TOPIC: J–00   Meaning of Art
            J–50   Mere Plan

SUJET: J–00   Signification de la technique
            J–50   Simple plan

IN THE CANADIAN PATENT OFFICE

DECISION OF THE COMMISSIONER OF PATENTS

Patent application number 2857912, having been rejected under subsection 30(3) of the *Patent Rules* (SOR/96–423) as they read immediately before October 30, 2019, has subsequently been reviewed in accordance with paragraph 199(3)(c) of the *Patent Rules* (SOR/2019–251). The recommendation of the Patent Appeal Board and the decision of the Commissioner are to refuse the application.

Agent for the Applicant:

BORDEN LADNER GERVAIS LLP
Bay Adelaide Centre, East Tower
22 Adelaide Street West
Toronto, Ontario
M5H 4E3

INTRODUCTION

[1]   This recommendation concerns the review of rejected patent application number 2857912, which is entitled "Exchange for Physicals" and is owned by Liffe Administration and Management. The outstanding defect indicated by the Final Action (FA) is that the claims do not define statutory subject matter, contrary to section 2 of the *Patent Act*. The Patent Appeal Board (the Board) has reviewed the rejected application pursuant to paragraph 199(3)(c) of the *Patent Rules* (SOR/2019–251). As explained below, my recommendation is to refuse the application.

BACKGROUND

The application

[2]   Canadian patent application 2857912 was filed on July 30, 2014 and has been open to public inspection since February 1, 2015.

[3]   The invention relates to exchange of futures for physicals (EFP) transactions, particularly to the provision of new products and trading strategies based on EFP transactions.

Prosecution history

[4]   On November 21, 2017, an FA was issued pursuant to subsection 30(4) of the *Patent Rules* (SOR/96–423) as they read immediately before October 30, 2019 (the former *Rules*). The FA indicated the application to be defective on the ground that claims 1 to 28 (i.e. all claims on file) are directed to subject matter outside the definition of invention and thus do not comply with section 2 of the *Patent Act*.

[5]   In its May 11, 2018 response to the FA (RFA), the Applicant submitted arguments as to why the claims on file do comply with section 2. The Examiner was not persuaded by the Applicant's arguments to withdraw the rejection.

[6]   Therefore, pursuant to subsection 30(6) of the former *Rules*, the application was forwarded to the Board for review on behalf of the Commissioner of Patents. On June 29, 2018, the Board forwarded to the Applicant a copy of the Examiner's Summary of Reasons along with a letter acknowledging the rejection.

[7]   The undersigned was assigned to review the rejected application and make a recommendation to the Commissioner as to its disposition. Following a preliminary review, a letter was sent on May 8, 2020 (the PR letter) explaining why I did not consider the claimed subject matter to be patentable. In its response to the PR letter (RPR) on June 8, 2020, the Applicant proposed an amended set of 28 claims and submitted arguments for their patentability.

[8]   *Choueifaty v Canada (AG)* 2020 FC 837 [*Choueifaty*] issued on August 21, 2020, prompting a review of Patent Office practice, and the subsequent issuance of "Patentable Subject-Matter under the *Patent Act*" (CIPO, November 2020) [*PN2020–04*]. Therefore, I conducted a supplemental review, taking into consideration the guidance of *Choueifaty* and *PN2020–04*, and the submissions of the RPR.

[9]   Following my supplemental review, I sent a letter on February 9, 2021 (the SR letter) explaining why, based on the record before me, I considered the claims on file to define unpatentable subject matter, falling outside section 2 of the *Patent Act* and prohibited by subsection 27(8) of the *Patent Act*. The SR letter also invited the Applicant to make submissions in response to the letter, and asked if the Applicant wished to participate in a hearing.

[10]   The Applicant responded to the SR letter on March 9, 2021 with a letter (RSR) requesting the case to be returned to examination for a new final action, proposing a new set of amended claims (the second proposed claims), providing arguments for their patentability and requesting a hearing. The hearing was held April 22, 2021; there, the Applicant reiterated its interest in the second proposed claims and further articulated its position regarding their patentability.

