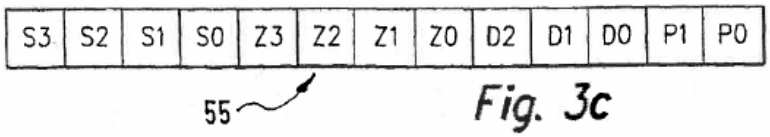


Fig. 3c

32. It begins:

> "In a second exemplary embodiment, in figure 3c, a third bit pattern 55 having a bit length of 13 bits is transmitted from the base station … to the mobile stations … with the information signals. The third bit pattern 55 does not have an evaluation bit S4 and therefore comprises both the access threshold value bits S3, S2, S1, S0 and the access class bits Z3, Z2, Z1, Z0. In addition the third bit pattern 55, like the first bit pattern 45 and the second bit pattern 50 as well, comprises the telecommunications service bits D2, D1, D0 and the priority bits P1, P0. Mobile stations belonging to a user class for which the associated access class bit = 0 are able to access the RACH … irrespective of the access threshold value S and of the

> priority threshold value P and hence possibly without evaluation thereof in the evaluation unit 60. Mobile stations belonging to a user class whose associated access class bit has been set to 1 and mobile stations which do not belong to a user class, need to perform the access threshold value evaluation already described in the first exemplary embodiment and possibly, in addition, the priority threshold value evaluation described in the first exemplary embodiment, in order to ascertain their access authorisation for the RACH …"

33. Access by class and access by the lottery have now been combined in a very different way. Both class information and access information are sent to the mobile in a 13 bit pattern. This pattern does not include an evaluation bit. Instead, mobiles belonging to a permitted class are able to access the RACH irrespective of their performance in the lottery. Mobiles which do not belong to a permitted class may nevertheless access the RACH if they are successful in the lottery. This was described during the course of the appeal as the "two routes of access" feature.

34. This feature is emphasised by a further passage at the end of paragraph [0036]:

> "In contrast to the first exemplary embodiment, the second exemplary embodiment allows access to the RACH 30 not only by mobile stations which can access the RACH 30 on account of their association with a user class but also by such mobile stations as draw a random or pseudo-random number R greater than or equal to the access threshold value S and possibly have a priority value above the priority threshold value P."

35. The contrast between this and the first embodiment is developed in paragraph [0037]:

> "In comparison with the first bit pattern and the second bit pattern, the access authorization information in the case of the third bit pattern contains both the access threshold value bits S3, S2, S1 S0 and the access class bits Z3, Z2, Z1, Z0."

36. The two routes of access feature provides what Mr Purvis described as horizontal and vertical control. The network provider can adjust the set of classes that do not have to win the lottery (horizontal control) and can separately adjust the access threshold value to make it harder or easier to win the lottery (vertical control). The judge put it this way at [40]:

> "This passage is explaining that, in this embodiment, there are mobiles which will be permitted to access the RACH due to their class, as well as mobiles which will be able to access the RACH only if they "win" the lottery. The skilled person would therefore appreciate by this stage that, in this embodiment of the invention, the network can discriminate between groups of users, for example ensuring that the emergency services are permitted access without having to do the lottery. He (or she) would also appreciate that at the same time the network can control the unfavoured users' access to the RACH by means of

> the lottery, by appropriate setting of the access threshold value. It would be clear that this functionality is additional to that provided by the first embodiment."

37. He described it in similar terms at [55] when considering the invention claimed in the patent:

> "Mr Gould [IPCom's expert] summarises the invention as providing, in a bandwidth efficient manner, a means for the network dynamically to adjust specific groups of users into a population with a priority access to the network independent of access threshold while at the same time using that access threshold to dynamically control the access of other users. He explains that it is bandwidth efficient by saying that it is possible only to send a single access threshold value, although of course the claim is not so limited. Again, I think this summary is a fair one to have in mind when considering the issues in the case, although it is not, of course, a substitute for the claims."

38. There is a further aspect of the description I would mention at this stage, namely the significance of the D bits and the P bits. I think it is clear that their relationship to the 13 bit embodiment is the same as it is to the 10 bit embodiment. The two routes of access feature does not depend in any way upon the D bits or the P bits for its functionality.

39. This point is emphasised by paragraph [0038]:

> "The numbers of bits used in the first, second and third bit patterns 45, 50, 55 for the access threshold value S, for the access class information Z0, Z1, Z2, Z3, for the priority threshold value P and for the subscriber service information D0, D1, D2 are to be understood merely by way of example and can be increased, for example for more extensive signalling and can be reduced for bandwidth reduction. In this case, the total length of the bit patterns 45, 50, 55 may also change. If appropriate, individual information components can also be omitted entirely."

40. That brings me to figure 4 and paragraph [0039] which respectively depict and describe a flowchart of the way in which the evaluation unit works in a system which incorporates both the 10 and 13 bit embodiments. It also includes a description of a processing scheme for the P bits and the D bits.

41. The judge gave this explanation of figure 4 in his 189 judgment:

> "222. The specification then goes on to describe, by reference to figures 4a, 4b and 4c a flowchart for the way in which the evaluation unit in the mobile works. I first set out figure 4a substantially as annotated in the expert report of Dr Cooper [Nokia's expert]:

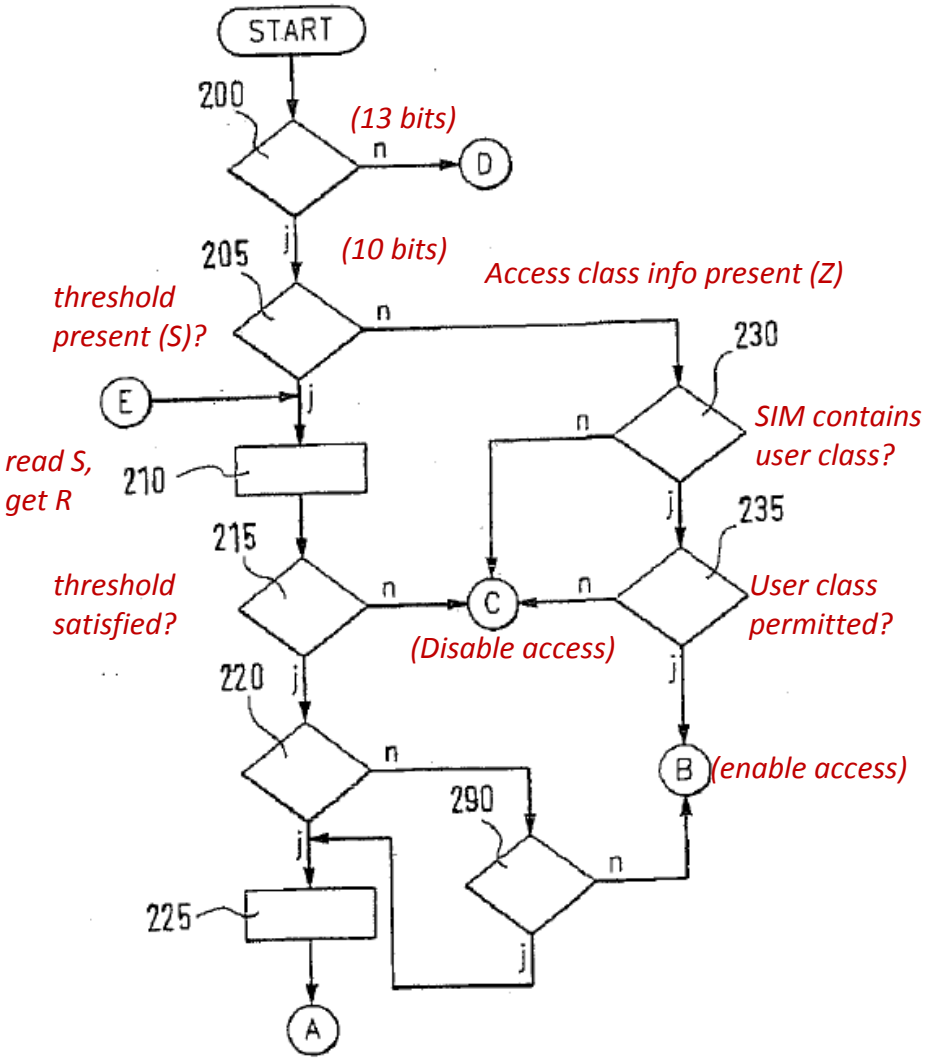


Fig. 4a

223. The evaluation unit is capable of evaluating both types of bit pattern, that is to say the 10 bit pattern and the 13 bit pattern. Nokia say this supports their view of the structure of the specification. To a degree it does, as it is undoubtedly the sort of evaluation unit one would need if one were arranging a network to receive both the 10 bit and 13 bit embodiments. But I do not think that alters the fact that the skilled person would appreciate that the 13 bit embodiment could be used on its own in a simpler evaluation unit, just as he would appreciate that the 10 bit embodiment could be so used on its own.

224. The first check which the unit performs is to determine which of the two lengths of bit pattern is being transmitted. The

flowchart then divides at box 200 to provide appropriate processing for the different bit patterns.

225. For the 10 bit pattern, the first step is to evaluate the S4 bit to ascertain whether the four bits which follow are access threshold value bits or access class bits. There is a further branch at box 205 to accommodate each of these two possibilities, and the logic follows the appropriate course thereafter.

