



PATENTS ACT 1977

APPLICANT Adobe Systems Incorporated

ISSUE Whether patent application GB1602643.7 complies
with section 1(2)

HEARING OFFICER J Pullen

DECISION

Introduction

- 1 Patent application GB1602643.7 was filed on 15 February 2016 claiming a priority date of 18 February 2015 from an earlier US application. It was published as GB 2536354 on 14 September 2016.
- 2 The combined search and examination report, dated 12 July 2016, reported under Section 17(5)(b) that a search would serve no useful purpose and that the claimed invention was excluded from patentability as a computer program as such. Several rounds of correspondence followed, with no agreement being reached. A hearing was offered in the examination report of 14 February 2019 highlighting that if the agent responded but did not request a hearing then the application may, nonetheless, be passed for a decision on the papers on file. The agent responded on 8 April 2019 with further amendments and arguments, but the examiner remained unconvinced and the case was passed to me for a decision on the papers.
- 3 It is noted that the question as to whether the application relates to excluded matter is the only issue that has been examined to date and the only matter to be decided. Consequently, if I find in favour of the applicant I will need to remit the application back to the examiner for further consideration.

The invention

- 4 The application relates to internet web browsers. Specifically, the claimed invention provides a computer program (or “computerized method”) for more effectively loading content from a web page. It does so by indexing links in a current page, creating a “trigger area” around each link, and preloading and caching content associated with a link if a cursor enters its trigger area. If the link is subsequently clicked in the usual way, the target page is loaded using the cached content.
- 5 The latest claims were filed on 8 April 2019. There are 18 claims, of which three are independent. Claim 1 is directed towards computer storage media, and reads:

A computer storage media storing computer-useable instructions that, when used by one or more computing devices, cause the one or more computing devices to perform operations comprising:

identifying one or more links in a document object model of a document corresponding to a current page provided via a browser;

creating an index containing the one or more links, the index including coordinates of the one or more links and trigger area coordinates of a trigger area for each of the one or more links;

detecting a user interaction, the user interaction corresponding to movement of a cursor within the trigger area, the trigger area associated with a link of the one or more links and wherein the movement of the cursor is detected via a mouse, a stylus, a touch input, gaze detection or gesture detection;

upon the detecting, disabling standard click behavior for the link and downloading predetermined content associated with the link;

caching the downloaded predetermined content;

detecting a user interaction with the link, the link corresponding to a target page; and

transitioning to the target page, wherein the transitioning includes injecting the cached predetermined content into the document.

- 6 Independent claim 14 is directed towards a method and independent claim 18 is directed towards a system, each is similar in scope to claim 1.

The law

- 7 Section 1(2) declares that certain things are not inventions for the purposes of the Act, it reads:

It is hereby declared that the following (among other things) are not inventions for the purposes of this Act, that is to say, anything which consists of –

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

(b) a literary, 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 a program for a computer;

(d) the presentation of information;

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

- 8 The assessment of patentability under section 1(2) is governed by the judgment of the Court of Appeal in *Aerotel*¹. The Court reviewed the case law on the interpretation of section 1(2) and approved a four-step test for the assessment of what is often called “excluded matter”, as follows:

Step one: properly construe the claim

Step two: identify the actual contribution (although at the application stage this might have to be the alleged contribution)

Step three: ask whether it falls solely within the excluded matter

Step four: check whether the actual or alleged contribution is actually technical in nature.

- 9 The operation of the approach is explained at paragraphs 40-48 of the judgement. Paragraph 43 covers identification of the contribution and paragraph 47 adds that a contribution which consists solely of excluded matter will not count as a technical contribution.
- 10 Subsequently, the Court of Appeal in *Symbian*². made clear that the *Aerotel* test is not intended to provide a departure from the previous requirement set out in case law, namely that the invention must provide a “technical contribution” if it is not to fall within excluded matter. The *Aerotel* test has subsequently been endorsed by the Court of Appeal in its decisions in both *HTC*³ and *Lantana*⁴.
- 11 Lewison J (as he then was) in *AT&T/CVON*⁵ set out five signposts that he considered to be helpful when considering whether a computer program makes a technical contribution. In *HTC* the signposts were reformulated slightly. 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.

