



## The Invention

- 4 The invention relates to monitoring user access to internet resources such as web pages, advertisements and/or other media. Techniques for monitoring user access to such resources have evolved significantly over the years. such monitoring was done primarily through server logs, but this has proven to be inaccurate as server logs cannot track views of media which has been locally cached. Another technique involves using beacon instructions to tag media. In particular, monitoring instructions are associated with the Hypertext Markup Language (HTML) of the media to be tracked. When a client requests the media, both the media and the beacon instructions are downloaded to the client. The beacon instructions are thus executed whenever the media is accessed, be it from a server or from a cache.
- 5 It is useful to link demographics and/or other user information to the monitoring information. To address this, an audience measurement entity (AME) establishes a panel of users who have agreed to provide their demographic information and to have their internet browsing activities monitored. However, panel sizes of AMEs remain small compared to the general population of users. Thus, a problem is presented as to how to increase panel sizes while ensuring the demographics data of the panel is accurate.
- 6 The present invention relates to combining media/advertising impression data obtained from cookies and other tracking technology with demographic data obtained from database proprietors such as social networks to create a database of demographically accurate advertising/media consumption data without the need to explicitly recruit a panel.
- 7 In particular, the invention relates to counting media impressions (such as internet advertising impressions or views of streaming media content) on a first type of computing device (e.g. a tablet computer). For a first portion of these media impressions, demographic information relating to persons is recognisable by a server of a database proprietor, for example a social network. For a second portion of these media impressions, the database proprietor has not been able to identify demographic data relating to persons viewing these media impressions, generating a non-coverage error. The invention corrects this non-coverage error based on:
  - (1) the demographic information provided for the first portion of media impressions;
  - (2) a first probability that the media corresponding to the media impressions is accessed on the first type of computing device; and
  - (3) a second probability that the media is accessed on a second type of device (e.g. a television).
- 8 The invention multiplies a ratio of the first probability to the second probability with a number of media impressions attributed to a first demographic group.
- 9 The latest version of the claims, filed on 20 May 2021, comprises three independent claims: method claim 1, apparatus claim 15, and computer readable storage medium claim 25. These claims correspond to one another in substance. I will therefore

primarily address claim 1 and the same analysis applies *mutatis mutandis* to claims 15 and 25. Dependent claims 13 and 14 are included, as these were explicitly referred to by the attorney at the hearing in considering the technical contribution.

1. A method, comprising:

receiving, at a first server of a first internet domain, a first network communication from a first type of computing device, the first network communication indicative of access to media at the first type of computing device;

sending, by executing an instruction with the first server, a second network communication from the first server to request demographic information corresponding to the first network communication and third network communications received at the first internet domain from the first type of computing device;

accessing, by executing an instruction with at least one processor, a count of media impressions occurring on the first type of computing device, a first portion of the media impressions corresponding to persons for whom first demographic information is recognizable by a second server of a database proprietor, a noncoverage error resulting from the second server of the database proprietor unable to access second demographic information of persons corresponding to a second portion of the media impressions; and

correcting, by executing an instruction with the at least one processor, the noncoverage error resulting from the second server of the database proprietor by determining the second demographic information for the second portion of the media impressions based on (1) the first demographic information for the first portion provided by the second server of the database proprietor in response to the second network communication, (2) a first probability that the media corresponding to the media impressions is accessed on the first type of computing device, and (3) a second probability that the media is accessed on a second type of device;

wherein the determining of the second demographic information includes multiplying (1) a ratio of the first probability to the second probability with (2) a number of the media impressions attributed to a first demographic group.

13. The method as defined in claim 1, further including conserving computer processing resources by not communicating with individual online users about their online media access activities and by not requesting survey responses from the online users to determine the first probability that the media corresponding to the media impressions is accessed on the first type of computing device or to determine the second probability that the media is accessed on the second type of device.

14. The method as defined in claim 1, further including conserving network communication bandwidth by not communicating with individual online users about their online media access activities and by not requesting survey responses from the online users to determine the first probability that the media corresponding to the media impressions is accessed on the first type of computing device or to determine the second probability that the media is accessed on the second type of device.

## The Law

10 Section 1(2) of the Act states:

1(2) It is hereby declared that the following (amongst other things) are not inventions for the purpose of the Act, that is to say, anything which consists of-

(a) a discovery, scientific theory or mathematical method;

(b) a literary, a dramatic, musical or artistic work or any other aesthetic creation whatsoever;

- (c) a scheme, rule or method for performing a mental act, playing a game or **doing business, or program for computer**;
- (d) the presentation of information;

but the foregoing provisions shall prevent anything from being treated as an invention for the purposes of the Act only to the extent that a patent or application for a patent relates to that thing as such.

