COMMISSIONER'S DECISION

S2 Computer Related Subject Matter: Data Processing System Applicant's system of registers, timing chain headers, and means to interconnect the components to release signals to permit sequential operation and avoid suspension of operation was found acceptable. No hearing deemed necessary. Rejection of application withdrawn.

This decision deals with Applicant's request for review by the Commissioner of Patents of the Final Action on application 319,883 (Class 354-231) filed January 18, 1979. Assigned to Plessey Handel und Investments Ag, it is entitled REAL-TIME DATA PROCESSING SYSTEM FOR PROCESSING TIME PERIOD COMMANDS. The inventor is Peter Fox. The Examiner in charge issued a Final Action on December 22, 1981 refusing to allow the application.

The application relates to data processing systems such as telecommunication switching systems where a process may be suspended for a certain time period, for example, a dialled digit process may be suspended for a period after reception of each digit. The number of suspended processes at any one time in such systems is often large. The invention provides a grouping of devices to arrange all the suspended or "wait-for" commands into a list and provides either a means to restart the processes when the wait-for commands come due according to their position on the list, or, a means that responds to an external event that occurs before the waiting period matures and causes the process to be removed from the wait condition. The stacks containing the information relevant to the waiting processes are chained together in the order they are suspended as shown in figure 7. Pointers connect the stack segments with the timing chain header segments. All the timing chain headers are inter-linked as shown in figure 8 whereby the lists of all the segments of the headers may be accessed in sequence. Included in the system is a timing chain monitoring process that scans the timing chain headers, ascertains those suspended processes which are to be removed, and computes the next run based on the information in the headers.

Figures 7 and 8, reproduced below, show certain elements which function with the stacks, registers, and other components of the system described and shown in the overall combination in figures 1A and 1B. These elements enable suspended processes to be reincluded into the system operation.



In Making his rejection under Section 2, the Examiner said, in part, as follows:

The applicant has disclosed a process to be carried out on a prior art computer (see page 5 line 24 of the disclosure). No new apparatus has been disclosed. As such the claims are contrary to the guidelines set out in the Commissioner's decision published on pages xviii to xxvi of the CPOR of August 1, 1978.

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To overcome the rejection, therefore, applicant must show that the process carried out by the computer is an invention within the meaning of Section 2. The fact that the claims are in terms of a system rather than a process does not alter this requirement in view of the Schlumberger judgement which, as noted above, established the principle that: "the fact that a computer is used to implement discovery does not change the nature of that discovery".

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The Applicant responded to the objections, in part, in the following terms:

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With respect to claims 1 to 11 of the present application, applicant's system, or apparatus claims, define the applicant's invention in terms of a combination of means, and accordingly the objection that the application discloses no new apparatus and that the invention disclosed is a process, to be carried out on a prior computer, seems to be totally in error. The Examiner has referred to the specification at page 5, line 24. Looking at the paragraph beginning at line 4 of page 5 it will be seen that what the applicant is describing there, and what he is referring to at line 24 of page 5 has to do with a central processor unit which would be suitable for use in the data processing system defined in the applicant's claims. In the sentence ending at line 24, the applicant mentions that this unit may be organized on the so-called capability register structure and the applicant refers to a British patent specification which discloses such organization. Nowhere does the applicant specify that the present invention is a process carried out on a prior art computer.

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With respect, the Examiner is clearly wrong in suggesting that the guidelines set forth in the August, 1978 issue of the Canadian Patent Office Record may have received support in the pronouncements of the Courts of Canada. . . There is no specific reference in the Judgement of Pratte J. to the Canadian Patent Office Record of August 1st, 1978, or to the specific guidelines contained in that issue of the Patent Office Record. Applicant maintains, and the fact is, that these guidelines are totally arbitrary and devoid of any authority pursuant to the Patent Act or any of the reported decisions of the Federal or Exchequer Courts of Canada interpreting the Patent Act.

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.... The last paragraph of the Reasons for Judgement does not read as set forth in the Office Action. (It) begins on page 205, 56 CPR 2(d), and is of sufficient significance that it should be read in its entirety. The contents of this paragraph will not be repeated here since the entire Judgement accompanies this response. To extract from this last paragraph, the meaningful portion thereof, the sentences beginning at the first line of page 206, should be considered

"what is new here is the discovery of the various calculations to be made and of the mathematical formulae to be used in making those calculations. If those calculations were not to be effected by computers but by men, the subject-matter of the application would clearly be mathematical formulae and a series of purely mental operations; as such, in my view, it would not be patentable." The learned Judge concluded that in the Schlumberger case the discovery was merely a series of mathematical formulae and that mathematical formulae as such, are scientific principles or abstract theorems, and therefore prohibited under Section 28(3) of the Act. The Judge, then concluded, that because such formulae were prohibited pursuant to Section 28(3) that the invention was not an invention within the meaning of Section 2.

