Federal Court  Cour fédérale

Date: 20170104

Docket: T-705-13

Citation: 2017 FC 6

Montréal, Quebec, January 4, 2017

PRESENT: The Honourable Mr. Justice Locke

BETWEEN:

MEDIATUBE CORP. AND NORTHVU INC.

Plaintiffs/
Defendants by Counterclaim

and

BELL CANADA

Defendant
Plaintiff by Counterclaim

PUBLIC JUDGMENT AND REASONS
(Confidential Judgment and Reasons dated January 4, 2017)

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I. Overview

[1] This case has morphed somewhat since it was commenced. Some issues have been removed and others have been added. For that reason, it is helpful to begin with a brief history of the litigation.

[2] This case began as a patent infringement action in which the patent owner (NorthVu Inc.) and a licensee (MediaTube Corp.) alleged that Bell Canada and Bell Aliant Regional Communications (collectively, Bell, and now a single entity) infringe Canadian Patent No. 2,339,477 (the 477 Patent) with their well-known Internet Protocol Television (IPTV) services called Fibe TV (offered by Bell Canada in the provinces of Ontario and Quebec) and FibreOp TV (offered by Bell Aliant in the provinces of Nova Scotia, New Brunswick, and Newfoundland and Labrador).

[3] The plaintiffs also alleged that Bell (i) had knowledge of the application that led to the 477 Patent back in 1999, (ii) sought out the plaintiffs and their predecessors in order to discuss the patented invention, (iii) worked with them (purportedly to commercialize the patented invention) after entering into a written confidentiality agreement, and (iv) eventually launched its own competing Fibe TV service without the plaintiffs' involvement or prior knowledge. The plaintiffs alleged that Bell thus brazenly infringed the 477 Patent and severely damaged the plaintiffs' business. As a result of these activities, the plaintiffs sought punitive damages.

[4] Bell denied infringement and asserted that the claims of the 477 Patent are invalid. Bell also characterized the plaintiffs as patent trolls. Among the grounds of invalidity were allegations that the claims were anticipated and/or obvious in view of a number of prior art references – many prior art references. Bell eventually identified 753 of them. With regard to the allegations in support of the punitive damages claim, Bell denied any impropriety, characterized the plaintiffs' allegations as intentionally false, and indicated that it would seek costs against the plaintiffs on the basis of trebling their actual legal fees incurred.

[5] The stage was thus set for a high-stakes fight. However, as a patent infringement action, this case has become something of a damp squib. As the litigation advanced to and through trial, a number of important issues were taken off the table.

[6] In December 2015 the plaintiffs narrowed their infringement allegations concerning Bell Aliant's FibreOp TV system by dropping their claim in respect of all fibre-to-the-home, or FTTH, subscribers (which, according to Bell, constitutes 96% of FibreOp TV subscribers), while maintaining their infringement claim against fibre-to-the-node, or FTTN, subscribers (which make up the remaining 4% of FibreOp TV subscribers). Information concerning these different types of subscribers is discussed in greater detail later in these reasons. In addition, upon the service of its experts' reports in February 2016, Bell effectively reduced the number of prior art references that were being asserted to a small subset of the 753 listed in its pleading. Finally, during the summer before the commencement of trial on September 12, 2016, the plaintiffs limited the asserted claims of the 477 Patent to only claims 1, 2, 4 and 18. Narrowing the issues

in the foregoing ways is not unusual. In fact, it is to be encouraged in order to assist the Court and the parties to focus on the real issues in dispute.

[7] However, there were far more unusual developments that have had the effect of changing the main thrust of this matter from one of patent infringement to one of allocation of costs. The context for some of these unusual developments was a series of changes to discovery answers. These changes were made by Bell beginning on January 31, 2016, and were provided in numerous installments in the months and weeks leading up to trial. The changes, which even included some additional information provided during trial, concerned details of Bell's Fibe TV and FibreOp TV systems, and are referred to herein as the Corrected Information.

[8] The plaintiffs argue that they had a good, arguable case for establishing patent infringement prior to receiving the Corrected Information, that the Corrected Information should have been provided earlier and that, even after receiving it, the plaintiffs had reasonable doubts as to its accuracy. They also submit that, if they had known earlier what they know now about Bell's systems, they would not have pursued this matter to trial. For these reasons, the plaintiffs ask that they be awarded costs regardless of my conclusions on patent infringement and validity.