11 The provisions of Section 1(2) were considered by the Court of Appeal in *Aerotel*<sup>1</sup> when a four-step test was laid down to decide whether a claimed invention is excluded from patent protection:

- (1) *Properly construe the claim*;
- (2) *Identify the actual contribution*;
- (3) *Ask whether it falls solely within the excluded subject matter*;
- (4) *Check whether the actual or alleged contribution is actually technical in nature*.

12 It was stated by Jacob LJ in *Aerotel* that the test is a re-formulation of and is consistent with the previous “technical effect approach with rider” test established in previous UK case law. Kitchen LJ noted in *HTC v Apple*<sup>2</sup> that the *Aerotel* test is followed in order to address whether the invention makes a technical contribution to the art, with the rider that novel or inventive purely excluded matter does not count as a “technical contribution”.

13 Lewison J in *AT&T/CVON*<sup>3</sup> set out five signposts that he considered to be helpful when considering whether a computer program makes a technical contribution. Lewison LJ reformulated the signposts in *HTC v Apple* in light of the decision in *Gemstar*<sup>4</sup>. The signposts are:

- i) Whether the claimed technical effect has a technical effect on a process which is carried on outside the computer.*
- ii) Whether the claimed technical effect operates at the level of the architecture of the computer; that is to say whether the effect is produced irrespective of the data being processed or the applications being run.*
- iii) Whether the claimed technical effect results in the computer being made to operate in a new way.*
- iv) Whether the program makes the computer a better computer in the sense of running more efficiently and effectively as a computer.*
- v) Whether the perceived problem is overcome by the claimed invention as opposed to merely being circumvented.*

## Arguments and analysis

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<sup>1</sup> *Aerotel Ltd v Telco Holdings Ltd and Macrossan's Application* [2006] EWCA Civ 1371

<sup>2</sup> *HTC Europe Co Ltd v Apple Inc* [2013] EWCA Civ 451

<sup>3</sup> *AT&T Knowledge Venture/CVON Innovations v Comptroller General of Patents* [2009] EWHC 343 (Pat)

<sup>4</sup> *Gemstar-TV Guide International Inc v Virgin Media Ltd* [2010] RPC 10

14 I will consider each of the *Aerotel* steps in turn in my analysis.

(1) Properly construe the claim

15 Claim 1 includes correcting a “non-coverage error” resulting from the second server of the database proprietor. Paragraph [0044] of the description defines a non-coverage error as “the measurement bias that occurs due to the inability of the database proprietor to recognize (e.g., identify the demographics of) a portion of the audience using mobile devices to view media”. According to paragraph [0044] such errors can arise for example when the person is not registered with a database proprietor, or their registration profile is incomplete or suspected of containing inaccurate information. Another example is where the person is registered with the database proprietor but accesses the proprietor from a different device to that on which the media impression occurs. A final example illustrated in this paragraph is where the person takes privacy-preserving measures that prevent the database proprietor from associating the mobile device with the person, for example by blocking or deleting cookies.

16 Claim 1 requires that the second demographic information is determined by multiplying the ratio of the two probabilities with the first demographic information. Paragraphs [0168] and [0169] of the description provides an example of this feature. For example, the first probability may be that 40% of males aged 18-24 watch comedy programs on a tablet computer, and the second probability may be that 20% of the same demographic group watch comedy programs on television. The ratio of these two probabilities is referred to as the ‘alpha factor’, equal to  $0.40/0.20 = 2$  in this case. This ratio or alpha factor is then multiplied by “the distribution percentage of the demographic group for a media item of interest”, i.e. the number of media impressions attributed to the relevant demographic group. For example, if males aged 18-24 represent 6.2% of the total impressions for a given episode of a television program, then the second demographic information would be  $2 \times 6.2\% = 12.4\%$ .

17 There is a single mention of, “...third network communications...” but no further explanation of how this feature interacts with the other features of the claim. Mr Moore acknowledged this during the hearing and implied that it has no real bearing on the substance of the invention. From the description it appears that this step could represent the AME sending user/device identifier logs to a database proprietor who responds with user demographic information (see paragraphs [0088]- [0090]). For the purposes of this decision I will merely construe this “third network communications” as implying that there are communications between the first type of computing device and the first internet domain and these communications could be sent with the request for demographic information (although his latter step is not clear in the claim). In any event the “third network communications” does not impact on the determination of the contribution.