¹ *Aerotel Ltd v Telco Holdings Ltd and Macrossan’s Application* [2006] EWCA Civ 1371; [2007] RPC 7

² *Symbian Ltd’s Application* [2008] EWCA Civ 1066; [2009] RPC 1

³ *HTC Europe Co Ltd v Apple Inc* [2013] EWCA Civ 451; [2013] RPC 30

⁴ *Lantana Limited and The Comptroller General of Patents, Designs and Trade Marks* [2014] EWCA Civ 1463; [2015] RPC 16

⁵ *AT&T Knowledge Venture/CVON Innovations v Comptroller General of Patents* [2009] EWHC 343 (Pat); [2009] FSR 19

Arguments and analysis

- 12 The examiner's position is set out most recently in his pre-hearing report of 10 June 2019, while the applicant's position is set out most recently in the letter dated 8 April 2019 from their attorney, Dr Anton Baker of D Young & Co. Both provide arguments based on the established *Aerotel* test and the *AT&T* signposts.
- 13 I shall consider all arguments on file and apply the same case law in deciding whether the claimed invention is excluded from patentability, as a computer program as such, under section 1(2) of the Patents Act.

Properly construing the claims

- 14 Independent claims 1 and 18 are very closely aligned. While claim 1 defines a computer storage media and claim 18 defines a system, in substance each claim essentially defines a computer program which when run performs a method comprising the following steps (reference numerals added):
- i. identifying one or more links in a document object model of a document corresponding to a current page provided via a browser;*
 - ii. creating an index containing the one or more links, the index including coordinates of the one or more links and trigger area coordinates of a trigger area for each of the one or more links;*
 - iii. detecting a user interaction, the user interaction corresponding to movement of a cursor within the trigger area, the trigger area associated with one of the links;*
 - iv. disabling standard click behaviour for the link;*
 - v. downloading predetermined content associated with the link;*
 - vi. caching the downloaded predetermined content;*
 - vii. detecting a user interaction with the link, the link corresponding to a target page; and*
 - viii. transitioning to the target page, wherein the transitioning includes injecting the cached predetermined content into the document.*
- 15 The method defined by claim 14 differs in that it implies the index of step (ii) above has already been created, such that the first step is to identify the index rather than to identify the links and create the index. It also comprises an additional step of rebuilding the index (for the target page). The method steps are therefore as follows (reference numerals added):
- i. identifying an index containing one or more links of a current page, the index including trigger area coordinates of a trigger area for each of the one or more links;*
 - ii. detecting a user interaction, the user interaction corresponding to movement of a cursor within the trigger area, the trigger area associated with one of the links;*
 - iii. disabling standard click behaviour for the link;*

- iv. *downloading predetermined content associated with the link;*
- v. *caching the downloaded predetermined content;*
- vi. *detecting a user interaction with the link, the link corresponding to a target page;*
- vii. *transitioning to the target page, wherein the transitioning includes injecting the cached predetermined content into the document; and*
- viii. *rebuilding the index for the document.*

- 16 The examiner has raised two issues regarding construction. The first concerns the expression “predetermined content”, which the examiner contends (in his examination report of 21 May 2018) should be construed in line with paragraph 38 of the description as filed, such that a web developer makes the determination as to the content. In his letter of 21 August 2018 Dr Baker indicates agreement on this point.
- 17 The second point concerns the terms “caching”, “cached” and “cache”, introduced into the claims at the most recent amendment round. In his pre-hearing report, noting the arguments provided in Dr Baker’s letter of 8 April 2019, the examiner infers that Dr Baker has construed these terms as relating to a hardware cache. The examiner argues that the person skilled in the art would be a developer of browsing software, and so would consider these terms to relate to a software cache. Dr Baker, having not filed any further arguments since the examiner’s pre-hearing report, has not responded to this particular point.
- 18 The terms “cache” and the related terms “caching” and “cached” are used as verbs throughout the claims and description, i.e. they define the action of caching the content, rather than defining a cache component. Paragraphs 60-65 of the description as filed describe an exemplary operating environment for implementing the invention, including illustrative components, but do not explicitly define a cache. It seems to me, therefore, that the invention is not limited by the type of cache. The claims require content to be cached (and the cached content to be subsequently injected into the target page document), and these requirements are met whether the cache is embodied in hardware or software.
- 19 I do not consider there to be any other issues with construction of the independent claims. Furthermore, the independent claims are considered to relate to the same invention and so will stand or fall together.

Identifying the actual or alleged contribution

- 20 In his most recent letter of 8 April 2019, Dr Baker states:

“The contribution of the claim can be thought of, for example, as a new method for reducing web page loading times, when a link is selected, in a bandwidth efficient manner. The computing device detects user interactions within trigger areas (the interactions are detected via a mouse, a stylus, a touch input, gaze detection or gesture detection), the detections being used to download predetermined content associated with a link and store the content in a cache in advance of actual selection of the link.”