ISSUES

[11]   First, the preliminary issue of whether this application should—or even could—be returned to examination is addressed.

[12]   Next, this review addresses the issue of whether the claims on file define subject matter falling outside the definition of invention in section 2 of the *Patent Act* and prohibited by subsection 27(8) of the *Patent Act*.

[13]   The review then addresses whether the second proposed claims would constitute
         necessary amendments under subsection 86(11) of the *Patent Rules*.

LEGAL PRINCIPLES AND PATENT OFFICE PRACTICE

Final actions

[14]   Subsection 30(4) of the former *Rules* states:

> Where an examiner rejects an application, the notice shall bear the notation "Final Action" or
> "Décision finale", shall indicate the outstanding defects and shall requisition the applicant to
> amend the application in order to comply with the Act and these Rules or to provide
> arguments as to why the application does comply, within the six-month period after the
> requisition is made or, except in respect of Part V, within any shorter period established by
> the Commissioner in accordance with paragraph 73(1)(a) of the Act.

[15]   Subsection 30(6) of the former *Rules* states:

> If the applicant amends the application or provides arguments within the time referred to in
> subsection (4) but, after the expiration of that time, the examiner does not have reasonable
> grounds to believe that the application complies with the Act and these Rules,
>
> > (a) the Commissioner shall notify the applicant that the rejection has not been withdrawn;
> >
> > (b) any amendments made within the time referred to in subsection (4) shall be
> > considered not to have been made; and
> >
> > (c) the rejected application shall be reviewed by the Commissioner.

Purposive construction

[16]   In accordance with *Free World Trust v Électro Santé Inc*, 2000 SCC 66 and *Whirlpool
         Corp v Camco Inc*, 2000 SCC 67, purposive construction is performed from the point of
         view of the person skilled in the art in light of the relevant common general knowledge
         (CGK), considering the whole of the disclosure including the specification and drawings.
         In addition to interpreting the meaning of the terms of a claim, purposive construction
         distinguishes the essential elements of the claim from the non-essential elements.
         Whether or not an element is essential depends on the intent expressed in or inferred from

the claim, and on whether it would have been obvious to the skilled person that a variant has a material effect upon the way the invention works.

[17] *PN2020–04* also discusses the application of these principles, pointing out that all elements set out in a claim are presumed essential unless it is established otherwise or such presumption is contrary to the claim language.

Patentable subject matter

[18] The definition of invention is set out in section 2 of the *Patent Act*:

> *invention* means any new and useful art, process, machine, manufacture or composition of matter, or any new and useful improvement in any art, process, machine, manufacture or composition of matter.

[19] Subsection 27(8) of the *Patent Act* also prescribes that:

> No patent shall be granted for any mere scientific principle or abstract theorem.

[20] In *Canada (Attorney General) v Amazon.com Inc*, 2011 FCA 328 at paras 61–63, 69 [*Amazon.com*], the Federal Court of Appeal explained that simply realizing an abstract business method by programming it into a computer by means of a formula or algorithm—itself an abstract idea—does not make it patentable subject matter.

[21] *PN2020–04* describes the Patent Office's approach to determining if a claim is patentable subject matter:

> To be both patentable subject-matter and not be prohibited under subsection 27(8) of the *Patent Act*, the subject-matter defined by a claim must be limited to or narrower than an actual invention that either has physical existence or manifests a discernible physical effect or change and that relates to the manual or productive arts, meaning those arts involving or concerned with applied and industrial sciences as distinguished in particular from the fine arts or works of art that are inventive only in an artistic or aesthetic sense.

