Intellectual Property Office

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15 November 2022

PATENTS ACT 1977

APPLICANT	Appdome Ltd
ISSUE	Whether GB2005530.7 is excluded under Section 1(2)(c) of the Patents Act 1977
HEARING OFFICER	Peter Mason

DECISION

Introduction

1 This decision concerns application GB 2005530.7, published as GB 2581070 A on 5th August 2020. The application is entitled "Automated mobile application integration" and the decision concerns whether the invention, as defined in the claims, is excluded from patentability under Section 1(2)(c) of the Patents Act 1977.

2 The application is the GB national phase of international application PCT/US2018/056359 which has an earliest priority date of 17 October 2017. There have been several rounds of correspondence, as well as a telephone consultation, but the applicant has thus far been unable to persuade the examiner of the patentability of the claims. In their letter of 26th July 2022, the applicant requested a hearing to decide the issue, further in their later letter of 19th August 2022 the applicant requests a decision to be made on the present state of the file. I will therefore make a decision based on the papers available on file.

Preliminary matters

3 The only substantive matter before me is whether the invention is excluded from patentability under section 1(2)(c) of the Patents act 1977. I note that the search is complete, and there are no other outstanding objections. Therefore, if I find that the claimed invention is allowable I will return the application to the examiner to complete the grant process.

4 The Section 20 date expired 8th October 2022. However this may be extended as-of-right, with a Form 52 and appropriate fee, up to two months from this date.

The invention

5 The application relates to a mobile application development tool that provides a network based automated application fusion platform (AFP) that allows integration of multiple third party functions into a mobile application.

6 Mobile application developers face significant challenges when integrating mobile applications using multiple programming languages on multiple development platforms; this results in time consuming and resource intensive release cycles.

7 The application intends to reduce the development cycle by providing an AFP that does not require a source code, instead the AFP allows a developer to select desired plugins which are then 'fused' to an application. This is alleged to shorten the application development cycle.

8 The claims have been amended since filing and are now as presented, as filed on 11th July 2022. There are three independent claims relating to a method, system and a computer readable storage medium as set out in claims 1, 20 and 21 respectively. The claims are as follows;

> *1. A computer-implemented method comprising: receiving, by a server computer from a development system, a first application binary executable for an application; receiving, by the server computer, a dataset specifying mobile services to be added to the application, the dataset selected by a user of the development system; dynamically and automatically generating a software adapter, for adapting plugin software components to the first app binary executable, using a position independent dependency and priority scheme to establish priorities and dependencies between different, fully compiled, and linked plugin software components for implementing the user-selected mobile services, wherein using a position independent dependency and priority scheme to establish priorities and dependencies further comprises: establishing an ordered list of the plugin software components, an ordered list of functions within the plugin software components and a priority for linking and initializing the plugin software components, wherein establishing the ordered list of the plugin software components comprises establishing an order in which a function call is handled by the plugin software components; generating, by the server computer and without access to source code for the first application binary executable, a second application binary executable for the application, the generating including merging the first application binary executable with binary code for the adaptor and the plugin software components; and transmitting, by the server computer to the development system, the second application binary executable.*
>
> *20. A system comprising: one or more processors; memory configured to store instructions that when executed by the one or more processors, cause the one or more processors to perform operations comprising: receiving a first application binary executable for an application; receiving a dataset specifying mobile services to be added to the application, the dataset selected by a user of the development system; dynamically and automatically generating a software adapter, for adapting plugin software components to the first app binary executable, using a position independent dependency and priority scheme to establish priorities and dependencies between different, fully compiled, and linked plugin software components for implementing the user-selected mobile services, wherein using a position independent dependency and priority scheme to establish priorities and dependencies further comprises: establishing an ordered list of the plugin software components, an*

ordered list of functions within the plugin software components and a priority for linking and initializing the plugin software components, wherein establishing the ordered list of the plugin software components comprises establishing an order in which a function call is handled by the plugin software components; generating, without access to source code for the first application binary executable, a second application binary executable for the application, the generating including merging the first application binary executable with binary code for the adaptor and the plugin software components; and transmitting the second application binary executable.