(2) Identify the actual contribution

18 Identifying the contribution in the second step of this test is critical and I refer to the following paragraphs in *Aerotel* for guidance:

*“43. The second step – identify the contribution - is said to be more problematic. How do you assess the contribution? Mr Birss submits the test is workable – it is an exercise in judgment probably involving the problem said to be solved, how the invention works, what its advantages are. What has the inventor really added to human knowledge perhaps best sums up the exercise. The formulation involves looking at substance not form – which is surely what the legislator intended.”*

19 The examiner identified the alleged contribution of the invention to be:

*“A method of correcting for a non-coverage error (i.e. measurement bias) in information retrieved from a database of media impressions in response to receiving an indication of media having been accessed at a first type of computing device. The information retrieved from the database is divided into two portions: a first portion corresponding to persons for whom demographic information is recognisable; and a second portion corresponding to persons for whom demographic information is unavailable. Demographic information for the second portion is inferred by taking the ratio of a probability that the media was accessed on the first type of computing device and a probability that the media was accessed on a second type of computing device, and multiplying this ratio by the demographic information for the first portion.”*

20 At the hearing Mr Moore expressed a view that the examiner appeared to look at the form and not the substance of the independent claims. He pointed out that, had the examiner assessed the substance of the contribution, they would have identified the efficiencies of computing resources and network bandwidth as part of the contribution. Furthermore, without the search being completed Mr Moore considered it difficult to assess the actual contribution. He referred to the *“technical effect of being more efficient method of use of architecture to increase the demographic data obtained for use in correcting misattribution errors, and in doing so conserving both computer processing resources and network communication bandwidth.”* According to the description, misattribution errors are not the same as non-coverage errors, the latter being the subject of the claimed invention, but I understand the point Mr Moore is making in terms of the technical effect he is claiming is present and his arguments applies equally in relation to non-coverage errors.

21 I agree that it is important to consider the substance of the claimed invention. The courts have consistently stated this principle and the paragraph I have referenced above in *Aerotel* affirms this principle. On the question as to whether it is necessary to complete the search before assessing whether an invention is excluded from patentability, the courts have consistently taken the view that assessing whether an invention is excluded is separate to a determination as to whether an invention is novel and includes an inventive step. In some cases it is indeed helpful to have completed the search in order to identify the actual contribution, but in others it is straightforward to identify the alleged contribution without requiring that the prior art search be complete. The present invention, in my view, falls into the latter category.

22 Mr Moore suggested that the contribution need not be limited to media impressions but instead should also reflect the underlying architecture in terms of the way a smaller data set is being enlarged by using data from external databases. He

highlighted original claim 109 in the application, an apparatus claim, comprising data collectors to receive the internet domains, and that although the content relates to media access, fundamentally it is the architecture which is most important.

- 23 It is certainly the case that, in the present invention, data from external databases is being collected to augment an existing data set. But the whole context and structure of the claim, and the embodiments of the description, relate to data representing media impressions and it seems to me that this limitation is an essential part of the invention. I will however consider the underlying manner in which data is collected in my analysis of steps (3) and (4).
- 24 Mr Moore also considered that conserving both computer processing resources and network communication bandwidth should be considered as part of the contribution. It is not clear to me that the computer always makes more efficient use of processing resources and bandwidth when working the invention. The various requirements on computer resources and network communications may be different in the present invention to prior art approaches, but it has not been made clear that, in all circumstances, fewer processing resources or less network communication bandwidth is required. Moreover it seems to me that the invention is really about improving demographic data for media impressions. I do not therefore consider that such efficiencies form part of the contribution, although I will consider them further in my analysis of steps (3) and (4).
- 25 It is important to consider the advantages of the invention and the problem solved when considering the contribution. As I have said, these relate to improving the demographic information identified in relation to media impressions. Considering all these points, I take identify the contribution as:

*“A method of improving the demographic information associated with media impressions where demographic information related to those media impressions is requested from a database proprietor whereby, for a first portion of media impressions, such demographic information is recognisable, and whereby a non-coverage error (i.e. measurement bias) is corrected to determine demographic information for a second portion of media impressions for which the database proprietor was unable to access demographic information. Demographic information for the second portion is corrected based on the demographic information collected for the first portion of media impressions, and on the ratio of a probability that the media was accessed on the first type of computing device and a probability that the media was accessed on a second type of computing device, multiplied by a number of media impressions attributed to a first demographic group.”*