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.... All telephone systems in operation in Canada at the present time, are in fact, complex digital processor controlled switching systems making use of extensive digital techniques both to transmit voice signals, and to carry digital data and digital signalling information. Virtually, every long distance telephone call in Canada is now made through systems which transform the voices of the persons carrying on the conversation into digital data and then transmits such voice signals via digital processors and data links from one location to another, reconstructing the voice signals from the digital information at the receiving terminal. As taught in the present application, the applicant's invention has particular utility in telecommunications switching systems.

The issue before the Board is whether or not the application and the claims are directed to patentable subject matter in view of Section 2 of the Patent Act. Claim 1 reads:

> A system for controlling the execution of suspended processes in a real-time data processing system, said processes being suspended for predetermined time periods upon the data processing system, executing a subroutine, encountering a wait-for time period command, each said command specifying one of a plurality of predetermined time periods, the system including a memory for storing information relevant to the processes, and at least one processor unit arranged to perform the processes, each process being provided with an information segment in the memory for holding working parameters for the process when the process is suspended, the information segment including (i) an indication of the time when the wait-for time period is due to mature for that process, and (ii) information segment linking information forming the information segments of all the processes which are suspended by commands having the same particular time period into a first linked list arranged in chronological order in which the processes are suspended, the first linked list being also linked to a timing chain header segment stored in the memory and exclusively allocated to the said particular time period, the timing chain header segment storing a wakeup value indicative of the time when the wait-for time period for the first information segment on the first linked list will mature, and each timing chain header segment including header linking information forming the timing chain header segments into a second linked list, and the memory also including a ready to run file having one entry for each process which is ready to be run by the processor unit, the system implementing a timing chain search procedure which is arranged to be run when the real-time reaches a predetermined value, wherein the timing chain search procedure includes

(a) reading the wake-up values in each of the timing chain header segments,
(b) comparing the wake-up values read with the time at which the timing chain search procedure is run,
(c) placing those process having wake-up values
which equate to the time at which the timing chain search procedure is run on the read to run file,
(d) removing those processes having wake-up values
which equate to the time at which the timing chain search procedure is run from the read to run file,
(d) removing those processes having wake-up values
which equate to the time at which the timing chain search procedure is run from the first linked lists, and adjusting the wake-up values in the relevant timing chain header segments, and
(e) reading the wake-up values of each timing chain header segment and selecting the smallest wake-up

During prosecution both the Examiner and the Applicant have looked to the decision in <u>Schlumberger Canada Ltd. v. The Commissioner of Patents</u> (181) 56 C.P.R. 204. We find guidance in determining the issues before us, in the following passages by Pratte, J. from that decision:

value to provide the next predetermined value.

In order to determine whether the application discloses 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.

In assessing Applicant's subject matter, we are persuaded that the 'what' of Applicant's device is a grouping of elements in a switching system which provides a queuing of processes awaiting operation and a sequencing of their acceptance into the system. To bring about his operation, Applicant has arranged a system using registers containing stacks of information, and timing chain headers, for example, as well as various means to interconnect all the components of the system that act to store and release signals which permit various processes to be carried out sequentially. We see too, special processes work with the arrangement described in order to permit an external event to release a process that is queued, or chained in sequence, for operation before its time sequence would permit. We feel that Applicant's combination of elements represents a type of subject matter that falls within a patentable field of art. In Applicant's response he brings to light that his combination has utility in a telecommunications switching system. The Examiner for his part is aware that a system is being claimed, and points out that in his view no new apparatus has been disclosed. Even given that the parts of Applicant's device are old, the overriding consideration here is whether or not Applicant's arrangement of them has provided a combination of structures to bring about a device that falls within the confines of Section 2. We are persuaded by the disclosure and Applicant's arguments that his arrangement provides a system that is acceptable under Section 2. We note that no art has been cited during the prosecution, and we make no finding on the allowability of the claimed matter. Should such an issue arise, then a Hearing might prove to be necessary.

We recommend the rejection of the application and the claims for failing to satisfy Section 2 of the Act, be withdrawn.

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 refusal of the application, and return it for continued prosecution.

J.H.A) Gariépy Commissioner of Patents

Dated at Hull, Québec this 14th day of August 1986

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