21. A non-transitory computer readable storage medium configured to store instructions that when executed by one or more processors, cause the one or more processors to perform operations comprising: receiving, by a server computer from a development system, a first application binary executable for an application; receiving, by the server computer, a dataset specifying mobile services to be added to the application, the dataset selected by a user of the development system; dynamically and automatically generating a software adapter, for adapting plugin software components to the first app binary executable, using a position independent dependency and priority scheme to establish priorities and dependencies between different, fully compiled, and linked plugin software components for implementing the user-selected mobile services, wherein using a position independent dependency and priority scheme to establish priorities and dependencies further comprises: establishing an ordered list of the plugin software components, an ordered list of functions within the plugin software components and a priority for linking and initializing the plugin software components, wherein establishing the ordered list of the plugin software components comprises establishing an order in which a function call is handled by the plugin software components; generating, by the server computer and without access to source code for the first application binary executable, a second application binary executable for the application, the generating including merging the first application binary executable with binary code for the adaptor and the plugin software components; and transmitting, by the server computer to the development system, the second application binary executable.

The law

9 The examiner raised an objection under Section 1(2) of the Act that the invention is not patentable because it relates to one or more categories of excluded matter. The relevant provisions of this section of the Act are shown with added emphasis below:

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) …..

(b) …..

(c) a scheme, rule, or method for performing a mental act, playing a game or doing business, ***or a program for a computer;*** *(my emphasis)*

(d) …..

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.

10 The assessment of patentability under Section 1(2) is governed by the judgment of the Court of Appeal in Aerotel[1], as further interpreted by the Court of Appeal in Symbian[2]. In Aerotel, the court reviewed the case law on the interpretation of Section 1(2) and set out a four-step test to decide whether a claimed invention is patentable:

(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.

11 The Court of Appeal in Symbian made it clear the four-step test in Aerotel was not intended to be a new departure in domestic law; it was confirmed that the test is consistent with the previous requirement set out in case law that the invention must provide a *"technical contribution"*. Paragraph 46 of Aerotel states that applying the fourth step of the test may not be necessary because the third step should have covered the question of whether the contribution is technical in nature. It was further confirmed in Symbian that the question of whether the invention makes a technical contribution can take place at step 3 or step 4.

12 The case law on computer implemented inventions has been further elaborated in AT&T/CVON[3] which provided five helpful signposts to apply when considering whether a computer program makes a relevant technical contribution. In HTC v Apple, Lewison LJ reconsidered the fourth of these signposts and felt that it had been expressed too restrictively. The revised 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;

[1] Aerotel Ltd v Telco Holdings Ltd and Macrossan's Application [2006] EWCA Civ 1371; [2007] RPC 7
[2] Symbian Ltd v Comptroller-General of Patents [2009] RPC 1
[3] AT&T Knowledge Venture/CVON Innovations v Comptroller General of Patents [2009] EWHC 343 (Pat), paragraph 8.

iv) whether the program make the computer a better computer in the sense of running more efficiently and effectively as a computer; and

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

13 The relevance of the legislation and legal precedent has gone uncontested throughout the proceedings.

Applying the Aerotel test

Step 1 - Properly construe the claim

14 The examiner finds objection in claim 1 and has observed, throughout their correspondences, that a similar reasoning applies to later claims mutatis mutandis. There is no contention from the applicant and throughout their correspondences both the applicant and the examiner have considered the three independent claims together.

15 Claim 1 is restricted to a computer implemented method whilst claim 20 includes the method of claim 1 operating on a system comprising a processor and memory. Claim 21 further concerns a non-transitory computer readable storage medium configured to store instructions that, when executed on a processor, causes the method of claim 1 to be performed. In the absence of claims 20 & 21 it would is implied that the method of claim 1 would necessarily require a processor, a memory or a typical non-transitory readable storage medium. Therefore claims 20 & 21 do not add anything over claim 1. Due to the similar scope of the independent claims I will restrict my consideration to independent claim 1 and claims 1, 20 and 21 will stand or fall together.

