Commissioner's Decision

Computer Related, Sec 2: Detection of Interferences

Claims were rejected in the Final Action for being broad enough to encompase a general purpose computer. Amended claims contain additional means which may be acceptable as a sufficient combination of elements if no art is applied.

Final Action: Amended claims to be considered.

This decision deals with Applicant's request for review by the Commissioner of Patents of the Final Action on application 284,910 (Class 354-233) filed August 17, 1977. Assigned to Honeywell Information Systems Inc. it is entitled APPARATUS FOR THE MULTIPLE DETECTION OF INTERFERENCES. The inventor is Mario G. Trinchieri. The Examiner in charge issued a Final Action on July 23, 1980, refusing to allow the claims. Subsequent to the response to the Final Action, the Applicant submitted a letter of amendment on August 28, 1987.

The application relates to a data processing system having mechanisms and methods for providing protection for the system to carry on its activities with a degree of simultaneity when one or more of the system's resources may be required by more than one activity at the same time. The mechanisms and methods further provide for protection against additional inconveniences, for example, excessive space requirements for temporary storage of uncleared versions of the resources, interference protection of processes in a multiprogramming/multiprocessing environment, and secondary aborts. The application refers to the firmware/hardware implementations of the arrangement of the protection mechanisms by means of block diagrams in various drawings and corresponding texts in the disclosure. The protection mechanism tools include a utilization table per resource, a matrix of relations for each non cleared process, and affected resources lists for mechanisms wishing to use the resources. These tools identify the relationships among the processes in use, and select alternate logical sequences when common resources are demanded by the processes and interferences occur in accessing the resources. The known structures shown by figures 10 to 13 illustrate where the protection mechanism may be applied. Specific descriptions of hardware embodiments are provided for the protection arrangements presented in figures 17a, 17b, 20a and 20b. It

may be seen from the description and the several drawings that the Applicant's arrangements present a combination of interacting components. All the drawings have been reviewed in assessing the subject matter in the application, but for brevity none are reproduced.

In the Final Action, the Examiner rejected the claims for being broad enough to encompass a general purpose computer embodiment referred to in the disclosure. He refuses them for encompassing non-statutory subject matter and for relating only to the program that controls the machines. He further rejects them as follows:

> The applicant is required to restrict the claims to embodiments wherein the novelty lies in the apparatus itself ...

The Applicant emphasizes in his response to the Final Action that the machines of the prior art may be used in practicing his invention. He draws attention to, figure 17a parts 1 and 2, figure 17b parts 1 and 2, figure 20 parts 1 and 2, and figure 20b parts 1 and 2 for a showing of hardware incorporated in his computer structure. The Applicant argues, in part, as follows:

> It should be noted that it is the hardware of Figures 17 and 20 which is incorporated into the prior art computer (shown in part by Figures 9-12) that comprise the invention. Clearly there is no program involved here. Clearly everything that is involved is hardware. All of the claims are either directed to such new and novel hardware or to the method carried out by such hardware. For example, claim 1 specifically recites <u>apparatus</u> comprising a combination of means, i.e. first means for storing coded signals ... and second means coupled to be responsive to said first means for identifying processes whose history of utilization of common information causes interference with a first predetermined process.

and,

> It should be clearly noted that, in this application, neither the processes nor the programs of the computer are disclosed or claimed either directly inferentially, nor are they necessary to practice the invention. Clearly what is disclosed and claimed is an <u>addition of hardware and logic circuitry to a prior art computer which forms a new hardware combination for processing information in a new and novel way</u>.
>
> The invention pertains to addition of hardware to a prior art computer to provide a new and unobvious combination that has new and unobvious results as disclosed and claimed.