21 I note that earlier in the prosecution of the application the attorney has focused on different elements in their assessment of the contribution. Their letter of 20 February 2017 submits that the contribution is “a method of autonomously determining when a user may be about the request access to content associated with a link and pre-emptively downloading at least a portion of said content in a controlled manner”. Their letter of 21 August 2018, meanwhile, describes the contribution as “a technique for analysing links on a browser page to identify threshold trigger areas around each of a plurality of links” (as well as describing what the computing device does with exactly the same wording as outlined in paragraph 20 above). Neither of these alternative assessments of the contribution is inconsistent with that provided in Dr Baker’s most recent letter, and I will consider them to the extent necessary in making my own assessment of the contribution.

22 In his pre-hearing report, the examiner offers his own interpretation of the contribution:

“I have identified the contribution to be a system which when a webpage is accessed by a browser then, as the browser creates the [document object model] for that webpage, it creates an index including: a predetermined subset (selected by the webpage creator) of the links contained in the webpage, the coordinates of the subset of links and the coordinates of a trigger area for each link in the subset and when the user interacts with a trigger area for a link then the standard click behaviour for the link is disabled and the content specified by the website creator and associated with the link is downloaded and cached and when the user interacts with the link the downloaded content is injected into the current webpage. This has the advantage of speeding up the user experience in clicking on links and is addressing the problem of how to automatically determine when a user of a website may be about to interact with a link on that website and pre-emptively download content associated with the link in advance of the user actually interacting with the link.”

23 In paragraph 43 of *Aerotel*, Jacob LJ outlined the considerations to be applied when identifying the contribution:

“...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”.

24 Aside from the specific nature of the cache, already addressed above, the examiner and attorney appear to agree on key details of how the invention works. The examiner’s assessment is rather more detailed in this respect, but both note the use of trigger areas (associated with links on a web page), with content associated with a link being downloaded and cached when a user interacts with a trigger area.

25 They also appear to agree on at least some of the advantages of the invention and problems it addresses. In particular, Dr Baker indicates in his letter of 21 August 2018 that he agrees with the examiner that the invention speeds up the user experience in clicking on links, and addresses the problem of how to automatically determine when a user of a website may be about to interact with a link, so that content associated with that link can be pre-emptively downloaded in advance of the user actually interacting with the link.

- 26 A key point of disagreement, however, appears to be the alleged effect that the invention has on network bandwidth usage. The examiner states in his pre-hearing report: “in comparison to conventional web browsing which only downloads content when actually required, the present invention is extremely likely to lead to increased bandwidth usage”. Dr Baker, on the other hand, approaches the issue by comparing the claimed invention with other methods which could be used to speed up the user experience, suggesting in his letter of 21 August 2018: “The naive approach to speeding up the user experience would be, for example, simply downloading every link on a page... [which] would consume an unduly large amount of bandwidth.” He submits that the present approach “allows for the user experience to be sped up while only consuming bandwidth for links likely to be selected by the user”, and therefore “actually reduces the bandwidth consumed by the device”.
- 27 While the claimed invention is likely to use more bandwidth than a conventional web browser as outlined by the examiner, a conventional web browser does not offer the same advantage of speeding up the user experience, and so I do not think it is the right basis of comparison for identifying the contribution of the present invention. There is no suggestion that the invention reduces bandwidth when compared with conventional web browsers; the attorney’s argument is that the invention speeds up the user experience compared with conventional web browsers, and does so in a way that is “bandwidth efficient” when compared with other potential solutions.
- 28 In the absence of a prior art search or any submissions from the attorney regarding the state of the art, I must assume that the “naive approach” outlined by Dr Baker in his letter of 21 August 2018 is a hypothetical one. Nevertheless it provides a useful example of an alternative approach which the person skilled in the art might take in attempting to speed up the user experience. By only downloading content when the cursor enters a trigger area, the claimed invention certainly has the potential to use less bandwidth compared with downloading content from every link on the page. For the purposes of assessing the contribution, therefore, I am willing to accept Dr Baker’s suggestion that the invention operates “in a bandwidth efficient manner”.
- 29 The only other point I wish to highlight regarding the alleged contribution provided by Dr Baker is the suggestion that the invention provides “a new method for reducing web page loading times”. While I can accept that the user experiences a quicker loading time once a link is selected (compared to a conventional web browser), I note that there is no suggestion that the invention allows the content to be downloaded any more quickly. It simply downloads content pre-emptively (if certain conditions are met), to speed up the user experience once a link is selected.
- 30 Taking account of all of the above, I consider the contribution to be a method for reducing web page loading times from the perspective of a user, when a link is selected, in a bandwidth efficient manner, by detecting user interactions within trigger areas, the detections being used to download predetermined content associated with a link and store the content in a cache in advance of actual selection of the link.