16 The independent claims are clear, and I have no difficulty construing them. However, for clarity I will include the examiners assessment below;

> *"12. In broad terms, the invention relates to a way of aiding in the development of applications in a way that allows developers to choose plugins to be integrated into their application binaries. The plugins themselves allow for applications to integrate seamlessly with third-party services and solutions.*
>
> *13. This is accomplished through the provision of a method wherein a developer sends a first application binary to a server computer along with a dataset specifying the required mobile services they wish to be integrated into the application binary.*
>
> *14. The server then 'dynamically and automatically' generates a software adapter which adapts the desired plugin software components to the application binary based on a 'position independent dependency and priority scheme' which is used to determine the priorities and dependencies between different plugin software components (i.e. to determine which functions of which plugin software components are loaded first).*
>
> *15. The first application binary supplied by the developer is fused with the binary code of the software adaptor and desired plugin software components*

to generate a second application binary which is transmitted to the development system.

16. The term 'dynamically and automatically' in the claims is construed to refer to the generation of the software adapter in response to the receipt of an application binary and dataset from the development system as opposed to referring in any way to 'dynamic compilation' wherein compilation of the software is linked to the run-time state of the computer system. This is discussed in more detail in paragraph 24 below.

17. The 'position independent dependency and priority scheme' is discussed in detail in paragraphs [0054-0057] of the specification but relate in essence to an ordering scheme (used when compiling or linking object files such that they compile/link in the correct order) which is not dependent on the position of the object files in the compilation/linking stream. By making this scheme 'position independent' it allows for the linked files and functions within the plugin software components to be dependent on one another and adhere to a priority scheme as discussed in paragraphs [0055-0056]."

Step 2 – Identify the actual contribution

17 Paragraph 43 of *Aerotel* suggests that the contribution can be assessed from the point of view of the problem to be solved, how the invention works and what the advantages are, stating *"What has the inventor really added to human knowledge perhaps sums up the exercise"*. Knowledge of the prior art plays a role in assessing the contribution, and as Lewison J noted[4], the examiner should have some notion of the state of the art. This does not necessarily mean however that the contribution is defined by what is new and inventive in the claim.

18 The examiner sets out in the pre-hearing hearing report what they contend the contribution be;

"A computer-implemented method of generating an application wherein a first application binary is received from a development system and a dataset indicating desired features is received from a user. A software adapter is generated for one or more software plugins to the application binary by using a position independent dependency and priority scheme to establish priorities and dependencies between different, fully-compiled, and linked plugin software components.. The position independent dependency and priority scheme comprising the establishment of an ordered list of plugin software components, functions within those components, and a priority for linking and initialising the software components. The list of plugin software components includes establishing an order in which a function call is to be handled by the plugin software components.

[4] AT&T Knowledge Venture/CVON Innovations v Comptroller General of Patents [2009] EWHC 343 (Pat), paragraph 8.

The adapter, plugins, and application binary are fused, without access to the original source code, to create a second application binary which is transmitted to the development system."

This contribution originated from that cited in the exam report dated 12th May 2022, further amended to account for amendments made with the applicant's correspondence dated 11th July 2022. It seems therefore that the examiner and the applicant are in agreement with respect to the contribution at this point, and I have nothing further to add.

Steps 3 and 4 Ask whether it falls solely within the excluded matter and check whether the actual or alleged contribution is actually technical.

19 The third and fourth steps of the Aerotel test involve considering whether the contribution falls solely within excluded categories, and then checking whether the contribution is technical in nature. It is appropriate to consider these two steps together because whether the contribution is technical in nature will have a direct impact on whether it falls solely within excluded matter.

20 Although the contribution is implemented using a computer program running on a network of computers, that does not mean that it should immediately be excluded as a computer program as such. In Symbian[5], the Court of Appeal stated that a computer program may not be excluded if it makes a technical contribution. In order to determine if the contribution is technical in nature I will consider the AT&T signposts as set out in paragraph 12 above.

The first signpost - whether the claimed technical effect has a technical effect on a process which is carried on outside the computer;

21 No arguments have been put forward by the applicant with respect to the first signpost. The examiner has however observed that the invention is carried out entirely within the computer system wherein the computer system is considered to be a network of computers as set out in Lantana[6]. I agree with the examiner and in light of the absence of any contention I can see no reason why the first signpost ought to be considered any further at this point.

22 The second signpost - 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;

23 The applicant, in their letter dated 8th February 2022, draws comparisons between the present invention and HTC v Gemalto[7] referring to paragraphs 300 and 301, which I have copied below, alleging that the present invention enables a computer to execute software that it would not otherwise be able to execute without requiring access to the source code of an input binary executable.