[22] *PN2020–04* further describes the Patent Office's approach to determining if a computer-related invention is patentable subject matter. For example, the mere fact that a computer is among the essential elements of the claimed invention does not necessarily mean that the claimed invention is patentable subject matter. An algorithm itself is abstract and

unpatentable subject matter. A computer programmed to merely process the algorithm in a well-known manner without solving any problem in the functioning of the computer will not make it patentable subject matter because the computer and the algorithm do not form part of a single actual invention that solves a problem related to the manual or productive arts. On the other hand, if processing the algorithm improves the functionality of the computer, then the computer and the algorithm would together form a single actual invention that solves a problem related to the manual or productive arts and the subject matter defined by the claim would be patentable.

ANALYSIS

Final actions

[23]   In the RSR, the Applicant objected to the very issuance of the SR letter, requesting instead a new final action or other examiner`s requisition. The Applicant argued that *Choueifaty* and *PN2020–04* show the legal basis upon which the FA (and preceding requisitions) are based is invalid; accordingly, the Applicant never received a valid FA prior to this PAB review of the case, and has thus been denied procedural fairness:

> Accordingly, the Applicant submits that the legal test and analysis used to object to, then eventually reject, the claims in each of the Office actions of this application, is improper and non-compliant with Canadian Supreme Court of Canada jurisprudence, and the Office's guidance. The process currently being undertaken by the Board does not provide the Applicant with the original proper notice of the alleged defects in the application in accordance with Rule 86(2) of the *Patent Rules*, nor does it provide the Applicant with the procedural fairness afforded by Rules 86(5). As a result, the Applicant rejects the validity of the Patent Office's process of issuing its Supplemental Review Letter, and requests that a notice issued under Rule 86, raising a legally valid basis for objection, be first sent to the Applicant.

> …

> Accordingly, for at least the reasons set forth above, the Applicant submits that the very issuance of the Supplemental Review Letter violates the *Patent Act* and the *Patent Rules*, by improperly disposing of the Examiner's obligation to issue a legally valid Office action under Rule 82 outlining the application defects and providing the Applicant with [its] statutory right to respond in accordance with a specific process, prior to the Patent Appeal Board undertaking its review.

[24]   *PN2020–04* was developed after, and takes into account, *Choueifaty*. It explains the Patent Office's new practice; it does not void all final actions and requisitions following past practices. Nor does it undo the requirements of the *Patent Rules*.

[25]   Here, the FA issued according to subsection 30(4) of the former *Rules*, the prescribed time period passed, the conditions of subsection 30(6) of the former *Rules* were fulfilled, and its corresponding prescriptions were applied. There is no mechanism in subsection 30(6) of the former *Rules* for returning an application to the examiner for another requisition once the review specified by paragraph 30(6)(c) of the former *Rules* has begun.

[26]   The principle of procedural fairness has also been followed. In addition to the opportunities to respond to the FA and the PR letter, the Applicant has also availed itself of the opportunities provided, subsequent to the publication of *PN2020–04*, to respond to the SR letter and to participate in a hearing.

Purposive construction

The skilled person and the relevant CGK

[27]   The SR letter cited the following references as relevant to the determination of the CGK. The Applicant had identified both references to the Examiner as having been cited or made of record during the prosecution of corresponding foreign applications.

- D1:   US 2009/0125434   May 14, 2009   Mikulecz
- D2:   US 2011/0078090   March 31, 2011   Peterffy

[28]   The PR letter characterized the notional skilled person as a team comprising a financial trading professional and a programmer or other technologist experienced with developing and providing the software, tools and infrastructure conventionally used to support the activities and designs of such professionals.

[29]   The Applicant, in the RPR, agreed with this characterization but further specified:

> In fact, not just any computer professional will suffice; only one that is expertly skilled in software and network infrastructures and communications will be sufficiently qualified. Indeed, the computer professional is needed to construct and program new computer modules that automatically perform certain computer functions in response

to other functions, and automatically receive current data over a network to trigger the newly-created modules to perform other automated functions.

[30] As noted in the SR letter, this further specification appears reasonable; I agree with it and consider it to be part of the characterization of the skilled person.