226. For the 13 bit pattern the evaluation unit knows that it will be receiving both access threshold information and access class information. This is shown in Figure 4c:

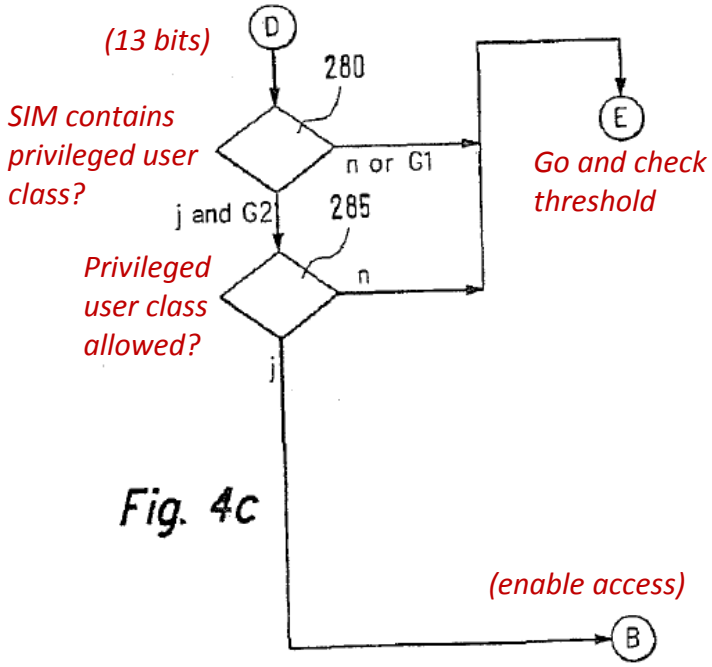


Fig. 4c

227. So the unit checks the four access class bits (at box 285) to check whether the user class ascertained for the mobile is authorised for access. If so, access is granted subject to some further hurdles. If not, there is a second branch which leads back to the processing of threshold value at box 210 in Figure 4a. The processing of the 10 and 13 bit patterns is therefore intertwined to this extent, but again the skilled person would appreciate that this is not inevitably the case. An adapted evaluation unit just for 10 or just for 13 bits would be envisaged."

42. Finally I must refer to the claims. Claim 1 is to a method in which a mobile performs a lottery if it receives data from the base station indicating that it should do so. Claim 2 introduces class based access, but it does not specify how it is to be combined with

the lottery. Claim 3 is directed to the P bits. Claim 4 is directed to the D bits. Claims 5 and 6 are directed to the S4 bit.

The specification of the 268 patent

43. The specification of the patent is different from that of the application in two respects upon which Nokia particularly focused. First, paragraph [0034] of the patent corresponds to paragraph [0036] of the application but has been amended to say that it describes the second exemplary embodiment which is based upon the invention described in the claims.

44. The second is that the claims themselves have been redrawn. I need only refer to claim 1 which, as broken down into integers, reads:

> [A] Mobile station for operation in a UMTS mobile radio network
>
> [B] in which multiple user classes are distinguished
>
> characterized in that the mobile station is arranged
>
> [C] to read a user class from a SIM card
>
> [D] to receive access threshold value bits and access class information over a broadcast control channel
>
> [E] to determine an access threshold value from the access threshold value bits
>
> [F] to use the access class information relevant for the user class to determine whether
>
> [G] the mobile station is permitted to access a random access channel, for example RACH, independent of the received access threshold value bits
>
> [H] or whether the access permission for the random access channel, for example RACH, is determined on the basis of an evaluation of the access threshold value by comparison of the access threshold value with a random number or pseudo random number.

Added matter

45. Nokia puts its case on added matter in various ways. But they all have at their heart the same complaint. IPCom has, says Nokia, framed the patent to claim only the 13 bit form of processing but, in doing so, generalised the way the 13 bit processing deals with the two independent routes of access feature, then drafted a claim based upon that generalisation while leaving out other aspects of the feature, and also including elements drawn from elsewhere in the application.

Added matter – the law

46. The objection is founded upon Article 123(2) EPC:

> "A European patent application or a European patent may not be amended in such a way that it contains subject matter which extends beyond the content of the application as filed."

47. The test for added matter was stated by Aldous J *in Bonzel v Intervention (No 3)* [1991] RPC 553 at 574 in these terms:

> "The decision as to whether there was an extension of disclosure must be made on a comparison of the two documents read through the eyes of a skilled addressee. The task of the Court is threefold:
>
> (1) To ascertain through the eyes of the skilled addressee what is disclosed, both explicitly and implicitly in the application.
>
> (2) To do the same in respect of the patent,
>
> (3) To compare the two disclosures and decide whether any subject matter relevant to the invention has been added whether by deletion or addition. The comparison is strict in the sense that subject matter will be added unless such matter is clearly and unambiguously disclosed in the application either explicitly or implicitly."

48. In Case G 2/10, 30 August 2011, the Enlarged Board of the EPO explained in similar terms that an amendment can only be made "within the limits of what the skilled person would derive directly and unambiguously, using common general knowledge, and seen objectively and relative to the date of filing, from the whole of the application as filed".

49. In *Vector Corp v Glatt Air Techniques Ltd* [2007] EWCA Civ 805, [2008] RPC 10, Jacob LJ elaborated aspects of the test to be applied and drew together various statements of principle from earlier cases at [4]-[9]:

> "4. In *Richardson-Vicks' Patent* [1995] RPC 568 at 576 I summarised the rule in a single sentence:
>
> > "I think the test of added matter is whether a skilled man would, upon looking at the amended specification, learn anything about the invention which he could not learn from the unamended specification."
>
> I went on to quote Aldous J in *Bonzel*. His formulation is helpful and has stood the test of time.
>
> 5. The reason for the rule was explained by the Enlarged Board of Appeal of the EPO in G1/93 *ADVANCED*

SEMICONDUCTOR PRODUCTS/Limiting feature [1995] EPOR 97 at [Reasons 9]:

> "With regard to Article 123(2) EPC, the underlying idea is clearly that an applicant shall not be allowed to improve his position by adding subject-matter not disclosed in the application as filed, which would give him an unwarranted advantage and could be damaging to the legal security of third parties relying upon the content of the original application."

6. Mr Richard Arnold Q.C. provided a clear articulation as to how the legal security of third parties would be affected if this were not the rule:

> "The applicant or patentee could gain an unwarranted advantage in two ways if subject-matter could be added: first, he could circumvent the "first-to-file" rule, namely that the first person to apply to patent an invention is entitled to the resulting patent; and secondly, he could gain a different monopoly to that which the originally filed subject-matter justified."

7. Kitchin J has recently helpfully elaborated upon the *Bonzel* formulation in *European Central Bank v Document Security Systems* [2007] EWHC 600 (Pat), 26th March 2007:

> "[97] A number of points emerge from this formulation which have a particular bearing on the present case and merit a little elaboration. First, it requires the court to construe both the original application and specification to determine what they disclose. For this purpose the claims form part of the disclosure (s. 130(3) of the Act), though clearly not everything which falls within the scope of the claims is necessarily disclosed.
>
> [98] Second, it is the court which must carry out the exercise and it must do so through the eyes of the skilled addressee. Such a person will approach the documents with the benefit of the common general knowledge.
>
> [99] Third, the two disclosures must be compared to see whether any subject matter relevant to the invention has been added. This comparison is a strict one. Subject matter will be added unless it is clearly and unambiguously disclosed in the application as filed.
>
> [100] Fourth, it is appropriate to consider what has been disclosed both expressly and implicitly. Thus the addition of a reference to that which the skilled person would take for granted does not matter: *DSM NV's Patent* [2001] RPC 25 at

> [195]-[202]. On the other hand, it is to be emphasised that this is not an obviousness test. A patentee is not permitted to add matter by amendment which would have been obvious to the skilled person from the application.
>
> [101] Fifth, the issue is whether subject matter relevant to the invention has been added. In case G1/93, *Advanced Semiconductor Products*, the Enlarged Board of Appeal of the EPO stated (at paragraph [9] of its reasons) that the idea underlying Art. 123(2) is that that an applicant should not be allowed to improve his position by adding subject matter not disclosed in the application as filed, which would give him an unwarranted advantage and could be damaging to the legal security of third parties relying on the content of the original application. At paragraph [16] it explained that whether an added feature which limits the scope of protection is contrary to Art. 123(2) must be determined from all the circumstances. If it provides a technical contribution to the subject matter of the claimed invention then it would give an unwarranted advantage to the patentee. If, on the other hand, the feature merely excludes protection for part of the subject matter of the claimed invention as covered by the application as filed, the adding of such a feature cannot reasonably be considered to give any unwarranted advantage to the applicant. Nor does it adversely affect the interests of third parties.
>
> [102] Sixth, it is important to avoid hindsight. Care must be taken to consider the disclosure of the application through the eyes of a skilled person who has not seen the amended specification and consequently does not know what he is looking for. This is particularly important where the subject matter is said to be implicitly disclosed in the original specification."

8. When amendment of a granted patent is being considered, the comparison to be made is between the application for the patent, as opposed to the granted patent, and the proposed amendment (see the definition of 'additional matter' in s.76(l)(b)). It follows that by and large the form of the granted patent itself does not come into the comparison. This case was to some extent overcomplicated by looking at the granted patent, particularly the granted claim 1.

9. A particular, and sometimes subtle, form of extended subject matter (what our Act calls 'additional matter') is what goes by the jargon term 'intermediate generalisation'. Pumfrey J described this in *Palmaz's European Patents* [1999] RPC 47, 71 as follows:

> "If the specification discloses distinct sub-classes of the overall inventive concept, then it should be possible to amend down to one or other of those sub-classes, whether or not they are

> presented as inventively distinct in the specification before amendment. The difficulty comes when it is sought to take features which are only disclosed in a particular context and which are not disclosed as having any inventive significance and introduce them into the claim deprived of that context. This is a process sometimes called "intermediate generalisation"."