[9] Another important development occurred at the beginning of the 14th day of the trial. The plaintiffs made two major admissions. Firstly, the plaintiffs acknowledged that the evidence established that Bell Aliant had never infringed the 477 Patent. Secondly, the plaintiffs withdrew their claim for punitive damages. These admissions came after the close of the plaintiffs' case in

chief, and after a number of witnesses for Bell had testified in relation to the Corrected Information, but before any evidence from Bell relating to the plaintiffs' punitive damages claim.

[10] A final major development took place during the plaintiffs' oral submissions on closing argument. There, the plaintiffs acknowledged for the first time that one aspect of Bell Canada's Fibe TV service called unicasting [redacted] does not infringe the 477 Patent. The plaintiffs also acknowledged that the other aspect of Bell Canada's Fibe TV service called multicasting (which operates all the time) does not infringe except for its stand-by utility (that is, it could allegedly be made to infringe by modification of Bell's system).

[11] In light of the foregoing, the only infringement issue that remains in dispute (the vestige infringement issue) concerns Bell Canada's Fibe TV service, and the multicasting aspect of that service. The plaintiffs maintain that claims 1, 2, 4 and 18 of the 477 Patent are infringed, but only by virtue of the fact that the system could be modified to incorporate all of the essential elements of these claims.

[12] Because of these many late admissions by the plaintiffs, Bell argues that it should have its costs related to certain aspects of the action awarded at an elevated level, regardless of the outcome of the case. For their part, the plaintiffs seek elevated costs, regardless of the outcome of the case, because of certain allegations made by Bell. The parties' respective submissions on costs are discussed later in these reasons.

[13] For the reasons set out below, I have concluded that the 477 Patent is valid but not infringed. I have also found that Bell should have its costs of this action, and that the amount of those costs should be elevated, for the reasons provided below, by 50% for most issues and on a solicitor-and-client basis in relation to the punitive damages claim.

II. The 477 Patent and its Background

[14] The 477 Patent is entitled "Audio/Video Signal Redistribution System". It issued on November 20, 2007, based on an application that was filed on July 30, 1999. That application claimed priority from an application that was filed in the United States on August 3, 1998, which the parties agree is the claim date of the 477 Patent as defined in s. 28.1 of the *Patent Act*, RSC 1985, c P-4. The application for the 477 Patent was published on February 17, 2000. The 477 Patent is set to expire on July 30, 2019.

[15] The named inventor of the 477 Patent is Ross Jeffery. He testified at trial with regard to his background and the development of the invention. This testimony is discussed in detail in relation to the issues of invalidity for overbreadth and for inutility. Mr. Jeffery also acted as the corporate representative of the plaintiff NorthVu Inc. during examinations for discovery.

[16] As stated in the Field of the Invention section, the 477 Patent "relates to an interactive audio/video telecommunications system which integrates and redistributes audio/video signals received in multiple formats to multiple users over existing telephone wires."

[17] The Background of the Invention section discusses the demand in modern society for audio/video telecommunications services from different sources and in different formats. Television and internet are mentioned as examples of such services. The challenge described in the 477 Patent is to integrate the different types of services to "allow a user to instantaneously access any channel provided by any telecommunications or broadcast service using a single system … over a single network of wires."

[18] The Summary of the Invention section describes:

> a single system which redistributes audio/video signals received in multiple formats to multiple users. The invention allows each user to remotely select and control the audio/video signal source desired to be viewed or accessed and provides access [to] any available broadcast and telecommunications system through a single receiving unit.

[19] This section also states that the invention can be implemented over existing telephone wires, thus reducing the cost of implementation, and without interfering with the normal use of the telephone network.

[20] The 477 Patent describes a redistributing device for receiving a plurality of audio/video input signals in different formats and redistributing user-selected signals to multiple users. The redistributor is "installed at a multi-user site, which may for example be an apartment or condominium, commercial high rise, hospital, school, a local loop in a neighbourhood telephone system, etc." At each user location is a communications interface which receives the selected signal from the redistributor and delivers it to a receiving device, typically a television set. The

communications interface also receives control signals input by the user for transmission to the redistributor to select the chosen input signal.

[21] The disclosure indicates that twisted-pair telephone wire is preferred for sending user-generated control signals upstream from the communications interface to the redistributor, and for sending audio/video signals downstream from the redistributor to the communications interface, though different kinds of conductors (*e.g.* coaxial cable) may be used. The term "twisted pair" refers to the typical arrangement of wires that has been used for telephone communication for many years. The twisted pair comprises two wires that have been manufactured in an arrangement twisted around one another. At least for frequencies in the range of a human voice, the twisting permits the telephone signal to be transmitted over longer distances than would otherwise be the case. The system described in the 477 Patent uses two twisted pairs, described as red/green and yellow/black. This is typical.