[31] Based on the above identification of the skilled person, and supported by what the present description (paragraph 2), D1 (paragraphs 2 to 4) and D2 (paragraphs 4 to 13) describe as generally known or conventionally done in the field, the SR letter identified the relevant CGK as including:

- trading schemes and financial instruments, including those involving:
    o both exchange-based trades and over-the-counter (OTC) trades; and
    o futures contracts and EFP transactions;
- the design, implementation, operation and maintenance of computer systems, networks and software, including:
    o host exchanges and electronic trading systems;
    o general purpose and special purpose computers, computing devices, processors and user interfaces; and
    o computer network and internet technologies and protocols; and
- the recognition that advantages can be seized by using computers, software, modern communications infrastructure, etc. to automate or computerize calculations or steps in administrative procedures.

[32] As noted in the PR letter, the small amount of detail in the present description (e.g. paragraphs 9 to 13, 16, 20, 21, 28 and 34; figures 1 to 4) concerning the computerization of the various procedures and calculations to be performed also suggests that such computerization must be within the grasp of the skilled person, and thus not in need of further explanation.

[33] The Applicant agreed in the RPR with the identification of the skilled person but not with the consequent identification of their CGK:

A 'common' computer programmer is not sufficiently skilled to design, maintain and operate the Applicant's automated system, particularly in the realm of electronic trading systems. As will be appreciated, designing and operating systems in electronic trading environments require a highly specific and advanced level of expertise that goes well beyond even what any experienced programmer would consider 'common.'

…

> In addition to the foregoing, integrating the Applicant's fully-automated functions (that include capturing current market information) certainly adds to the complexity and level of skill needed to design, operate and maintain the Applicant's claimed invention. Surely, these skills go well beyond the skills of a common programmer and the elements claimed are well outside the common general knowledge of the person skilled in the art would.

[34] As explained in the SR letter, the reason a notional skilled person is identified is to be able to identify the relevant CGK, which in turn, is used in purposive construction. The skilled person is the addressee of a patent application, and is expected to be able to practise the disclosed and claimed invention; see e.g. *Manual of Patent Office Practice* (CIPO) at §§12.02.02b and 14.02.02, revised June 2015 and October 2019. Depending on the relevant field, they may be presumed to have expert-level knowledge and skills.

[35] The Applicant has submitted that to design and operate a system like this invention would require "a highly specific and advanced level of expertise." That to practise this invention, the skilled person or team must include a computer professional "that is expertly skilled in software and network infrastructures and communications" and who is able "to construct and program new computer modules that automatically perform certain computer functions in response to other functions, and automatically receive current data over a network to trigger the newly-created modules to perform other automated functions." By definition, this means that such capabilities must be within the skilled person's CGK.

[36] In fact, if such capabilities were *not* within the CGK of the skilled person, the disclosure of this application would be insufficient to enable the claimed invention, given the above-mentioned small amount of detail concerning computerization and automation.

[37] Furthermore, as remarked in the SR letter, these capabilities and CGK complement the above agreed-upon characterization of the skilled person and the above references to conventional practice found in the description, in D1 and in D2.

[38] Additionally, the SR letter noted that the RFA provided a definition of "straight-through processing" (STP) that is helpful to refer to here: the CGK would also include systems with STP capability, that is, systems with the ability to conduct an entire transaction process electronically without the need for re-keying or manual intervention. The CGK

would not extend to STP for EFP transactions, however—although it was CGK that EFPs may be traded OTC (as noted in paragraph 2 of the description), such trades inherently required direct negotiation between parties (or their brokers) and thus could not avoid manual intervention.

[39] The Applicant did not comment on the skilled person or their relevant CGK in the RSR or at the hearing. Accordingly, I adopt the above definitions of these concepts here.