50. In *Napp Pharmaceutical Holdings Ltd v Ratiopharm* [2009] EWCA Civ 252, [2009] RPC 18, Jacob LJ re-emphasised at [98]-[99] that not everything falling within the scope of a claim is necessarily disclosed:

> "98. We can deal with this quite shortly. The added subject-matter is said to be contained in claim 6. Mr Silverleaf put it this way:
>
> > We say that if that claim covers water soluble spheronising agents, it must also disclose the possibility of using them or it does not actually read on to them at all; because otherwise the teaching of the document is to use water insoluble ones. We say if in fact the claim is wide enough to cover water soluble spheronising agents, there must be added matter.
>
> 99. The trouble with that submission is that claim 6 does not mention – so cannot possibly teach – water soluble spheronising agents. It just specifies "a spheronising agent." The fallacy in the argument is to equate disclosure of subject matter with scope of claim, a fallacy struck down as long ago as 1991 in *AC Edwards v Acme Signs & Displays* [1992] RPC 131 (see e.g. *per* Fox LJ at p.143)."

51. These principles are enough to deal with the issues arising in most cases. However, this appeal focuses on two particular points: first, the approach to be adopted to claim broadening; second, the objection of intermediate generalisation.

52. As for claim broadening, in decision T 0260/85 *Coaxial connector/AMP*, OJ EPO 1989, 105 the Technical Board of Appeal (TBA) explained (at [7]) that the deletion of a feature would constitute added matter if the application as originally filed contained no disclosure, express or implied, that the feature could be omitted.

53. Then, in decision T 0331/87 *Houdaille*, the TBA laid down a three part test at [3]-[6]:

> "3. For the determination whether an amendment of a claim does or does not extend beyond the subject-matter of the application as filed, it is necessary to examine if the overall change in the content of the application originating from this amendment (whether by way of addition, alteration or excision) results in the skilled person being presented with information which is not directly and unambiguously derivable from that previously presented by the application, even when account is taken of matter which is implicit to a person skilled in the art in what has been expressly mentioned (Guidelines, Part C,

> Chapter VI, No. 5.4). In other words, it is to examine whether the claim as amended is supported by the description as filed.
>
> 4. In the decision T 260/85 ("Coaxial connector/AMP, OJ EPO, 1989, 105) the Board of Appeal 3.5.1 came to the conclusion that "it is not permissible to delete from a claim a feature which the application as originally filed consistently presents as being an essential feature of the invention, since this would constitute a violation of Article 123(2) EPC" (cf. Point 12 and Headnote). In that case the application as originally filed contained no express or implied disclosure that a certain feature ("air space") could be omitted. On the contrary, the reasons for its presence were repeatedly emphasised in the specification. It would not have been possible to recognise the possibility of omitting the feature in question from the application (Point 8). It could be recognised from the facts that the necessity for the feature was associated with a web of statements and explanations in the specification, and that its removal would have required amendments to adjust the disclosure and some of the other features in the case.
>
> 5. Nevertheless it is also apparent that in other, perhaps less complicated technical situations, the omission of a feature and thereby the broadening of the scope of the claim may be permissible provided the skilled person could recognise that the problem solving effect could still be obtained without it (e.g. T 151/84 - 3.4.1 of 28 August 1987, unreported). As to the critical question of essentiality in this respect, this is a matter of given feasibility of removal or replacement, as well as the manner of disclosure by the applicant.
>
> 6. It is the view of the Board that the replacement or removal of a feature from a claim may not violate Article 123(2) EPC provided the skilled person would directly and unambiguously recognise that (1) the feature was not explained as essential in the disclosure, (2) it is not, as such, indispensable for the function of the invention in the light of the technical problem it serves to solve, and (3) the replacement or removal requires no real modification of other features to compensate for the change (following the decision in Case T 260/85, OJ EPO 1989, 105). The feature in question may be inessential even if it was incidentally but consistently presented in combination with other features of the invention. Any replacement by another feature must, of course, be examined for support in the usual manner (cf. Guidelines, Part C, Chapter VI, No. 5.4) with regard to added matter."

54. Thus the skilled person must be able to recognise directly and unambiguously that (1) the feature is not explained as essential in the original disclosure, (2) it is not, as such, indispensable for the function of the invention in the light of the technical problem it

serves to solve, and (3) the replacement or removal requires no real modification of other features to compensate for the change.

55. This test provides a convenient structured approach to the fundamental question whether, following amendment, the skilled person is presented with information about the invention which is not derivable directly and unambiguously from the original disclosure.

56. Turning to intermediate generalisation, this occurs when a feature is taken from a specific embodiment, stripped of its context and then introduced into the claim in circumstances where it would not be apparent to the skilled person that it has any general applicability to the invention.

57. Particular care must be taken when a claim is restricted to some but not all of the features of a preferred embodiment, as the TBA explained in decision T 0025/03 at point 3.3:

> "According to the established case law of the boards of appeal, if a claim is restricted to a preferred embodiment, it is normally not admissible under Article 123(2) EPC to extract isolated features from a set of features which have originally been disclosed in combination for that embodiment. Such kind of amendment would only be justified in the absence of any clearly recognisable functional or structural relationship among said features (see e.g. T 1067/97, point 2.1.3)."

58. So also, in decision T 0284/94 the TBA explained at points 2.1.3-2.1.5 that a careful examination is necessary to establish whether the incorporation into a claim of isolated technical features, having a literal basis of disclosure but in a specific technical context, results in a combination of technical features which is clearly derivable from the application as filed, and the technical function of which contributes to the solution of a recognisable problem. Moreover, it must be clear beyond doubt that the subject matter of the amended claim provides a complete solution to a technical problem unambiguously recognisable from the application.

59. It follows that it is not permissible to introduce into a claim a feature taken from a specific embodiment unless the skilled person would understand that the other features of the embodiment are not necessary to carry out the claimed invention. Put another way, it must be apparent to the skilled person that the selected feature is generally applicable to the claimed invention absent the other features of that embodiment.

60. Ultimately the key question is once again whether the amendment presents the skilled person with new information about the invention which is not directly and unambiguously apparent from the original disclosure. If it does then the amendment is not permissible.

Added matter – the attacks

61. Nokia's case on added matter developed at the trial and, as the judge explained at [141], departed from the pleaded case. In the end it seems both sides were content to

deal with the allegations as formulated in Nokia's closing written submissions. Six allegations are pursued on this appeal. I will address them in turn.

Is the 13 bit pattern processing disclosed distinctly?

62. Nokia contends that a plausible way of reading the application is that what is disclosed is a "first exemplary embodiment" using only the 10 bit pattern, and a "second exemplary embodiment" in which the network may send any one of the bit patterns in figure 3. In other words, there is no embodiment in which the network is constrained to send only the 13 bit pattern.

63. This was a matter which the judge addressed in his 189 judgment. In referring to the disclosure of the 189 patent corresponding to [0036] of the application, the judge said this at [216]:

> "Herein lies the major source of contention between the parties. Does the second embodiment, as Nokia contend, involve the base station sending all three bit patterns? Or does the second embodiment, as IPCom contends, simply involve the transmission of the 13 bit pattern? The dispute is about whether there is a freestanding embodiment which does not involve the sending of the S4 bit …"

64. The judge preferred IPCom's contention, holding at [217] – [218]:

> "217. I think both sides were trying to extract too much from the question of precisely what overall system the second embodiment was intended to describe. The real purpose of the second exemplary embodiment is to introduce the 13 bit pattern. In my judgement the skilled reader of the specification would appreciate that access to the random access channel could be controlled by the base station by sending the 13 bit pattern alone. All the information necessary to do an access threshold test and an access class test are present in the 13 bit pattern. The skilled person would also appreciate that access to the network could be controlled in a system in which the base station was capable of sending all three bit patterns. The skilled person would expect that the patentee was seeking to protect a method which involved 10 bit alone, 13 bit alone, or combinations.
>
> 218. Nokia make a number of highly semantic points on this passage. For example they lay stress on the fact that the 13 bit pattern is called a "third" bit pattern: but that does not mean that it is a third pattern which always has to be present in the second embodiment. Rather, I think it means that it is the third bit pattern to be mentioned, which it is. They also draw attention to the words "in addition" in the third sentence: but in context these words are simply referring to the additional inclusion of the D and P bits, additional information which it is not necessary to explain here. The patentee is not saying that

> the third bit pattern is necessarily present in addition to the first and the second. Likewise, Nokia referred to the words "and also" in the third sentence, but this is a flimsy foundation indeed for saying that the first and second bit patterns are required to be present. As IPCom pointed out, the corresponding German text uses the words "wie auch" which do not convey the meaning for which Nokia contend in any event."

65. Similarly, he concluded at [223] in the passage to which I have referred at [41] above:

> "… I do not think that alters the fact that the skilled person would appreciate that the 13 bit embodiment could be used on its own in a simpler evaluation unit, just as he would appreciate that the 10 bit embodiment could be so used on its own."

66. In addressing the added matter allegation in this case, the judge referred to his earlier conclusion and continued at [143] – [144]:

> "143. Mr Meade did not seek to challenge that finding head-on. Rather he submitted that that finding did not go far enough to decide the added matter point against him. For that purpose it was necessary to find clear and unambiguous disclosure of using the 13 bit pattern alone.
>
> 144. I do not think there is anything in this point. To the extent that there is any doubt at all that the skilled person would understand that the 13 bit embodiment could be used alone, that position is unaltered by the disclosure of the granted patent. That document cannot be read as adding to the disclosure of the application about whether the 13 bit embodiment can be used alone."

67. On this appeal, Mr Meade submitted that the judge's finding at [223] of his 189 judgment was only a finding that it would be *obvious* to the skilled person that the 13 bit embodiment could be used on its own in a simpler evaluation unit. This, he continued, is not enough for IPCom to succeed on added matter.

68. I do not accept this submission. In these paragraphs of his 189 judgment, the judge was considering the disclosure of the patent, not what was obvious. Moreover, the judge confirmed this was so at paragraph [144] of his judgment in this case.