The issue before the Board is whether or not the claimed subject matter is directed to a patentable art area of invention within the meaning of Section 2 of the Patent Act. Amended claim 1 reads:

> In a multiprogramming/multiprocessing computer system for executing a plurality of processes sharing common information, an apparatus for identifying first processes of said plurality of processes which would interfere with a second process of said processes which is executing on said computer system when said second process accesses the common information, said apparatus comprising:
>
> (a) first means for storing first coded signals indicative of the history of utilization of the common information by any one of said plurality of processes;
>
> (b) second means for identifying third processes which sequentially follow said second process for execution on said computer system;
>
> (c) third means, coupled to said second means, for storing second coded signals which identify said third processes;
>
> (d) fourth means, coupled to said first and third means, for comparing said first coded signals with said second coded signals; and
>
> (e) fifth means, coupled to said fourth means for indicating which first processes of said third processes would interfere with said second process executing on said computer system.

In assessing the computer-related subject matter of this application, we find direction from the comments provided by Pratte, J. in Schlumberger Canada Ltd. v. The Commissioner of Patents (1981) 56 C.P.R. 204, as follows:

> In order to determine whether the application discoses a patentable invention, it is first necessary to determine what, according to the application, has been discovered.

and,

> I am of opinion that the fact a computer is or should be used to implement discovery does not change the nature of that discovery. What the appellant claims as an invention here is merely the discovery that by making certain calculations according to certain formulae, useful information could be extracted from certain measurements. This is not, in my view, an invention within the meaning of Section 2.

We see in Applicant's amended claims 1 to 14 submitted August 28, 1987, a combination of apparatus including firmware and hardware. It enables multiple processes to use common resources by using various means which interact to identify those processes that would cause interference with a

certain process when information is sought from a common source. We are persuaded by the application and by Applicant's arguments that the amended claims are directed to more than making calculations and are related to an invention within the meaning of Section 2.

In determining what components form the Applicant's combination, we find a clear discussion of his appreciation of the entities forming the invention in his response of June 13, 1980, in part, as follows:

> ... In order to appreciate this, however, it is necessary to clearly identify such entities as "plurality of processes", "first processes", "second process" and "third processes". The terms may be better understood by considering the pictorial description set out in the attached SKETCH A.
>
> > "plurality of processes" includes all processes in the computer system. Example: those in the area inside the external circle in the figure.
> >
> > "second process" is a specific process of that plurality. Example: the dot in the figure.
> >
> > "third processes" is the subset of said plurality including all processes "which follow" said second process. Example: those in the area inside the intermediate circle in the figure.
> >
> > "first processes" is the subset of the "third processes" including those of said third processes which "would interfere" with said second process. Example: those in the area inside the inner circle.
>
> A main purpose of the invention is to identify the "first processes" corresponding to a given "second process".
>
> According to claims 2 and 3 this identification is accomplished in two steps, taking advantage of the fact that the "first processes" are a subset of the "third processes". First, the "third processes" are identified (claim 2 refers to this part of the operation), then, the "first processes" are identified among the "third processes" (claim 3 encompasses the entire operation).
>
> This is why claim 2, after having mentioned as the main purpose of the apparatus the identification of the "first processes", describes means which lead to the identification of the "third processes", and only when the "fifth means" of claim 3 are also considered, the "first processes" are identified.

In view of the description provided by Applicant's specification, and his arguments of June 13, 1980, we find that the amended claims, by including

the fifth means, may be acceptable as a sufficient definition of the combination of elements that achieves the main purpose of the invention, namely the identification of which of a number of processes interferes with another process in accessing information from a common source.

While it may be that the amended claims 1 to 14 are acceptable under Section 2 and contain sufficient components to define the invention, we are aware, and as Applicant notes, no art has been cited. We make no finding of patentability therefore.

In summary, we recommend that the refusal of the claimed subject matter under Section 2 be withdrawn, and that the application be returned to the Examiner for prosecution consistent with the recommendation.

M.G. Brown
Acting Chairman
Patent Appeal Board

S.D. Kot
Member

I concur with the findings and the recommendation of the Patent Appeal Board. Accordingly, I withdraw the rejection of the claimed matter under Section 2 of the Act, and I remand the application in its amended form to the Examiner for normal prosecution.

J.H.A. Gariépy
Commissioner of Patents

Dated this 16 day of November 1987
Hull, Quebec.

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