The essential elements

[40] The two independent claims—claims 1 and 15—are directed to the performance of an EFP transaction, where claim 1 is in the form of a method and claim 15 is in the form of a system. Claim 1 is representative of the invention:

> Claim 1.   A method for performing an exchange for physicals (EFP) transaction as part of a straight-through (STP) procedure, comprising:
>
> > receiving, by a matching engine module of an electronic exchange in communication with a processor, EFP data comprising an amount of securities to be traded and a price;
> >
> > automatically activating, by the matching engine module, a price allocation module having specialized computer-readable instructions executed by a processor to cause the price allocation module to perform the functions of:
> >
> > > calculating a first delta percentage between the EFP data and an index based on the amount, the price, and an index value;
> > >
> > > calculating a residual delta based on the first delta percentage and an index notional value; and
> > >
> > > attributing the residual delta to the securities to form modified EPF data;
> >
> > generating, by the matching engine module, at least one EFP transaction based on the modified EFP data responsive to the price allocation module forming the modified EFP data, each of the at least one EFP transaction comprising a futures leg and a cash leg; and
> >
> > automatically executing and settling the futures leg and the cash leg of each of the at least one EFP transaction as part of the straight-through processing (STP) procedure.

[41] Claim 15 is very similar to claim 1, only different in that it expresses the subject matter in the form of the computerized system for performing the EFP transaction, as opposed to

the computerized method for doing so. Dependent claims 2 and 16 recite the receipt of EFP data via a network, and dependent claims 3 to 14 and 17 to 28 recite further details pertaining to the calculations performed involving component security weights, quantities, index values and deltas.

[42]   As stated in the SR letter, there is nothing in the claim language or on the record leading to a determination of any claimed elements being non-essential.

Patentable subject matter

[43]   It was submitted in the FA that the essential elements of the claims on file are directed to a scheme, plan, set of rules or mental steps, having purely intellectual meaning, and thus unpatentable. The Applicant disagreed, submitting in the RFA that the claimed invention is technological in nature, includes technical features and physical steps to achieve a practical result, and manifests a discernible effect or change.

[44]   The Applicant repeated these submissions in the RPR, the RSR and at the hearing, the RSR adding that the claimed invention improved the functioning of a computer. At the hearing, the Applicant submitted that the computerized, electronic environment is itself the source of the problems to be solved. The RPR described the problem being addressed by the claimed invention as the inability of existing electronic systems to provide STP of EFP transactions, due in part to their reliance on human input. The proposed solution, submitted the Applicant, is the provision of a novel mechanism including matching engine and price allocation modules, eliminating the need for human input and enabling full automation of EFP transactions.

[45]   As the SR letter explained, the application (paragraph 2) states that OTC trading of EFPs is known, as is the reporting of the futures leg of the contract with reference to a cash leg, but there is "a need for new products and strategies that provide a more comprehensive EFP solution, and that expand EFP transactions into new markets." To fulfil this need, the application (paragraphs 3 and 9) proposes the provision of an exchange or market for EFPs, where EFP transactions are based on an index and the value of an EFP is expressed in terms of index points. The claimed inventions embody the performance of such EFP transactions.

[46] As noted above, although STP belonged to the CGK, STP for EFP transactions did not, because, as OTC transactions, EFP transactions require negotiation between the two parties (or their brokers) and settling of the details of the transaction. Thus, human interaction is inherent to the process.

[47] Index-based transactions also belonged to the CGK, but not, based on the record before me, index-based *EFP* transactions. This is what the application proposes: a scheme whereby EFP transactions are index-based. Such a scheme—since it is not based on interparty negotiation like OTC trading—is capable of automation and STP. STP and automation are not the focus of the application, however.

[48] The application (paragraph 34) refers only once to STP, where it says that the described index-based EFP trading solution "*may* include a fully automated straight-through processing solution [emphasis added]." It does not say it is necessary to the invention, or attempt to teach how such automation should be achieved.

[49] The Applicant submitted in the RPR that the language of the description should not be interpreted as meaning computerization is optional. STP is an example of automation, submitted the Applicant, but does not preclude other examples; the claimed invention relies on automation and computerization and would not otherwise be effective. In the RFA, and elsewhere in the RPR, the Applicant submitted that the claimed invention enables the automation of EFP transactions by addressing technological deficiencies in existing systems, and provides many improvements over conventional electronic EFP systems, by its introduction of the matching engine module and price allocation module. A key feature of the fully-automated functions, added the Applicant in the RPR, is the ability to capture, via the matching engine module over a network, current market information.