Steps (3) and (4): Ask whether the contribution falls solely within the excluded subject matter; check it is actually technical in nature

- 26 The Court of Appeal in *Symbian*<sup>5</sup> ruled that the question of whether the invention makes a technical contribution must be addressed when considering the computer

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<sup>5</sup> *Symbian Ltd v Comptroller-General of Patents* [2009] RPC 1

program exclusion, although it does not matter whether that takes place at step 3 or step 4.

27 In relation to the technical contribution, Mr Moore referred to the *“technical effect of being more efficient method of use of architecture to increase the demographic data obtained for use in correcting misattribution errors, and in doing so conserving both computer processing resources and network communication bandwidth.”*

28 For computer-implemented inventions the *AT&T/Cvon* signposts set out above provide helpful pointers in determining whether such inventions make a technical contribution. Mr Moore discussed the relevance of the *AT&T signposts* in view of *Gemstar*<sup>6</sup>, paragraph 234:

*“Again the question is whether what the invention achieves has a relevant technical effect. This time I think that it does. This is not merely a computer running a program without any effect in what might be regarded as the outside world. While it does not produce a “better computer” it does actually achieve something which can be regarded as a physical effect, namely the initiation of movement of data from one disk to another (both metadata and TV programme content). That seems to me to be enough to prevent it being just a computer program as such and to render it patentable material. It is true that it does not produce an effect outside the system itself, but it is still an effect.”*

29 Mr Moore suggested, based on Justice Mann’s comments in this paragraph of *Gemstar*, that the signposts are helpful pointers but do not act as probative or constraining direction. I agree, the signposts act as useful pointers towards there being a technical contribution but are not the be all and end all of the analysis. Nevertheless, I consider them to be useful in the present case and will consider them in turn, although I will also take a step back and consider the contribution more generally.

*Signpost i) Whether the claimed technical effect has a technical effect on a process which is carried on outside the computer.*

30 Mr Moore’s submissions in relation to *Gemstar* do not relate entirely to the first signpost, but for convenience I will consider them here. Mr Moore submitted that, in the present case, what is being achieved is to take data from one server to another server. Fundamentally, data is being processed between different data sets which were not originally intended to be utilised for solving the problem of the invention. According to Mr Moore this in itself is considered to be a technical physical effect outside of the computer, the physical effect being the initiation of movement and storage of data from one disk to another, similar to that of *Gemstar*.

31 I do not agree with this analysis. The contribution relates to correcting non-coverage data in demographic data relating to media impressions. Although this is achieved by retrieving demographic information from a proprietary database and associating it with the data relating to the media impressions, it relates to manipulating data within a single computer system. I note that, as Birss J remarked in *Lantana*<sup>7</sup>,

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<sup>6</sup> *Gemstar-TV Guide International Inc v Virgin Media Ltd* [2009] EWHC 3068 (Ch), [2010] RCP 10

<sup>7</sup> *Lantana Ltd v The Comptroller-General of Patents, Designs and Trade Marks* [2013] EWHC 2673 (Pat) at [30] affirmed [2014] EWCA Civ 1463, [2015] RPC 16 at [46]

communication between known networked computers does not amount to a technical effect external to the computer. I do not take *Gemstar* to be stating that, whenever data is moved from one database to another or from one server to another, there is necessarily a technical effect. In *Gemstar* it was the specific circumstances in which the TV programme content and the metadata were moved to another device which resulted in a technical effect. In the present case, merely copying data from the second server of the database proprietor to the first server is not analogous to the situation in *Gemstar*. Demographic information is retrieved from the second server, associated with the media impressions stored on the first server, and then non-coverage data errors are corrected in the first server based on probabilities as to the type of computing device used to access the media and a number of media impressions associated with a first demographic group. This is carried out for administrative purposes, to improve the demographic data relating to media impressions, and all takes place within the networked computer system comprising the two servers. Mr Moore submitted that to increase AME panel sizes so that statistically significant data sets can be created in a larger population from a smaller population is a real-world problem outside the computer. This seems to me to be an administrative problem rather than a technical problem and the solution of claim 1 does not make a technical effect on a process outside of the computer. I cannot therefore identify a technical effect on a process outside of the computer.