69. Mr Meade also submitted there is no clear and unambiguous disclosure in the application that the 13 bit pattern may be used on its own and, in so far as the judge decided to the contrary, he fell into error. In support of this argument he deployed what he described as a number of "strong pointers" towards the conclusion that there is no embodiment in which the network is constrained to send only the 13 bit pattern:

i) The description of the second exemplary embodiment in paragraph [0036] includes a reference to all three bit patterns. In that context, the 13 bit pattern is described as the "third" bit pattern.

ii) Figure 4 shows a flow chart which clearly describes an embodiment using all three bit patterns. At point 200 (in figure 4a) the mobile checks whether it has received a 10 bit or a 13 bit pattern. Further, figure 4 is not described as a third embodiment, nor is there any suggestion given that it is a hybrid or compilation of the first two embodiments. On the contrary, the description of figure 4 flows on from and is a continuation of the description of the second exemplary embodiment. In other words, figure 4 is part of the description of the second embodiment, which involves both 10 bit and 13 bit processing.

iii) The invention of claim 1 of the application revolves around a "check" whether the access authorisation data comprised an access threshold value, or access class information. It is not immediately apparent that an embodiment comprising the 13 bit pattern alone would involve any such check, since in a system where only the 13 bit pattern can be sent the mobile would know which it was receiving.

iv) On no view is there a claim of the application which is limited to a system in which the 13 bit pattern alone is sent.

v) Finally, an embodiment comprising the 13 bit pattern only would not have any way of saving transmission capacity, which is a major object of the invention of the application.

70. The first of these points is addressed by the judge at [218] of the 189 judgment. He said, and I agree, that the 13 bit pattern is described as the "third" bit pattern because it is the third bit pattern to be mentioned.

71. As for figure 4, I accept this depicts, and the supporting text describes, an evaluation unit and subscriber station using all three bit patterns. But I do not believe that the skilled person would understand from this that the 13 bit pattern must always be used with the 10 bit pattern. To the contrary, it would be clear to the skilled person from paragraphs [0036] and [0037] of the application that the third bit pattern may be used as an alternative to the first and second bit patterns. The judge was right to say, as he did at [223] of the 189 judgment, that figure 4 and its associated description do not alter the fact that the skilled person would appreciate that the 13 bit embodiment could be used on its own.

72. Turning to the "check" point, the judge addressed this at [233] of the 189 judgment:

> "233. In my judgment the check which is required by claim 1 is a check as to whether the mobile station is to use part of the access information to perform the access threshold evaluation. This occurs in the first embodiment when the mobile checks the S4 bit, telling the mobile that the answer to the question is "yes" if the S4 bit is set to 0 and "no" if it is set to 1. It also occurs in the second embodiment when the mobile looks at the Z bits in box 285. If a Z bit for the user class in which that mobile is included is set to 1, then the answer to the question is "yes" and it will use the access threshold information to do the lottery. If the same Z bit is set to 0, then it will not (in fact it will obtain access based on its class)."

73. I believe the judge was right to reach this conclusion and that it is supported by paragraph [0036] of the application. As I have said, this explains that mobile stations belonging to a user class for which the associated access class bit is set to 0 are able to access the RACH irrespective of the access threshold value S and the priority threshold value P.

74. Mr Meade's fourth point seems to me to take the matter no further. The fact that the application does not contain a claim which is limited to a system in which the 13 bit pattern alone is sent does not determine the question whether or not the application discloses the 13 bit embodiment independently of the 10 bit embodiment.

75. Finally, I do not accept Mr Meade's submission that an embodiment comprising the 13 bit pattern only would not have any way of saving transmission capacity. I say this for two reasons. First, Mr Purvis submitted, and I agree, that the claims are truly to a method of allocating access rights. Second, the 13 bit embodiment does save transmission capacity on the BCCH channel compared to the IS-95 system, the only prior art system which offered the same sort of flexibility. The difference between the systems was described by the judge at [85] in these terms:

> "The difference between this functionality of IS-95 and the inventive concept is that the inventive concept has access class information which tells the mobile whether to do the lottery which is distinct from the access threshold value itself. In IS-95 there is always a lottery based on received access threshold value bits, (although the network can rig the lottery in the mobile's favour and guarantee access). To put it another way, in IS-95 there is no route to access which is independent of the received access threshold value bits. …."

76. Moreover, the judge rejected Nokia's submission that it was obvious to take the step from IS-95 to the invention of claim 1, concluding at [99] – [100] that it was not self-evident that one could retain the functionality provided by IS-95 if one made the necessary modifications proposed by Nokia.

77. Mr Purvis also argued that Nokia's allegation must fail for the further reason given by the judge at [144], namely that the description is, so far as relevant, exactly the same in the application and the patent and all the patent does is to frame a monopoly by reference to the 13 bit embodiment. This may be so but, since I am entirely satisfied that the application does directly and unambiguously disclose the 13 bit embodiment independently of the 10 bit embodiment, I prefer to express no final conclusion upon the point.

Relationship between figures 3c & 4, paragraphs [0036] & [0039]

78. Nokia contends that claim 1 of the patent involves the addition of matter because it discloses a selection of some of the features of the second embodiment (taken mainly from paragraph [0036] of the application) but omits many others (virtually all of paragraph [0039]).

79. Mr Meade developed this point as follows. First, he argued that paragraph [0036] of the application explains the 13 bit pattern, and gives some explanation of what can be

achieved with it. This is directed to the *capability* of the 13 bit pattern but does not attempt to describe the processing that lies behind it. That is only to be found in the flow chart of figure 4, and in paragraph [0039] of the application. He submitted that it may be possible to *infer* processing from paragraph [0036], but argued that is not the same as a clear and unambiguous disclosure of it.

80. Moreover, Mr Meade continued, in so far as it is possible to tell anything about the processing of the 13 bit pattern as described in paragraph [0036]:

i) It is in one sense more specific than features [F] to [H] of claim 1 of the patent because it requires the mobile to deal with the situation where mobiles do not belong to a user class at all.

ii) It is in another sense less specific than features [F] to [H] of claim 1 of the patent because it does not describe the order in which the bits are processed.

81. For processing, Mr Meade's argument continued, the reader has to look to paragraph [0039] and figure 4. It follows that figure 4 and paragraph [0039] are an integral part of the description of the second embodiment on any view.

82. The judge addressed these submissions at [146] – [148]:

> "146. I think that the skilled person would recognise that [0036] is propounding as inventive, and at a higher level than [0039], some particular features of the second embodiment. Although [0036] mentions the presence of the telecommunications service bits and priority threshold bits, I think the skilled person would recognise from this paragraph that what is being proposed is a system in which (a) both access threshold value bits and access class bits are sent; (b) depending on the setting of the access class bit, the mobile will determine whether access is to be allowed without consideration of the access threshold value, or whether it has instead to use that value and perform the lottery.
>
> 147. Both sides emphasised the need to read the application as a whole, and without hindsight. In broad, perhaps even crude, terms, both the introduction and the claims of the application follow the structure: lottery/class/priority/service. With that in mind, the skilled person would see very clearly in [0036] one way in which the first two – lottery and class – can be combined. The interaction of lottery and class is repeatedly emphasised. He would not, in my judgment think that the fact that this concept was being presented alongside the priority and service information, or prior to a more detailed explanation of the processing which involved that information, meant that the other features were essential to his concept.
>
> 148. Given that conclusion in relation to the disclosure of the application, I do not think there is any added disclosure in

> the patent, in the claims or elsewhere. I therefore reject this ground of added matter."

83. I believe the judge was right for the reasons that he gave. Paragraph [0036] of the application discloses a system for allocating access to the RACH not only by user class but also by the lottery. It teaches clearly and unambiguously that mobile stations may access the RACH on account of their association with a user class, in which case they may do so independently of the received access threshold value bits; or they may access the RACH on the basis of an evaluation of the access threshold value by comparing that value with a random or pseudo-random number drawn by the mobile, and determining whether it is greater than or equal to the access threshold value. There is, therefore, no need for the skilled person to look to paragraph [0039] and figure 4 at all. But if he were to choose to do so, he would find a description of the flow chart of figure 4 and a processing system for the 10 and 13 bit patterns. That does not, however, mean to say the skilled person would believe that the 10 and 13 bit patterns must necessarily be used together. To the contrary, he would appreciate that this is not inevitably the case and that an adapted evaluation unit for just 10 or 13 bit patterns is also contemplated.

84. The other two points, namely user class and the order in which the bits are processed, are the subject of the next added matter allegation and I address them in that context.

Features [F], [G] & [H] are not disclosed in paragraph [0036]

85. Nokia contends that paragraph [0036] of the application does not support integers [F], [G] and [H] for four reasons.

86. First, paragraph [0036] is more specific because the processing related to access class also requires (a) checking whether the mobile has an access class at all and (b) dealing with the case where it does not. To that extent, therefore, features [F], [G] and [H] are an intermediate generalisation.

87. Second, claim 1 of the patent is specific about the order of the processing: first the mobile evaluates the access class information and permits access to the RACH if the mobile is in a permitted class. If and only if the mobile fails this evaluation, it subsequently carries out the lottery. By contrast, paragraph [0036] of the application says nothing about the order of the steps and the teaching could just as well be implemented by having the mobile first do the lottery and only go on to evaluate the access class information if it fails the lottery. Claim 1 therefore adds matter by disclosing a specific order of steps, and that they are essential to the invention, for the first time.

88. Third, paragraph [0036] does not teach that the mobile uses the access class information to determine whether it is permitted to access the RACH "*independent of the received access threshold value bits*" as required by features [F], [G] and [H].

89. Finally, paragraph [0036] does not disclose that any of these features have any inventive significance.

90. It is convenient to take these points in the order in which they were made. As for the possibility of the mobile not having an access class at all, I accept that paragraph

[0036] of the application says that mobile stations belonging to a user class whose associated access class bit has been set to 1 and mobile stations which do not belong to a user class, need to perform the access threshold value evaluation. However, I have no doubt that the skilled person would understand from the teaching of this paragraph that this feature is only necessary in a system in which some mobiles do not belong to a user class. If, as in UMTS, all the mobiles fall into one class or another, then there is absolutely no point in the mobile interrogating itself as to whether it is in a class at all. This element of the description is plainly not essential; nor is it indispensable for the function of the claimed invention. Moreover, its removal requires no modification of the other features to compensate for the change. All of these matters would be recognised by the skilled person directly and unambiguously from the application in the light of the common general knowledge.