Does the contribution fall solely within excluded matter/is it technical in nature?

- 31 I will consider the third and fourth steps of the *Aerote/* test together.

- 32 There is no doubt that the claimed invention is computer implemented. In such cases the *AT&T* signposts provide useful guidance on what may constitute a technical contribution. At different points throughout prosecution of the application the attorney has sought to rely on different combinations of the signposts, such that all five signposts have been considered at one point or another. The examiner has also considered all five signposts, as set out in their pre-hearing report. I will therefore consider the five signposts in order.
- 33 With regard to the first signpost, in Dr Baker's letter of 8 April 2019 he suggests that the invention has a technical effect on a process which is carried on outside the computer since it reduces network bandwidth usage, which affects other devices on the network "in a technical way". Dr Baker further notes that reducing network bandwidth usage is a common technical benefit relied on in network routing scheme patents.
- 34 The examiner disagrees, stating in his pre-hearing report that the contribution "relates to the manipulation of data within the computer, hence it does not relate to a technical process existing outside of the computer". He suggests that, if affecting bandwidth usage was enough to overcome the exclusion, then any computer program which used a network would be patentable, which is clearly not so in light of the relevant caselaw. Furthermore, noting the comments of Birss J in *Lantana*⁶ that "two computers connected across the internet is an entirely conventional computing arrangement", the examiner suggests that any other devices on the network form part of the "computing arrangement", such that any effect on them is within that arrangement.
- 35 I have already indicated that I am willing to accept the invention operates in a "bandwidth efficient manner", by only downloading content for links that are likely to be selected rather than every link on a page, for example. In my view, however, this does not amount to a technical effect on the network itself. There is no change to the technical characteristic of the network or the communication process outside of the computer on which the program is run, so the invention is distinguished from the network routing scheme patents mentioned by Dr Baker.
- 36 Furthermore, while other devices on the network may indeed benefit from more network bandwidth remaining available, I do not consider this to amount to the invention having a technical effect on those devices. If this were the case then, as the examiner has suggested, any computer program which used a network would be patentable, which is not so. Therefore the first signpost is not met.
- 37 With regard to the second signpost, Dr Baker notes in his letter of 8 April 2019 that the invention takes account of the limited amount of data a cache is typically capable of storing. In response to this technical constraint, he says, content is downloaded predictively in response to user interaction with a trigger area, rather than downloading all content associated with every link on a page, which allows all the downloaded content to be stored in a cache and provided quickly if a link is selected. Dr Baker argues that the claimed method takes due account of the technical

⁶ *Lantana v Comptroller-General of Patents* [2013] EWHC 2673 (Pat)

limitations of the architecture of the computer and therefore operates at the level of the architecture of the computer.

- 38 The examiner disagrees, because (as noted above) he considers the cache to be a software cache, and therefore just part of the suite of software, not part of the architecture of the computer.
- 39 I have already determined that the claimed invention is not limited by the type of cache, and could in my opinion utilise either a hardware cache or a software cache. Even if the cache is considered to be part of the architecture of the computer, however, there is a clear difference between operating at the level of the architecture and taking account of the limitations of the architecture. If the signpost is to be met then the technical effect must be produced irrespective of the data being processed or the applications being run, and I do not believe that is the case here. On the contrary, the operation of the invention is fully dependent on the data being processed since it depends on the page being viewed and the links it contains. There is no technical effect on the cache itself, the claimed invention merely utilises the cache. Therefore the second signpost is not met.
- 40 In respect of the third and fourth signposts, brief arguments were made in the attorney's letter of 20 February 2017 but not pursued. Nevertheless, the examiner has considered these signposts in his pre-hearing report, and I will also do so for completeness.
- 41 With regard to the third signpost, the attorney's letter states that the contribution "clearly results in a system of one or more computing devices which is made to operate in a new way, namely it allows for a web developer to control the manner and timing of which content associated with a link is transferred to a user". In his pre-hearing report, the examiner states "I do not see that the computer is operating as a computer in a new way except in so far as any computer running a new program operates in a new way", and that in his opinion "for the third signpost to be relevant it must be the computing arrangement operating as a computing arrangement in a new way not merely having a program which provides new functionality to a user and I consider that the present application falls within the latter category". I fully agree with the examiner on this point, and therefore find that the third signpost is not met.
- 42 With regard to the fourth signpost, the attorney's letter suggests that the contribution results in "an increase in the speed or reliability of the one or more computing devices since it allows the web developer to selectively control what elements actually need to be updated (i.e. avoiding unnecessarily downloading elements) and load balancing by increasing the control over the timing of data transfers". The examiner makes clear in his pre-hearing report that he does not see that the computer is operating more efficiently or effectively as a computer, adding that the contribution does not provide load balancing since there is nothing that suggests making any assessment of the current load before any decision to download content.
- 43 There is no reference in the specification as filed to load balancing, and nothing in the attorney's letter to explain exactly what is meant by load balancing in this context. I am also not convinced that the invention increases control over the timing of data transfers as alleged by the attorney; it changes the action which triggers the downloading of content, but the timing of data transfer is still dictated by user