[300] What if anything is the technical contribution to the art made by claim 3? This needs to be considered at the priority date. In this case, whether one

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[5] *Symbian Ltd v Comptroller-General of Patents [2009] RPC 1*
[6] *Lantana Ltd [2014] EWCA Civ 1463*
[7] *HTC Corporation v Gemalto SA [2013] EWHC 1876 (Pat) (10 July 2013)*

is considering the common general knowledge or the individual cited items of prior art the contribution made by claim 3 is the same. It is a microcontroller which can run applications originally written in Java. To achieve this, an interpreter has to be loaded onto the microcontroller as well as application code and the application program itself has to be processed in a new way before being placed on the card.

[301] The only relevant exclusion is Art 52(2)(c) (programs for computers as such). Although software is at the heart of this invention I do not accept the contribution is excluded, for three reasons. First, the invention is a solution to a concrete and technical problem relating to a particular kind of computer chip (microcontrollers). Second, the solution is generally applicable. This is not merely a new program which happens to run on a microcontroller, it is a new way of programming microcontrollers. It is applicable to microcontrollers in general and to Java applications in general. Third the subject matter of the claim, a microcontroller, has a capacity which known microcontrollers did not have. It can run applications written in Java which could not be run on microcontrollers before. In that sense it could fairly be called a "better" microcontroller. "Better" does not necessarily mean inventive. The points I have relied on would not make sense if the claim lacked novelty but they do not depend on the finding of inventive step.

24 The invention of HTC, broadly speaking, concerns; A smart-card microcontroller having a memory on which an interpreter and at least one application is loaded, wherein the application is to be interpreted by the interpreter and where the application is generated by a programming environment using a compiler, such as Java, and a converter which minimizes the output of the compiler for interpretation by the interpreter.

25 In the above paragraphs Birss J gives three reasons why the contribution in HTC was considered technical, and it is the second reason that the applicant relies on.

26 The examiner asserts that the present invention is distinguishable to the system considered in HTC, specifically with respect to the three reasons stipulated by Birss J. Of particular note, the examiner argues that where the invention of HTC related to a microcontroller having new functionality and where technicality was derived from an intrinsic feature that facilitated a new way of programming technical hardware, the present invention relates solely to programming of applications. The examiner concludes that whilst the present invention may be generally applicable, the effect is at the application level which results in a better programme, rather than a better computer system *per se*.

27 At paragraph 300 of HTC Birss J. sets out the technical contribution of HTC which concerns a microcontroller which can run applications originally written in Java, and in order to achieve this the microcontroller must be loaded with an *interpreter* and *an application code* wherein the application program itself is processed in a new way before being placed on to a smart card.

28 Therefore, the invention of HTC includes, at least, an interpreter component that provides some functionality in interpreting the converted file. Considering the present invention wherein a first binary executable and selected dataset is received, a

software adapter is generated, and a second binary executable is produced based on the first application binary executable and an output of the software adaptor. The first binary executable, dataset, software and production of the second application binary executable all find basis in their software rather than any hardware component such as the interpreter of HTC. In the absence of any configuration of hardware components and how these hardware components function with respect to any data input I am able to distinguish the present application from the invention of HTC.

29 Furthermore, any effect, whether the production of a second binary executable, or establishing a list of plugin software components using a position independent dependency and priority scheme is entirely dependent on receiving both the first binary executable and the dataset specifying mobile services. Any effect, therefore, is achieved at an application level rather than a hardware level. Therefore I am unable to identify any technical effect that operates at a level of architecture of the computer as required by the second signpost.

The third signpost - whether the claimed technical effect results in the computer being made to operate in a new way;

30 The third signpost emphasises that the effect must be more than just the running of a programme or application on a general purpose computer; the computer itself must operate differently that it did before as a result of the programme being run.

31 The applicant refers to paragraph 31 of At&T where Lewison J noted that this signpost *"points towards some generally applicable method of operating a computer rather than a way of handling particular types of information"*. The applicant further argues, in earlier submissions, that the present method provides a more flexible methodology for software development over the prior art, where plugin software is incorporated into a binary executable without access to a source code.