91. Turning to the order of the processing, I believe Nokia's contention is based upon a misapprehension of the proper interpretation of claim 1 of the patent. Read in the context of the specification as a whole, I do not accept that the claim is specific about the order of the processing. It requires the mobile to be so arranged that it uses the access class information to determine whether it is permitted to access the RACH independent of the received access threshold value bits or whether it must carry out the lottery. But there is nothing to say that the mobile may not carry out the lottery in any event and, indeed, have done so first. That is simply a question of how it is implemented.

92. The third point can be dealt with very shortly. Paragraph [0036] of the application uses the word "irrespective" rather than "independent". But this difference in wording has no significance in the context of the claim and adds nothing to the disclosure.

93. Finally, I must deal with the contention that paragraph [0036] of the application does not disclose that features [F], [G] and [H] have any inventive significance. The answer to this point is that it would be clear to the skilled person from paragraph [0036] that these three features, as a unit, form the heart of the second exemplary embodiment and together allow access to the RACH not only on the basis of class but also on the basis of the lottery. This provides greater flexibility in terms of the horizontal and vertical control to which I have referred. The judge summarised the position in terms with which I entirely agree at [40] and [55], which I have set out at [36] and [37] above.

The description of the flow chart is incomprehensible

94. Nokia contends that the relevant parts of paragraph [0039] and figure 4 of the application are incomprehensible. They appear to contemplate one input being the user class of the mobile and another whether such class is "privileged" or "normally privileged". But this latter parameter is not explained in any coherent way; it is not even clear if it is broadcast, or stored on the mobile, or something else altogether. Mr Meade submitted that IPCom's expert, Mr Gould, was cross examined about it and that it emerged that he just did not understand the processing and, perhaps more importantly, the ordinary reader would not have been able to understand it either.

95. I think that Nokia has fairly characterised Mr Gould's evidence. It is summed up in his answer "I do not know what is going on in there". But this does not, in itself, give

rise to an added matter objection. Perhaps recognising this to be the case, Mr Meade continued that there is no basis for the generalised feature [F] of claim 1. Specifically, he argued, this feature is an intermediate generalisation from the specific processing described in paragraph [0039] which involves access class and the privileged/normally privileged test.

96. The answer to this allegation is that features [F], [G] and [H] are described in paragraphs [0036], [0037] and [0038] in the passages to which I have referred. The fact that additional complexity is introduced into the processing description in paragraph [0039] does not detract from that earlier teaching which directly and unambiguously discloses these features of the claim. I believe the judge was therefore right to reject this allegation.

The "D" telecommunication service bits

97. Nokia contends that the D service bits have been omitted from claim 1 of the patent and that this is an exceptionally clear instance and symptom of added matter.

98. Mr Meade developed Nokia's case as follows:

i) The D bits are sent by the base station to tell mobiles which services are available.

ii) They are utilised throughout the preferred embodiments.

iii) They have a specifically taught purpose: to save transmission capacity, which is the overall objective of the application. They are taught as being necessary to tell the mobile whether access to a particular kind of service is permitted at the time RACH access is desired. In their absence, the mobile would just not know if it could attempt RACH access or not for such a service.

iv) In the processing of figure 4, the D bits always have to be checked prior to RACH access being attempted.

v) The D bits would be considered particularly important in a UMTS system because such a system has multiple services. If the D bits were deleted, a system with multiple services therefore just could not work unless some other fairly complex rearrangement of the whole system were made – which is not taught in the application and would be less efficient in terms of transmission capacity.

99. The judge dealt with this allegation at [155]-[162]. He began by referring to the general disclosure of the application at [156]-[157]:

> 156. In the general part of the specification, there is mention of these bits at [0009] in the passage relating to claim 4. This explains that for each of the user classes authorised for access, an additional stipulation is which telecommunications services can be requested via the telecommunications channel. This is said to save transmission capacity, because these classes are prevented from even requesting those services.

> 157. At [0014], in the general introduction to the embodiments, it is explained that the network provides a number of services, specifically small data packets, large data packets and voice. This would have been expected of any network in 1999. [0015] explains that the various services "can be made available to the mobile stations either individually or in any combination". In the same section, at [0020], the application explains that, in a first embodiment, information sent on the broadcast channel "*can* contain information regarding for which purpose and for which mobile stations access to the RACH is to be permitted". No distinction is being drawn with information about classes of mobile stations and the purpose of permitted access (i.e. the D bits). The three different types of subscriber services are mentioned again at [0021]."

100. Within this general description I would draw particular attention to the teaching in paragraph [0020] that the bit pattern can, but so also need not necessarily, contain information regarding the purpose for which access to the RACH is permitted.

101. The judge then continued at [158] with his summary of the disclosure in relation to the first exemplary embodiment:

> "158. In [0025] to [0035], which contain the detailed description of the 10 bit embodiment, the three telecommunications bits are part of the 10 bits described in both Figures 3(a) and (b). In the example in [0035] it is shown how a mobile station can have access authorisation for requesting some services but not for others."

102. Importantly, the last sentence of [0025] says that it is *possible* to arrange for a telecommunications service to be able to be used when the associated telecommunications service bit has been set. As I have said, I believe this indicates that this feature is optional.

103. Turning to the 13 bit embodiment, the judge summarised the disclosure at [159] – [160] in this way:

> 159. In [0036] to [0038], which deal with the 13 bit embodiment, the telecommunications service bits are also included in the bit pattern. [0036] makes it clear, by the repeated use of the word "possibly" that the priority bit evaluation is not regarded as essential for those mobiles which are not given access on the basis of class. There is, however, no corresponding express suggestion that the service bits can be omitted. In the example the D bits are set as 011, and the specification explains that this means that mobiles cannot send small data packets on the RACH, but they can request authorisation for larger packets and for voice.

> 160. There then follows [0038] which is in the same terms as [0036] in the granted patent and which I have set out above. These first two sentences clearly apply to all three bit patterns and suggest that it is not essential to have the exact number of bits of each type (e.g. one can have more or less Z bits than the four illustrated). It also explains that individual information components can be omitted entirely. This too applies to both the 10 bit and the 13 bit embodiment. In my judgment the skilled person would understand that, depending on the sophistication of the system, one could do without some of the types of information. Priority information is one example. Read in combination with the general part of the specification and the claims (the lottery/class/priority/service structure) it would be clear that class and service information could be omitted as well."

104. Here the judge has rightly focused on paragraph [0038] which teaches that for the first, second and third bit patterns the subscriber service information can be reduced for bandwidth reduction or, if appropriate, omitted entirely.

105. The judge then turned to paragraph [0039] and dealt with it in these terms at [161]:

> "161. It is true that in [0039], in the description of the flow chart, the evaluation of the service bits takes place before access to the RACH is allowed. But one would expect this description to include the features of the sub-claims. The skilled person would clearly understand that if service information were to be omitted, then it would not have to be processed."

106. I agree with this summary of the description of the flow chart depicted in figure 4 and how the skilled person would understand it. In addition to all of this teaching, the skilled person would also have regard to the claims of the application. These form part of the disclosure and reveal that the D bits did not feature in the principal claims, emphasising to the skilled person that they were not an essential part of the invention.

107. Finally, the judge referred to the evidence given by Mr Gould that he could not think of anything specific that pointed to the subscriber service bits as not essential. The judge did not consider this to be decisive and in my judgment he was right to take that approach. It is not clear to me quite what Mr Gould had in mind in giving that evidence but, more importantly, I think the teaching of the application is clear and unambiguous that the D bits are not essential.

108. Mr Meade criticised the judge for failing to deal with any of the points set out at [98] above adequately, and in particular for failing to address the point that the D bits have the specific purpose of saving transmission capacity, and the interplay between them and UMTS.

109. I have dealt with the general disclosure of the application. As for the D bits having the specific purpose of saving transmission capacity, the application teaches that omitting the D bits does save transmission capacity on the BCCH. Using the D bits as

described would take three extra bits on the BCCH but might generate an advantage in terms of RACH usage. It is therefore, as Mr Purvis submitted, a trade off which I have no doubt would be clear to the skilled person. This is entirely consistent with the teaching in, for example, paragraph [0005] of the application that the access control inherent in the lottery uses a minimum of transmission capacity since it is effected merely by transmission of the access threshold value.

110. Turning to the processing of figure 4, I accept that the D bits always have to be checked prior to RACH access being attempted, but this is a description of the flow chart of figure 4 and the way in which the evaluation unit works for a system using all of the features which are specifically described. But this does not mean to say the D bits must necessarily be used and, for the reasons I have given, the skilled person would appreciate they do not, and that their functionality is quite distinct from that of the claimed invention.

111. As for UMTS, this is not a point which was taken on the pleadings but was raised in argument after the evidence. It is therefore no surprise that the judge did not deal with it expressly in his judgment. Nevertheless, I am satisfied that there is nothing in the point for the following reasons. First, there was no clear evidence before the court that UMTS could not work without discrimination by means of the D bits. Second, there is no teaching in the application that the D bits are essential for the operation of UMTS. Third, existing systems with multiple services did not require discrimination by means of the D bits.

112. Mr Meade submitted that claim 1 of the patent is effectively a new claim based upon a specific embodiment but with the deletion of the D bit feature. In these circumstances he argued that the principles explained by the TBA in *Houdaille* apply. I am prepared to accept that that is so but would answer the *Houdaille* questions as follows. First, there is no teaching in the application that the D bits are required or essential. Second, the D bits are not indispensable for the function of the claimed invention which has, at its heart, the two routes of access feature. Third, removal of the D bits does not require any modification or rearrangement of the other features of the invention. All of these matters would be recognised by the skilled person directly and unambiguously from the application in the light of the common general knowledge. I therefore believe the judge arrived at the correct conclusion.