[22] The redistributor of the preferred embodiment is shown in Figure 1 of the 477 Patent, which is reproduced here:

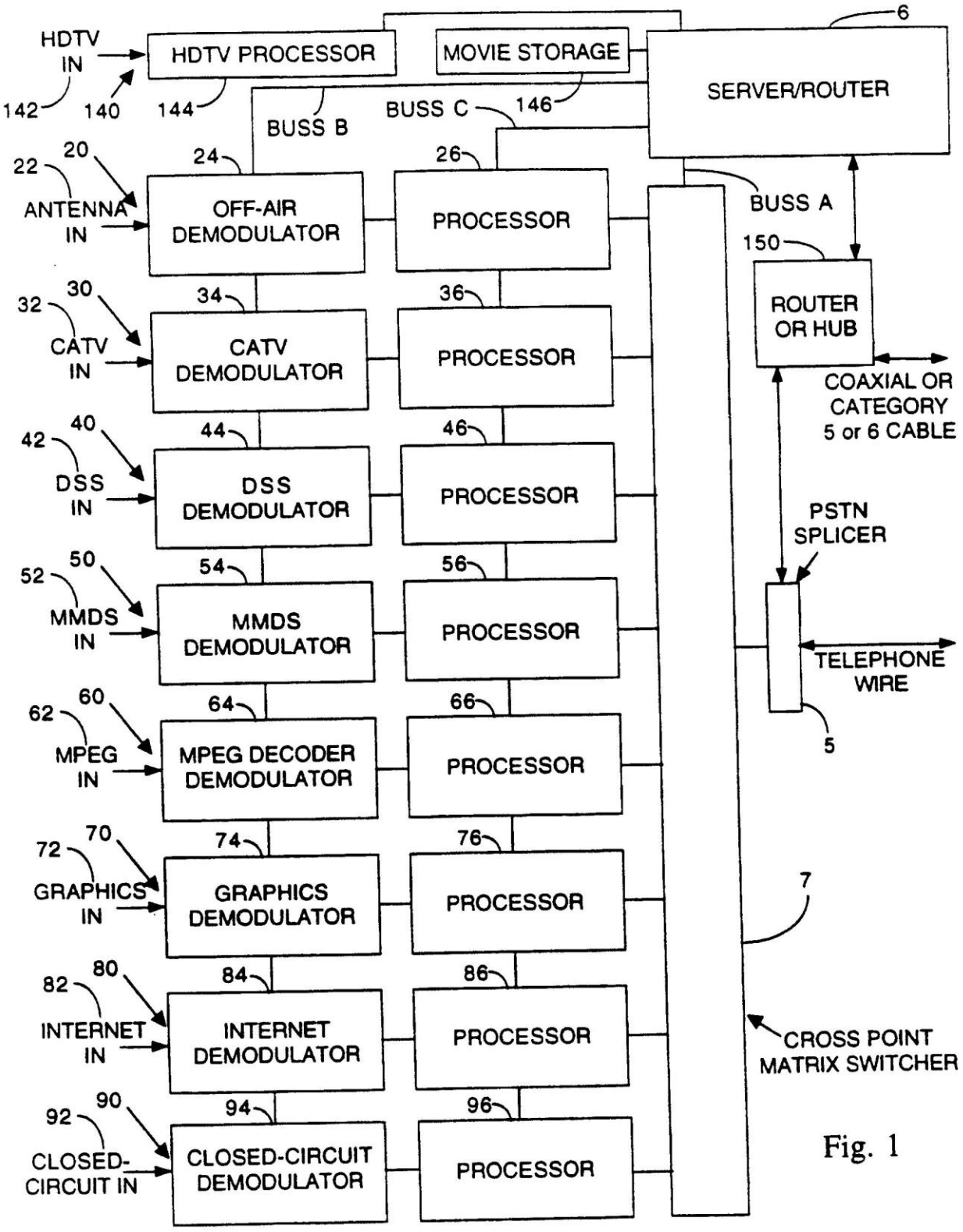

HDTV IN
142
140
144
HDTV PROCESSOR
MOVIE STORAGE
6
SERVER/ROUTER
BUSS B
BUSS C
146
BUSS A
22
20
ANTENNA IN
24
OFF-AIR DEMODULATOR
26
PROCESSOR
150
ROUTER OR HUB
32
30
CATV IN
34
CATV DEMODULATOR
36
PROCESSOR
COAXIAL OR CATEGORY 5 or 6 CABLE
42
40
DSS IN
44
DSS DEMODULATOR
46
PROCESSOR
PSTN SPLICER
52
50
MMDS IN
54
MMDS DEMODULATOR
56
PROCESSOR
TELEPHONE WIRE
5
62
60
MPEG IN
64
MPEG DECODER DEMODULATOR
66
PROCESSOR
72
70
GRAPHICS IN
74
GRAPHICS DEMODULATOR
76
PROCESSOR
7
82
80
INTERNET IN
84
INTERNET DEMODULATOR
86
PROCESSOR
CROSS POINT MATRIX SWITCHER
92
90
CLOSED-CIRCUIT IN
94
CLOSED-CIRCUIT DEMODULATOR
96
PROCESSOR

Fig. 1

[23] The various input signals are shown on the left, each being received by a separate demodulator which tunes to the appropriate channel of its input (if more than one channel is received), and processes the audio and video signals from each modulator into a common format (baseband). The baseband signal is then injected into a processor (a separate processor for each demodulator) which processes the signals for switching by a cross point matrix switcher. The processors also receive upstream user-generated control signals from the communications interface and output them to a server. The server, through data buses A, B and C, functions as a router to control and route the input signals.

[24] The audio/video signals output from the cross point matrix switcher are transmitted to the communications interface where it is processed to be shown on a receiving device, preferably a television set. User control signals are received at the communications interface via a photoreceptor from a common handheld infrared or wired remote control device. Those signals are sent upstream to the redistributor over a twisted pair of a telephone wire in a manner that does not interfere with the telephone service.

[25] The parties are agreed that the input audio/video signals that are received by the redistributor may be in either analog or digital format. The parties are also agreed that, in the preferred embodiment, the signals output from the demodulator, and subsequently processed for switching and transmitted to the communications interface, are described only as being in analog format, though digital audio/video signals were well-known at the time. Nothing in the patent explicitly excludes digital audio/video signals.

III. Issues in Dispute

[26] Following the various admissions and new arguments made by the parties, I have prepared the following list of issues that remain to be decided:

- Claim construction