[50] The Applicant expanded on this argument in the RSR. The submission here was directed to the second proposed claims, but is still relevant to the current consideration:

> Said another way, one source of the improvement realized by the claimed invention lies in its ability to capture live market data fluctuations, and generate EFP transactions that reflect those live market data fluctuations. Support for the these features, as recited in Claims 1 and 15, may be found, for example, at paras. [0003], [0014]–[0016], [0020] and [0034]. As any person of skill in the art will acknowledge, these added capabilities constitute a significant advancement in this field.

[51]   Although the application (paragraph 12; figure 1) indicates that the EFP system involves a network, it does not directly refer to the capture of live market data fluctuations or show how the matching engine module would enable it. As explained in the SR letter, the application (paragraphs 12 and 14) characterizes the matching engine module as comprising computer-readable instructions for causing "the exchange computer to perform various functions described herein." It is not depicted in the drawings, it is introduced as something the exchange computer "may include," and which ultimately may not be crucial to the invention: "it should be understood that other priority and/or matching rules, or no priority and/or matching rules, may be utilized in accordance with the present disclosure."

[52]   Nor does the application show how price allocation module would enable the capturing of live market data. According to the application (e.g. paragraphs 16, 20, 26 and 28; figures 3 to 4), the price allocation module may comprise computer-readable instructions for determining and calculating the cash prices and quantities for each constituent stock security; it comprises the rules for calculating and allocating EFP prices, based on the index. There is no discussion of how market data is captured via the network.

[53]   During the hearing, the Applicant clarified that means for capturing live market data via a network (referred to during the hearing as "market surveillance," to use the expression from the second proposed claims), though important for engaging the electronic exchange environment, is not necessarily novel, and that "there are lots of things that continuously survey markets."

[54]   In the RSR, the Applicant took such reasoning as included above as arguments that the matching engine and price allocation modules were not essential elements. Although, in general, this sort of reasoning could certainly be relevant during the purposive construction of a claim, it has already been stated in the present case that all the claimed elements are taken as essential.

[55]   The application does not refer to any problem of automation or computerization. It does not refer to any challenges in implementing the index-based EFP trading scheme or in computerizing the requisite calculations. In fact, the automated capture of current market information and the computer implementation of the disclosed index-based EFP trading scheme are not enabled by the description but by the CGK. As noted above, in the identification of the skilled person and the CGK, it is up to the skilled person to create the

computer modules for automatically receiving data over the network and performing automated functions. The application does not profess to teach an invention of which the computer or network implementation would require more from the skilled person than their CGK would provide.

[56] In the RSR, the Applicant characterized the above reasoning as the "problem–solution approach" of past practice. The above reasoning is not being employed in a purposive construction (as noted above, all the claimed elements are taken as essential), but in an attempt to discern the nature of the computer-implemented scheme or algorithm here.

[57] The Applicant also contended in the RSR that such matters relate to novelty and obviousness, not the question of patentable subject matter. Although such circumstances can indeed determine questions of novelty and obviousness, they are also important for determining the actual invention. If a computer is merely being used in a well-known manner to process an algorithm, without solving a problem in the functioning of the computer, it does not form a single actual invention with the algorithm. Since the application does not mention how to capture live market data, instead leaving the conception and implementation of capable means to the skilled person relying on only their CGK, the submission of the RSR that "such capability represents a significant advancement in this art and in the way conventional systems in this art operate" becomes untenable. Nor do the description and drawings focus on the computer implementation of the index-based EFP trading scheme. The computer here is being used in a well-known manner; it is not part of the single actual invention.