User class read from a SIM card

113. Nokia contends that feature [C] of claim 1, part of the characterising portion of the claim, requires that the mobile station reads a user class from a SIM card. This feature, Nokia emphasises, not only requires a SIM card, but also that the user class be on it, and read from it. Nokia continues that there is no disclosure of such a feature in the application, let alone a disclosure in combination with the other features of claim 1 of the patent.

114. The judge rejected this allegation at [165]:

> "This is feature [C] of the claim of the granted patent. Nokia submit that IPCom need to go to the detailed description in [0039] to find this feature. But that is not correct. Paragraph [0024] explains, in the general introduction to the

> embodiments, that the mobile has "an access authorization card, for example a SIM card". [0033] explains that the mobile "takes the association with a user class from the access authorization card". The skilled person would understand that description to carry through to the second embodiment: it is a feature of general application whenever user class is to be used. There is no added matter here."

115. Mr Meade submitted that the judge fell into error here because his reasoning does not justify a finding that there was clear and unambiguous teaching to use the SIM card feature in connection with the second embodiment. I am unable to accept this submission. The judge had the relevant legal tests well in mind, having recited them at [126] – [136] of his judgment. He considered, and I agree, that the teaching in paragraph [0024] as to the presence of a SIM card and the explanation in paragraph [0033] that the mobile takes the association with a user class from the SIM card carries through to the second embodiment. It is, as he said, a feature of general application whenever user class is to be used. The disclosure is clear and unambiguous.

Added matter – general

116. Nokia contends that, in addition to the specific points to which I have referred, the judge fell into error in failing properly to identify and apply the *Houdaille* test and overlooked the requirement in law that to support an intermediate generalisation, an application must clearly and unambiguously disclose the inventive significance and purpose of the feature in question.

117. I am unable to accept either of these arguments. So far as the first is concerned, Mr Meade focused upon [130] of the judgment and the consideration given there by the judge to the requirement that the skilled person would directly and unambiguously recognise that the feature was not explained as essential. I do not think that the judge was here purporting to set out the whole of the three stage test. That he had done at [129]. But in any event, for the reasons I have given, I am entirely satisfied that the *Houdaille* test, including each of its three elements, is satisfied.

118. As for the second argument, the problem which the application addresses is, in its broadest terms, the provision of a system for controlling access by mobile phones to the RACH. In the second embodiment this is achieved by means of the two routes of access feature. This provides horizontal and vertical control in the manner I have described. Moreover, the judge held at [168] that it was implicit that the two routes of access concept was advantageous:

> "I consider that the concept embodied by these features, however one describes it, is clearly disclosed. I do not think that it is fatal to the patent that the concept is not expressly described as advantageous. Given that access class and lottery based permission are both described as advantageous, it is implicit that a combination of them will be as well. So this way of putting the added matter objection is unpersuasive as well."

119. I agree with the judge and with his further conclusions at [40] and [55] which I have set out at [36] and [37] above.

Added matter – conclusion

120. For all these reasons I agree with the judge that the patent is not invalid for added matter.

Obviousness

121. Nokia contends that the judge fell into error in failing to find the patent is invalid because:

i) It achieves nothing by way of a technical advance.

ii) It is obvious over the common general knowledge.

iii) It is obvious over GSM/GPRS.

iv) It is obvious over Farsta.

122. I will deal with each of these in turn but first must set out some general principles.

Obviousness – the law

123. It is now conventional to address the question of obviousness using the structured approach explained by this court in *Pozzoli v BDMO* [2007] EWCA Civ 588; [2007] FSR 37. This involves the following steps:

> (1) (a) Identify the notional 'person skilled in the art'.
>
> (b) Identify the relevant common general knowledge of that person.
>
> (2) Identify the inventive concept of the claim in question or, if that cannot readily be done, construe it.
>
> (3) Identify what, if any, differences exist between the matter cited as forming part of the "state of the art" and the inventive concept of the claim or the claim as construed.
>
> (4) Ask whether, when viewed without any knowledge of the alleged invention as claimed: do those differences constitute steps which would have been obvious to the person skilled in the art or do they require any degree of invention?

124. It has been said many times that obviousness is, at the end, a kind of jury question. In *Conor v Angiotech* [2008] UKHL 49; [2008] RPC 28 at [42], Lord Hoffmann approved the following statement which I made in *Generics (UK) Ltd v H Lundbeck* [2007] RPC 32 at [72]:

> "The question of obviousness must be considered on the facts of each case. The court must consider the weight to be attached to any particular factor in the light of all the relevant circumstances. These may include such matters as the motive to find a solution to the problem the patent addresses, the number and extent of the possible avenues of research, the effort involved in pursuing them and the expectation of success."

125. There are two other aspects of the law which have a particular bearing on the present case.

126. The first is that there is no invention in simply combining together a number of arbitrary features which achieve no technical purpose. I put it this way in *Abbott Laboratories v Evysio* [2008] RPC 23 at [181]:

> "… there is no invention in stipulating a feature which is arbitrary and serves no useful purpose. It has long been established that a patent cannot be used to prevent a person from doing what is merely an obvious extension of what has been done or was known in the art before the priority date […]. The selection of a number of these products by reference to an arbitrary parameter which has no technical significance does not involve an inventive step and does not create a patentable invention. It involves no technical ingenuity and solves no technical problem."

127. Similarly, in *Actavis v Novartis* [2010] EWCA Civ 82, [2010] FSR 18, Jacob LJ explained:

> "36. …. Suppose the patent claim is for a plate of diameter five-and-a-quarter inches. And suppose no one can find a plate of that particular diameter in the prior art. Then (a) it is novel and (b) it is non-obvious for there is no particular reason to choose that diameter. The conclusion, that the plate is patentable, is so absurd that it cannot be so.
>
> 37. What then is the answer to the paradox? It is this: the five-and-a-quarter inch limitation is purely arbitrary and non-technical. It solves no problem and advances the art not at all. It is not inventive. And although "inventive step" is defined as being one which is not obvious, one must always remember the purpose of that definition – to define what is inventive. That which is not inventive by any criteria is not made so by the definition. Trivial limitations, such as specifying the plate diameter, or painting a known machine blue for no technical reason are treated as obvious because they are not inventive."

128. The second concerns the care which must be taken in assessing an allegation of obviousness based upon the common general knowledge alone. In such a case it is

particularly important to avoid hindsight. Again, as I said in *Abbott Laboratories v Evysio* at [180]:

> "It is also particularly important to be wary of hindsight when considering an obviousness attack based upon the common general knowledge. The reason is straightforward. In attacking a patent, attention is focussed upon the particular development which is said to constitute the inventive step. With this development in mind it may be possible to mount an attack which is unencumbered by any detail which might point to non obviousness: *Coflexip v Stolt Connex Seaway* (CA) [2000] IP&T 1332 at [45]. It is all too easy after the event to identify aspects of the common general knowledge which can be combined together in such a way as to lead to the claimed invention. But once again this has the potential to lead the court astray. The question is whether it would have been obvious to the skilled but uninventive person to take those features, extract them from the context in which they appear and combine them together to produce the invention."

129. Similarly, Floyd J put it this way in *Ratiopharm v Napp* [2008] EWHC 3070 (Pat) at [158]:

> "Fourthly, allegations of obviousness in the light of common general knowledge alone need to be treated with a certain amount of care. They can be favoured by parties attacking the patent because the starting point is not obviously encumbered with inconvenient details of the kind found in documentary disclosures, such as misleading directions or distracting context. It is vitally important to make sure that the whole picture presented by the common general knowledge is considered, and not a partial one."

130. This was a matter which the judge had well in mind, as is clear from [58] of his judgment.

Obviousness – what, if anything, does the patent achieve?

131. There was no dispute that in the GSM/GPRS system, RACH access was controlled using class barring followed by the lottery for those classes which were not barred. Users in barred classes could not attempt access at all, and had to wait until their class became non-barred.

132. By contrast, in the invention of the patent, mobiles belonging to a permitted class are able to attempt to access the RACH irrespective of their performance in the lottery. Mobiles which do not belong to a permitted class may nevertheless attempt to access the RACH if they are successful in the lottery.

133. Nokia contends that, assuming this characterisation to be correct, the invention provides no benefit whatsoever and is no more than an arbitrarily different (and not a better) way of arranging the access class and lottery features together.

134. Mr Meade developed Nokia's submission in this way. He argued that the patent is only relevant at all when the RACH is suffering a degree of congestion – because if it has plenty of spare capacity there will be no need to limit access attempts either by the lottery or by control based on user class. When congestion arises it can be controlled by the lottery to some extent. But the lottery can only achieve so much; the RACH may still be congested by those succeeding on the lottery. Mr Meade then posed this question: what is the point of allowing the emergency services to by-pass the lottery if they simply end up among the throng of lottery winners struggling to overcome contention on the RACH? A fundamental error on the part of the judge, he submitted, was to fail to deal with this issue and, indeed, to deal with obviousness over the common general knowledge and Farsta on the basis that the patent does not achieve anything useful.

135. I am unable to accept these submissions. The judge identified the benefits provided by the invention at [40] and [55], set out at [36] and [37] above. This horizontal and vertical control was again referred to by the judge at [117] in accepting Mr Gould's evidence that the invention provides:

> "a means for dynamically allocating specific groups of users to obtain priority access to the network while controlling other users on a threshold value."