*Signpost ii) Whether the claimed technical effect operates at the level of the architecture of the computer; that is to say whether the effect is produced irrespective of the data being processed or the applications being run*

- 32 Mr Moore submitted that the claimed technical effect is at the architectural level. I have already considered Mr Moore's submission that the method of using the underlying architecture of in terms of the way a smaller data set is being enlarged by using data from external databases should be part of the contribution, and decided that, whilst an element of the contribution, is restricted to the application to media impressions and demographic information relating to those impressions. This effect is at the application level and does not operate at the architecture level of the computer. Even if I considered the enlargement of a smaller data set by using data abstracted from other databases in a more general sense, this is not, in my view, a technical effect at the architecture level of the computer. It is only produced within the relevant databases, which run at the application level. There is no technical effect which is produced irrespective of the data being processed or the applications being run.

*Signpost iii) Whether the claimed technical effect results in the computer being made to operate in a new way*

*and*

*Signpost iv) Whether the program makes the computer a better computer in the sense of running more efficiently and effectively as a computer*

- 33 Mr Moore referred to paragraph [00150] of the description and to claims 13 and 14 to support his submission that the invention causes the computer run as a better computer. As I have said, his viewpoint of the technical effect is a "*more efficient*
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*method of use of architecture to increase the demographic data obtained for use in correcting misattribution errors, and in doing so conserving both computer processing resources and network communication bandwidth.”* Claims 13 and 14 relate to conserving processing resources and network communication respectively by not communicating with online users about their online media access activities and by not requesting survey responses from the online users to determine the first probability that the media corresponding to the media impressions is accessed on the first type of computing device or to determine the second probability that the media is accessed on the second type of device. At the hearing Mr Moore also highlighted the efficiencies gained from leveraging data from existing systems built for a primary purpose and being used for this secondary purpose.

- 34 As I have already said in my identification of the contribution, it is not clear to me that the computer always makes more efficient use of processing resources and bandwidth when working the invention. The various requirements on computer resources and network communications may be different in the present invention to prior art approaches, but it has not been made clear that, in all circumstances, fewer processing resources or less network communication bandwidth is required.
- 35 Moreover, any new computer program which works more efficiently than a previous computer program could be argued to make the computer run faster when it is running that program. But the computer only appears to run more efficiently when it's doing this particular data analysis or data collection. It's not more efficient when it is processing something else, for example. Any efficiencies in the present case arise out of the computer being programmed to carry out the specific method of claim 1, and do not result in a better computer *per se*. This is the case even if the application to media impressions is removed from the contribution.

*Signpost v) Whether the perceived problem is overcome by the claimed invention as opposed to merely being circumvented.*

- 36 The problem being addressed in the present invention is improving the demographic information associated with media impressions by correcting non-coverage errors when certain demographic information is not available from proprietary databases. This is solved by calculating certain probabilities associated with the types of devices being used to view the media and by using the demographic information which is available for certain other media impressions. I do not consider this to be a technical problem but rather lies in the administrative field of improving demographic information associated with media impressions. I note Mr Moore's submissions that the invention results in processing efficiencies and reduced bandwidth requirements but, even if the invention did in fact have these results (which I have considered above), the problems associated with reducing processing requirements and/or bandwidth requirements are circumvented by the operation of the computer program rather than solved in any technical sense. Therefore, the fifth signpost does not indicate that the program overcomes a technical problem.
- 37 Having considered all the signposts, none of them point to the contribution making a technical contribution. Taking a step back and looking at the contribution as a whole, the invention relates to improving demographic information relating to media impressions. It does this by retrieving demographic data from proprietary databases such as social networks. If such data is not available for some media impressions, a

non-coverage error is generated and a calculation involving the probability that the media is accessed on particular device types, information relating to media impressions for which demographic data is available, and a number of media impressions associated with a first demographic group is carried out. These steps relate to an administrative process for linking demographic information to media impressions implemented as a program for a computer. They do not make a technical contribution. The invention therefore lies in the excluded field of a program for a computer as such. Moreover, because the computer program implements an administrative process, the contribution also relates to a method of doing business as such.

### **Conclusion**

- 38 In conclusion, I have found that the invention claimed in the independent claims relates to a program for a computer as such and a method of doing business as such. I therefore refuse the application under section 18(3).

### **Appeal**

- 39 Any appeal must be lodged within 28 days after the date of this decision.

## **B Micklewright**

Deputy Director, acting for the Comptroller