behaviour. In any event, I can find nothing which suggests that the invention makes the computer a better computer in the sense of running more efficiently and effectively as a computer. It may result in a better web browser, but for the fourth signpost to be met the computer as a whole must be improved, not just an individual computer program.

- 44 Regarding the fifth signpost, the attorney has maintained throughout prosecution of the application that the invention solves a technical problem rather than circumventing it. Most recently, Dr Baker in his letter of 8 April 2019 states “the claimed invention solves at least a technical problem of how to reduce web page loading times, when a link is selected, in a bandwidth efficient manner”. The examiner states in his pre-hearing report that any problem in bandwidth limitation is only circumvented “because the invention doesn’t make any difference to how much data can be transmitted, [it] merely selects the data that will be transmitted”.
- 45 The problem the invention aims to address is the long loading times of web pages, and it does so by pre-emptively downloading and caching web content associated with links which may be selected by a user. While a user may experience a shorter delay transitioning to a target page when they select a link, the web content itself is not downloaded any more quickly – as discussed in relation to the contribution in paragraph 29 above. As noted by the examiner, the invention does not make any difference to how much data can be transmitted (in a given timeframe). Therefore the problem of long load times is not overcome, but is merely circumvented by preloading content before a link is selected. The fact that the invention operates in a “bandwidth efficient manner” by selectively downloading only particular content does not help the matter – in this sense the invention circumvents any problems with bandwidth limitation by simply downloading less content. Therefore the fifth signpost is not met.
- 46 There is one more issue I must address regarding the fifth signpost. In his letter of 8 April 2019, Dr Baker suggests that, if the present invention is considered to circumvent rather than solve problems regarding bandwidth limitations, this would suggest that any invention which has as its technical purpose a reduction in bandwidth usage or link congestion in a network should be excluded from patentability. I fail to see how this is the case. The failure of the present invention to meet the fifth signpost is due to the nature of the proposed solution, not the nature of the problem itself. This does not prevent a patent being granted for an invention which takes the same problem and actually overcomes it in a technical way.
- 47 I find that the *AT&T* signposts point away from there being any technical contribution, and towards excluded matter. I note the comments in Dr Baker’s letter of 8 April 2019 that the signposts are not prescriptive conditions nor an exhaustive list. I agree, but in any event do not consider the alleged contribution to be technical in nature, and consider it to be no more than a program for a computer.
- 48 Finally, I note that Dr Baker’s letter of 21 August 2018 suggests, based on the wording of the hearing officer in patent decision BL O/112/18, that “where an applicant makes a reasonable case that their invention is patentable then [the examiner is] bound to find in their favour”. Dr Baker also helpfully provides an

excerpt from *Macrossan*⁷ on which the hearing officer's decision was based. I note from paragraph 9 of *Macrossan* that the "tribunal still has to consider whether the exception applies, and it can come to the conclusion that it does without having to find that there is no doubt at all about it". Having considered the matter in light of all the evidence and arguments before me, I find that the exclusion set out in section 1(2)(c) of the Act applies.

Conclusion

- 49 I conclude that the claimed invention is excluded from patentability under section 1(2)(c) because it is no more than a program for a computer.
- 50 I have read through the specification but am unable to identify any saving amendment. I therefore refuse the application under Section 18(3).

Appeal

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

J PULLEN

Deputy Director, acting for the Comptroller

⁷ *Macrossan v Comptroller-General of Patents* [2006] EWHC 705 (Pat)