136. This degree of flexibility was not provided by the GSM/GPRS system. It was provided by the other common general knowledge system, IS-95, but in a less efficient way. The judge summarised the way the IS-95 system worked at [77] - [79]:

> "77. IS-95 is based on the CDMA interface developed by Qualcomm. A mobile station in IS-95 transmits messages on a paging channel following a random access procedure until it receives an acknowledgement from the network. Before attempting access to this channel, the mobiles have to carry out a persistence test to determine whether access is possible.
>
> 78. Each mobile is a member of an access overload class. These access overload classes correspond to the access classes of the patent. The network broadcasts a persistence value PSIST for each class. The persistence value for class n is called PSIST(n). It is therefore a class specific parameter.
>
> 79. The persistence test consists of a comparison between a random number RP with the persistence value P. P depends on the reason for the access attempt, and is calculated from the value PSIST(n) which is transmitted by the network. The standard provides formulae for the calculation of P in three cases: registration of the mobile on the network, message transmission, and all other cases (including voice)……"

137. After setting out and describing the relevant formulae, the judge continued at [83]:

> "83. The result of all this is that, in the case of voice calls, the network can use the value of PSIST(n) to control how or

> whether the mobile class concerned accesses the RACH. Dependent on the value of PSIST(n) for the class in question, the class may obtain immediate access to the network, be effectively class-barred, or will be throttled to some intermediate extent. The mobile is only required to decode PSIST(n) and perform the persistence test to know what its rights are in every case."

138. The judge then explained the difference in functionality between IS-95 and the patent at [85] in the passage I have set out at [75] above.

139. In summary, therefore, IS-95 provided essentially the same functionality as the invention but it did so in a way which required more control information to be sent on the BCCH. The judge was therefore entitled to reach the conclusion that he did at [123]:

> "123. It is of course always necessary, at the end, to take a step back and ask whether the claim embodies an inventive step, both in the case of the attacks based on specific publications and in the case of the common general knowledge. Nokia submitted that the invention achieved nothing in terms of functionality as compared with, say, IS-95. That is correct as far as it goes, but it does not follow that IPCom's approach to achieving that functionality is obvious. It is entirely possible that invention lies in achieving the same functionality in a different way. In the end I was not satisfied that any of Nokia's four starting points rendered IPCom's solution obvious."

140. The invention therefore has the advantage over IS-95 that it is less complex and uses less bandwidth; and has the advantage over GSM/GPRS that it provides the particular vertical and horizontal RACH control to which I have referred. Mr Purvis submitted, in my judgment entirely fairly, there was more than sufficient evidence before the court for the judge to conclude there was something useful about the functionality and operation of the invention of the patent which, after it was proposed by Bosch, was adopted by the industry in the UMTS standard.

Obviousness in the light of the common general knowledge

141. Nokia's case of obviousness over the common general knowledge ran as follows:

i) The lottery was common general knowledge.

ii) Access class control was common general knowledge.

iii) It was common general knowledge to combine them, as in GSM/GPRS and IS-95.

iv) It was common general knowledge that appropriate priority for the emergency services had to be accommodated in any system.

v) If it was a problem making, for example, the emergency services do the lottery at times of congestion, then it would be obvious to signal on the BCCH that the lottery was suspended for that class.

142. Mr Meade, on Nokia's behalf, emphasised that this was not a five step argument but rather an argument which involves five propositions, four of which are simply statements of the common general knowledge and are not open to question. The only step from the prior art is, he said, the relative arrangement of the lottery and access class control, given the undoubted need for priority access for the emergency services.

143. The judge considered this argument, albeit in summary form, from [116] – [123]. He rejected it for four main reasons. First, and most importantly, he considered it was untrammelled by any of the details of a practical working system. This, he thought unrealistic because the skilled team would be much more likely to start from one of the known standard proposals, such as GSM/GPRS or IS-95. Second, he did not think that the desire to give the emergency services priority access to the RACH would drive the skilled team to the invention of the patent. Third, in a situation in which the RACH was very congested, it would not be obvious simply to allow one class to by-pass the lottery. Finally, the judge had regard to what those in the art were actually doing at the time.

144. Mr Meade submitted that the judge fell into error at each stage of this reasoning. First, he argued that the alleged invention has nothing to do with detail and the obviousness attack was pitched at exactly the level of the patent. Mr Gould was questioned in a manner entirely consistent with the common general knowledge and was asked about that combination of things which were both essential to a working system and already combined in the prior art. Moreover, he argued, the law of obviousness does not and cannot constrain the skilled person to a particular starting point. It is there to allow a skilled person to do anything that is obvious from any starting point, whether that be GSM/GPRS, IS-95 or anything else.

145. The difficulty with this submission is that the judge found as a fact that the skilled person would not start to develop a telecommunications system from scratch but would start from one of the known standard proposals, such as GSM/GPRS or IS-95. The whole approach taken by Nokia was, so the judge found, unrealistic. I have no doubt this was a finding he was entitled to make on the evidence, particularly in relation to an industry which depends so much upon standardised protocols.

146. Mr Meade then argued that the judge fell into error in concluding that the need to give the emergency services priority would not require the invention of the patent.

147. As to this, the judge considered that one solution would be to give the emergency services permanent priority access, in which case there would be no need to provide for the possibility of a lottery. Alternatively, if one wanted to give them priority access some of the time, one could bar the other classes when required. In my view the judge cannot possibly be faulted for addressing Mr Meade's argument in this way. His reasoning was entirely legitimate in the light of the evidence he had heard and the common general knowledge.

148. The judge was then criticised for what was said to be an error of logic. The argument ran as follows. If the RACH is very congested, giving the emergency services a by-

pass round the lottery will merely leave them competing with all the other users who have won the lottery.

149. Once again, I find myself unable to accept this argument. As the judge explained, it was always possible to bar classes of users when required. The patent, on the other hand, provides a different solution which involves the dynamic adjustment of privileged groups of users upon whom priority access is conferred while controlling other users by adjustment of a threshold value.

150. Finally, Mr Meade submitted that, so far as the secondary evidence was concerned, the judge simply recorded various different ways of saying that the patent was not anticipated.

151. In the section of his reasoning dealing with this argument, the judge attached weight to the evidence of Nokia's expert, Professor Purat, that at the priority date no one other than Bosch had thought of any of the following ideas:

i) using the distinction between users given by access classes for any purpose other than class barring;

ii) providing two routes of access which enable individual groups to access the RACH without doing an evaluation of a persistence level which was required for other groups;

iii) broadcasting information over the BCCH to enable dynamic allocation of individual classes into a population of users which did not need to use the lottery.

152. These were all matters to which the judge was entitled to attach such weight as he considered appropriate. He also had regard, entirely properly, to various proposals representing the contemporaneous thinking of the major telecommunications companies.

153. In summary, I am satisfied that the judge had ample material before him upon which to reach the conclusions that he did. I would therefore reject the submission that the judge ought to have found the patent obvious over the common general knowledge.

Obviousness over GSM/GPRS

154. This allegation turns on a point of interpretation of features [F], [G] and [H] of claim 1. Nokia helpfully identified the differences between the parties at trial thus:

i) IPCom contended these features require that the mobile has to be able to tell from the access class information that it definitely <u>is</u> allowed to attempt RACH access, without consideration of the received access threshold bits.

ii) Nokia contended for a somewhat broader construction. These features mean that the mobile can tell whether or not it is permitted to attempt RACH access from the access class information.

155. There was no dispute that if Nokia's construction is the correct one, the patent is obvious over GSM/GPRS because GSM/GPRS would then have all the features of the

claim save for not being a UMTS system; and it would have been obvious to use the same technique in UMTS.

156. Mr Meade developed his submission as follows. He argued that, as a matter of simple language, the words of the claim are met by class barring. To illustrate this, he invited us to imagine interrogating the mobile in the GSM/GPRS system, that is to say with class barring and a lottery. If one asked a mobile unlucky enough to be in a barred class: "Can you use your class to determine whether you are permitted to access the RACH, without referring to the lottery?", the answer would be "Yes, I can, and I am not permitted to access the RACH because I am in a barred class. I do not need to think about the lottery to tell you that."

157. The judge rejected this argument at [49] – [52]. In my judgment he was right to do so. The natural meaning of the claim is that certain mobile stations are permitted to access the RACH independently of the received access threshold value bits, that is to say the lottery. The claim identifies two alternatives: first, allowing access to the RACH independent of the lottery; second, allowing access on the basis of the lottery.

158. Second, the purpose of the invention as described in the body of the specification is to provide the two routes of access feature. As the judge said himself at [39]:

> "The skilled person would appreciate that what is envisaged is a system in which both access threshold value and user class information are sent to the mobile stations. The setting of the user class bit for any given class determines whether that class is able to access the RACH without doing the lottery, or whether instead it must be subjected to the lottery."

159. Third, the class barring scheme of GSM/GPRS was part of the common general knowledge. As Lord Hoffmann said in *Kirin Amgen Inc v Hoechst Marion Roussel* [2004] UKHL 46, [2005] RPC 9 at [34], in construing the words of the claim it must be recognised that the patentee is trying to describe something which, at any rate in his opinion, is new. It would therefore be surprising if the patentee had framed the claim so as to encompass and describe part of the common general knowledge, indeed one of the well known standards.

Obviousness over Farsta

160. Nokia relied at trial upon the minutes of a meeting of the L1 Expert Group in Farsta, Sweden in the summer of 1987, together with a document by Thomas. As the judge explained, the Farsta meeting was of a GSM working group and attended by representatives of a number of telecommunications companies.

161. The judge helpfully summarised the disclosure of the documents in this way at [106] – [110]:

> "106. According to the minutes, a number of aspects of the development of the GSM standard were discussed. Section 5 of the minutes is entitled "Random Access Protocol on the CCCH". Section 5.2 is headed "Control of overload situations". It records that Mr Thomas presented a paper which

describes an algorithm to control the overload. The details of the algorithm do not matter, although it is an algorithm based on what I have called "the lottery" which is implemented after the mobile has had one unsuccessful attempt at access to the channel.