[58] The disclosed rules and calculations are not seen as an improvement or adaptation of OTC EFP processes permitting their automation; nor as "addressing technological deficiencies that prevent existing systems from fully automating certain types of transaction processing," as the Applicant characterized it in the RPR. They are instead seen as the proposal of another type of EFP process or transaction, one with different goals and outcomes than those for OTC EFP transaction processing, and one that would be capable of automation, given the CGK of the skilled person. The proposed scheme and rules for index-based EFP transaction processing represent a new abstract business method, which may then be realized by programming it into a computer using the CGK of the skilled person. The computer is processing the method in a well-established manner, with expected results, and without the method improving the functioning of the computer processing it.

[59]   Accordingly, in representative claim 1, any computer programmed to realize the abstract idea of performing index-based EFP transactions is merely a computer programmed to process this abstract algorithm or abstract business method in a well-established manner; processing the algorithm so does not solve any problem in the functioning of the computerized equipment.

[60]   As shown above, such a claimed invention is unpatentable subject matter and prohibited by subsection 27(8) of the *Patent Act*.

[61]   The same reasoning and determination also applies to independent claim 15, given the similarity of its essential elements.

[62]   The receipt of EFP data via a network in the dependent claims 2 and 16 constitutes a generic data input step; the inventions of these dependent claims also involve computers processing abstract algorithms or abstract business methods in an well-established manner.

[63]   As noted above, dependent claims 3 to 14 and 17 to 28 recite further details of the calculations performed. These calculations are processed by the computer in a well-established manner, and the additional details thus do not affect the reasoning for the previously discussed claims.

[64]   Therefore, my view is that claims 1 to 28 on file define unpatentable subject matter, falling outside section 2 of the *Patent Act* and prohibited by subsection 27(8) of the *Patent Act*.

Proposed claims

[65]   As remarked above, the Applicant proposed a second amended set of 28 claims with the RSR. The proposed independent claims have been amended extensively, compared with those on file, to explicitly refer to and emphasize the involvement of "a market surveillance device" and the generation of EFP data. Proposed dependent claims 2 and 16 have also been amended extensively to include the receipt and matching of EFP orders, and to expound on the automatic execution and settling of the EFP transactions. The wording of the remainder of the proposed dependent claims has either been left as it is or modified slightly to reflect the proposed independent claims' identification of the price allocation module as performing certain calculations.

[66] Second proposed claim 1 is included here as a reference:

Claim 1.   A method for performing an exchange for physicals (EFP) transaction as part of a fully automated straight-through processing (STP) computer procedure, comprising:

continuously surveilling, by a market surveillance device in communication with a processor, continuous market data comprising live index values and trade prices;

continuously generating, by the processor, EFP transactions based on the continuously surveilled market data, each EFP transaction based on an index value among the live index values that fluctuates according to market movement, said continuously generating including:

generating, by a matching engine module of an electronic exchange platform in communication with the processor, EFP data comprising an amount of securities to be traded and a price;

automatically activating, by the matching engine module, a price allocation module when the EFP data is generated, the activated price allocation module comprising specialized computer-readable instructions that, when executed, cause the price allocation module to generate EFP transactions with a pricing valuation that closely matches the continuous market data, the price allocation module performing the functions of:

calculating, based on the index value among the live index values surveilled by the market surveillance device, a first delta percentage between the EFP data and an index based on the amount, the price, and the index value;

calculating a residual delta based on the first delta percentage and an index notional value generated from a last traded price from among the trade prices surveilled by the market surveillance device; and

attributing the residual delta to the securities to form modified EPF data;

generating, by the matching engine module, at least one EFP transaction based on the modified EFP data responsive to the price allocation module forming the modified EFP data, each of the at least one EFP transaction comprising a futures leg and a cash leg; and

automatically executing and settling the futures leg and the cash leg of each of the at least one EFP transaction as part of the fully automated STP computer procedure.

[67]   In the RSR, the Applicant introduced the second proposed claims as follows:

The alternative claim set submitted herewith reflect additional details intended to further clarify the technical nature and physical existence of Applicant's invention. In particular, the alternative claim set further clarifies that the invention also requires a market surveillance device that continuously surveils continuous market data, and to make clear that EFP transactions are continuously generated (based on the continuously surveilled market data) in a manner that fluctuates according to market movement.