32 I acknowledge, as the examiner has done, that this is a new protocol by which to arrive at a second binary executable. However, as previously identified with respect to the first signpost, each element of claim 1 find basis in software rather and how these software products are processed by hardware or influence the operation of a computer system. In my mind, the computer receives a first and second input and provides an output for transmission. The computer system of claim 1 is operating as it did before, albeit running a better programme that it might have done previously.

fourth signpost - whether the program make the computer a better computer in the sense of running more efficiently and effectively as a computer; and

33 The applicant arguments, with respect to the fourth signpost, in their letter dated 19th April 2022 that the present programming method removes constraints of prior art priority schemes that were incompatible with computer hardware making it more likely to crash. Consequently, the applicant alleges that running the present invention makes the computer run more effectively and efficiently. A similar line of argument is submitted in their letter dated 11th July 2022 where the applicant claims that the present invention reduces instances of crashing and improves computer uptime.

34 The applicant's argument is based entirely on the assertion that the present method reduces compatibility issues when ran on existing hardware or negates the intrinsic sensitivities of that hardware when performing complex functions therefore improving runtime during application development.

35 The examiner acknowledges that there may be a reduced likelihood of a computer crashing, or improved uptime, as a result of running the method of the present invention. However, the examiner maintains that this improved functionality is not due to there being a better computer system but merely a better programme being ran on the computer. The examiner further asserts that the computer system is just as likely to crash afterwards, as it was before, running the method of the present invention.

36 It is clear to me, as I have observed with respect to the previous signposts, that the present invention finds basis in software. Furthermore, whilst I appreciate that a computer system may appear to be more efficient whilst running the present invention this is due to the invention providing a better programme and requiring less computing resource to execute. It is well established that a computer programme requiring less processing power to run is not considered to meet the fourth signpost; in this case it is clear to me, and apparently supported by the applicants' arguments, that the programme of the present invention is merely making more efficient use of conventional hardware of a computer system.

The fifth signpost - whether the perceived problem is overcome by the claimed invention as opposed to merely being circumvented.

37 In Lantana Birss J stated *"[i]t makes sense to think of something which is a solution to a technical problem as itself having technical character because it takes that character from the technical nature of the problem to be solved. But if a thing is not solving the technical problem but only circumventing it, then that thing cannot be said to have taken any technical character from the problem."*. Therefore whilst providing a solution to a technical problem an invention may receive some technicality from that solution, if the invention merely circumvents the problem the same cannot be said.

38 There is some contention in regard to the problem at hand. The examiner asserts that the problem resides in maintenance programming of applications across discrete platforms, environments and third-party services. The applicant does not explicitly state what they believe to be the specific problem, but it appears, from their letters dated 19th April 2022 and 11th July 2022, that the problem lies in the prior art programming of an AFP's which compromises the operation of typical hardware as well as hindering the application development cycle.

39 The preamble of the application, as is typical of patent specifications, outlines the problem and the general solution achieved by the invention. Specifically, paragraph [0002], sets out the problem, paragraphs [0003]-[0004] set out the prior art solutions and their limitations, whilst paragraph [0006] sets out the present solution in general terms. Here the application describes a problem relating to integrating mobile applications which have been developed using multiple programming languages on multiple platforms having third party capabilities including enterprise mobility management (EMM), mobile app management (MAP), access (VPN), security, etc.

in discussing the prior art solutions the application discusses problems and disadvantages associated each of software developments kits (SDK's), mobile operating systems and app wrapping. In each case it appears that the problem resides in the integration of discrete software products which have been produced using different platforms and operating environments, and therefore it is arguable that the problem finds basis in the scheme used to integrate these services.

40 If I were to agree with the examiner and acknowledge that the problem resides in the inability of typical computing hardware to integrate across discrete platforms, environments and third-party services then, in the absence of any reconfiguration of the necessary hardware, the use of a more sophisticated programme merely circumvents the problem. in this instance, therefore the present invention would fail the fifth signpost.

41 If I were to agree with the applicant and acknowledge that the problem exists within the prior art software schemes then the solution is exclusively within the software provided and no inherent technicality can be implied from the problem or the solution. In this instance, therefore the present invention would similarly fail the fifth signpost.

Conclusion

42 I find the invention claimed in GB2005530.7 falls solely within matter excluded under Section 1(2) as a program for a computer 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.

Appeal

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

Peter Mason

Deputy Director, acting for the Comptroller