107. The minutes go on to explain that there was discussion on special priority being given for certain user groups or services and that guidance was sought from wp1, another working party. They also explain that no decision could be taken on how to control the load, the choice being limited to controlling the probability of re-transmission and controlling the re-transmission interval. The minutes continue:

> "As an extreme measure group(s) of users could be excluded from system access by order of a special BCCH message. The feasability [sic] of such a measure is embedded in the questions to wp1 (annex 5)."

108. Annex 5 is entitled "Limiting access on a heavily loaded CCCH. The Annex notes that the CCCH is a vulnerable channel. It starts by explaining the limitations of reducing the re-transmission rate, namely that there comes a point when the quality of service is reduced to an unacceptable level. It says:

> "If this rate is reached there is no alternative but to exclude certan [sic] groups of users.
>
> On the other hand it might be necessary to allow 'immediate' access to special groups of users."

109. The Annex explains that the first measure may be taken when one of two network operators in a country suffers a failure, so that all its subscribers want to access the network of the surviving operator. The step that would then be taken would be to block all "roaming" users from the malfunctioning network from accessing the other, functioning network. It continues by saying:

> "The second possibility occurs in emergency cases where 'every' subscriber wants to access the system and the overload prevents emergency services (which may be in a closed user group) to access the system."

110. There then follows this paragraph, the import of which is hotly contested:

> "Wp1 is asked to give guidance to the L1EG on categories that deserve special control mechanisms to access the system, in order to be able to design signalling messages to cope with overload situations by indicating the groups of

> users or services that may require special priority to access the system.
>
> The L1EG advises though, to limit categories to the vital ones only, in view of the signalling complexity involved.""

162. Nokia contends the document is talking about two different things: excluding some groups of users and allowing others immediate access. Both are directed at the same goal: dealing with service degradation caused by overloading.

163. Thus, contends Nokia, Farsta teaches first, the restrictive approach of blocking particular classes of users; second, the permissive approach of allowing immediate access, that is to say an override for the emergency services.

164. IPCom contends Nokia is reading too much into the description in Farsta and, moreover, doing so with the benefit of hindsight. It says Farsta is essentially concerned with retransmission control. Everyone is allowed to transmit once but at times of very high load, even if retransmission is completely prohibited, the RACH may still be too busy. In such a situation, allowing the emergency services freedom to carry on retransmitting would achieve nothing. Accordingly, Farsta is describing two different degrees of class barring; first, barring particular classes of users, such as all roaming subscribers; second, barring all users except the emergency services. This would clear the RACH and allow the emergency services through on their first attempt.

165. The judge heard evidence on this issue from Mr Gould and Professor Purat and this clearly assisted him to understand the context of the publication. In light of that evidence and his own reading of the publication, the judge preferred IPCom's submissions, as appears from [114]:

> "Having heard and then re-read the evidence on this document I prefer IPCom's submissions. The document is not suggesting any form of lottery by-pass. The situations discussed both involve heavy overload of the RACH. Lowering the re-transmission rate so as to lower the chance of mobiles getting access is having no effect. So you either reduce the load by removing a big class such as roaming subscribers from another network, or you effectively stop all the traffic to let the emergency services through. It would make no sense to create a lottery by-pass for the emergency services onto the *ex hypothesi* overloaded RACH."

166. I too have read the evidence upon which the judge relied and considered carefully the disclosure of the documents in light of the parties' submissions. I also remind myself to be wary of the influence of hindsight. As Mr Purvis fairly submitted, no-one had ever implemented a lottery by-pass system by 1987, still less a system with means allowing adjustment of groups of users into a population with priority access to the network independent of access threshold while at the same time using the access threshold to dynamically control the access of other users. Moreover Farsta was produced in the course of development of the GSM system and, in due course, it used classes but for class barring only. In light of all these matters, I too prefer IPCom's

interpretation of Farsta and believe the judge came to the right conclusion. In conditions of particularly heavy use, it teaches first, blocking access of particular groups of subscribers and second, in cases of emergency, blocking all subscribers save for the emergency services. This is the only interpretation consistent with the wording of Farsta and the general knowledge at the time. It is also consistent with the way GSM was ultimately implemented.

Obviousness – conclusion

167. It follows that I believe the judge was right to reject the attacks on the patent based on obviousness.

Insufficiency

168. Claim 1 of the patent, by feature [A], is to a mobile for use in a UMTS mobile radio network.

169. Nokia contends that it was in fact impossible to make a mobile suitable for RACH access control in any actual UMTS system at the date of filing of the application because key elements of the UMTS system directly relevant to and necessary for RACH access had not yet been decided. Specifically, the missing elements included access class information and the details of the lottery threshold, two things which, argued Mr Meade, are critical to the purported invention of claim 1. Accordingly, he continued, UMTS protocols for RACH access just did not exist in a meaningful way.

170. The judge rejected this contention at [176]:

> "… The patent would not be understood to be pretending that the invention would work without modification in whatever UMTS system was ultimately agreed. This case is nothing like a patent where there is a missing essential ingredient. The cross-examination of Mr Gould did not show that a system could not have been built based on the draft standards: it merely showed that it would not have been possible to guess what choices would be made in the final standards, and that if there was a difference the phone would not work. The insufficiency attack therefore fails."

171. I believe the judge came to the right conclusion on this issue. The patent must be construed as of its filing date (see *Biogen v Medeva* [1997] RPC 1 at 53 – 54). At that date the UMTS standard was in draft, albeit nearly complete. Moreover, the skilled person would have understood that specifications such as these change over time. In these circumstances it seems to me the key question is what the skilled person would have understood the reference to "UMTS mobile radio network" in claim 1 to mean as of that date. The answer to that question is, I think, clear. He would have understood it to be a reference to a UMTS system in accordance with the draft standard as it existed at that time. Since it was common ground that the skilled person would have had no difficulty in building a system using that draft standard, incorporating the description of the patent and producing a perfectly workable telephone system, it must follow that the patent is sufficient.

172. I would therefore reject this ground of appeal. Contrary to the submission advanced by Nokia, the patent is not claiming a mobile which could not be made.

Infringement by the A2

173. The issue turns on the proper interpretation of feature [H] which concerns the lottery and requires the mobile to operate in the following way:

> "Access permission for the [RACH] is determined on the basis of an evaluation of the access threshold value by comparison of the access threshold value with a random number or pseudo random number."

174. Nokia accepts that its A1 device had this functionality because the mobile was capable of obtaining a random number and if it received the broadcast threshold, it would determine whether that threshold was bigger than the random number. If it lost the lottery it would try again.

175. The A2 device works in a slightly different way. The mobile now generates a random number and, using both that number and the broadcast threshold, it determines a random delay prior to attempting RACH access. Mr Meade argued that this means it does not have to make repeated tries, and there is no yes/no decision based on which of the broadcast threshold and random number is bigger. In a nutshell, whereas the A1 used the random number and broadcast threshold to decide *whether* to attempt RACH access, the A2 uses those numbers to decide *when* to attempt RACH access.

176. The judge described the way the A2 works in these terms at [198], citing from his 189 judgment:

> "In the original N96 the mobile repeatedly undertook the lottery until successful, comparing the persistence value P_i and the random number. In the New Device the mobile calculates once and for all a timing delay, and the mobile waits that long before attempting access. The delay calculation involves calculating a value of "n" using both R and P_i according to the following calculation:
>
> $$n = \frac{\log\left(1 - R/32769\right)}{\log\left(1 - P_i/32769\right)}$$
>
> If R is less than P_i the result of the equation is less than 1. The software then truncates that value to zero and gives access. Otherwise it is given access after a delay.
>
> Nokia says that this means that there are two (additional) differences from the claims of 189. Firstly there is no comparison in the sense of claim 1. Secondly access to the random access channel is not "assigned" on the basis of the

> comparison in the sense that the mobile decides whether it will get access: the mobile knows it will get access and learns when this will occur.
>
> As to the comparison, it is plain that the delay calculation depends critically on a comparison of R and P_i as these are the only variables on the right hand side of the equation. Dr Cooper accepted that the formula provided an indirect comparison of R and P_i. I reject this distinction.
>
> As to the second point, access to the channel is still assigned *based on* a comparison of R and P_i. The fact that a delay is introduced does not alter this.
>
> Accordingly the differences introduced by the New Device would not avoid a finding of infringement if the 189 patent were valid."

177. Mr Meade submitted that it follows from this description there are two clear reasons why there is no infringement by the A2. First, the requirement in the claim that there be a "comparison" must mean putting two numbers side by side and determining which is bigger. This does not happen in the A2.

178. Second, the words "*access permission is determined* on the basis of an evaluation … by *comparison* …" requires the comparison to result in a yes/no answer. It must result in a determination: is there or is there not to be permission? Again, this does not happen in the A2.

179. The judge rejected these submissions, holding that the required evaluation by comparison with a random number is carried out in the A2, albeit with a more complex formula.

180. I am satisfied that the judge came to the right conclusion. The calculation performed by the A2 does involve a comparison of the random number (R) and the access threshold value (P_i). If R is less than P_i then the result of the equation is less than 1 and the system generates a zero. If it is not then the system generates a non-zero value.

181. As for Nokia's second point, the A2 does produce a yes/no answer in that, depending upon the result of the evaluation, access is either given immediately or after a delay. This, it seems to me, is a determination of access permission, and that determination is made on the basis of the evaluation of the access threshold value. True it is that the preferred embodiments do not work in quite the same way. But there is no reason to suppose that the patentee intended the wording of the claim to be so limited and, falling as it does within the natural meaning of the words used when read in the context of the whole specification, I am satisfied that the A2 infringes.

Conclusion

182. For all these reasons, I would dismiss the appeal.

Lord Justice Etherton:

183. I agree.

Lord Justice Laws:

184. I also agree.