[68]   As alluded to above, the RSR contended that the proposed claimed invention's ability to capture live market data fluctuations and continuously generate reflective EFP transactions represented a functional improvement and significant advance in the field.

[69] The Applicant submitted in the RSR that conventional systems lack a mechanism for generating valuation data that tracks and adjusts with continuously changing market data. "As a result, conventional systems are unable to provide accurate transaction data reflective of the current market data and are unable to be fully automated via an STP procedure."

[70] According to the RSR, the necessary capture and use of voluminous, complex real-time data requires computer technology and that it is thus only in the realm of computer technology that the claimed invention can exist. During the hearing, the Applicant described the market surveillance function as a very complicated exchange, getting a lot of data, from multiple sources. The Applicant characterized it as a real-world interaction, likening it to performing measurements.

[71] The Applicant later acknowledged during the hearing, however, that the market surveillance device (a distinct aspect from the matching engine and price allocation modules, though coordinated with them) is not necessarily novel in itself—conventional means exist for "surveilling" the market. As discussed above, the description and drawings do not directly refer to any "market surveillance device" or disclose how live market data is captured, leaving such means to the skilled person to conceive and implement.

[72] Thus, this function is not one of measuring or sensing, but a generic data input function, necessarily well-known in this environment. It cannot be assumed to be like, e.g. a function of measuring characteristics of the transactions or communications occurring over the network. It instead appears to be the receipt of information (i.e. "continuous market data comprising live index values and trade prices") by the computer, communicated via the network, from one or more sources. It is a data input of information of intellectual significance, and—since the application does not suggest how it is done—it is must be taken as a generic data input function. It represents one of the functions or steps of the computer processing the algorithm or abstract method in a well-established manner.

[73] As for the steps involved in continuously generating EFP transactions, the Applicant submitted during the hearing that these constituted physical actions with physical, discernible effects. EFP data is generated and the legs of the transactions are

automatically executed and settled, with potentially big impacts for the involved parties, observed the Applicant.

[74] This data generation, however, is the computer processing the algorithm in a well-established manner, with expected results, and without the method improving the functioning of the computer processing it. Based on the description and drawings' (paragraphs 14 to 16; figure 2) depiction of the generation of EFP transactions, the computer's step of "automatically executing and settling" cannot be assumed to go beyond automatically communicating data of intellectual significance. That is to say, the automatic communication by the computer of data involved in the execution and settling of a trade represents a generic data output function in this context.

[75] The computer here—taking into account its generic data input and output functions—is being used in a well-known manner; it is not part of the single actual invention, and thus it cannot help the invention of the second proposed claims fulfil the physicality requirement. The methods and systems of the second proposed claims involve computers programmed to process abstract algorithms or abstract business methods in a well-established manner. Accordingly, these claims are also directed to unpatentable subject matter.

[76] It follows that the second proposed claims are not considered a necessary amendment under subsection 86(11) of the *Patent Rules*.

RECOMMENDATION OF THE BOARD

[77] In view of the above, I recommend that the application be refused on the basis that claims 1 to 28 on file define unpatentable subject matter, falling outside section 2 of the *Patent Act* and prohibited by subsection 27(8) of the *Patent Act*.

Leigh Matheson

Member

DECISION OF THE COMMISSIONER

[78] I concur with the findings of the Board and its recommendation to refuse the application on the basis that the claims on file define unpatentable subject matter, falling outside section 2 of the *Patent Act* and prohibited by subsection 27(8) of the *Patent Act*.

[79] Accordingly, I refuse to grant a patent for this application. Under section 41 of the *Patent Act*, the Applicant has six months to appeal my decision to the Federal Court of Canada.

Virginie Ethier

Assistant Commissioner of Patents
Dated at Gatineau, Quebec
this 9th day of June, 2021