    - "audio/video signals"
    - "conductors"
    - "server"
    - "controlling an output channel selection of the input signal"
    - "for each communications interface, a switching device"
- Infringement – stand-by utility of Fibe TV service only, and claims 1, 2, 4 and 18 only
- Validity
    - Anticipation
    - Obviousness
    - Overbreadth/Insufficiency
    - Inutility
- Costs
    - The Corrected Information
    - Bell's allegation that the plaintiffs are patent trolls
    - Bell's citation of 753 prior art references in its counterclaim of invalidity of the 477 Patent

- The plaintiffs' infringement allegations in respect of Bell Aliant, including maintaining said allegations (i) in respect of FTTH customers until December 2015, and (ii) against all remaining FibreOp TV customers until day 14 of the trial
- The plaintiffs' infringement allegations in respect of Bell Canada, including maintaining said allegations, except for the vestige infringement argument based on stand-by utility, until oral submissions on closing argument
- The plaintiffs' allegations in support of their claim for punitive damages, and their maintenance of these allegations until day 14 of the trial

IV. Witnesses

[27] Brief descriptions of each of the witnesses at trial, together with an overview of their testimony, are provided in the Appendix at the end of these reasons. By way of overview, I have the following non-exhaustive set of observations concerning the witnesses:

1. One expert witness on each side (Dr. Eldering for the plaintiffs and Dr. Houh for Bell) was an experienced expert witness whose testimony was clear and precise, but whose answers in cross-examination betrayed a certain lack of neutrality. In the end, I favoured Dr. Houh's testimony because I found his conclusions and his reasoning easier to accept.

2. One of the plaintiffs' expert witnesses, Dr. Ramakrishnan, prepared his report on claim construction before he was given any information about Bell's allegedly infringing systems. He was thus kept blind to extraneous facts when construing the claims of the 477 Patent. The plaintiffs argue that I should favour the testimony of such a blinded witness over that of Bell's experts, who were not blinded. On this subject, I commend the

reader to my comments in *Shire Canada Inc v Apotex Inc*, 2016 FC 382 at para 42 and following. In short, I stated that blinding a witness may indeed lend weight to their testimony in some situations, but I am mainly interested in how well-reasoned the various experts' opinions are. I agree with the plaintiffs' argument that construing a patent is for the judge, and the role of the experts is to assist in that analysis.

3. The principals of both of the plaintiffs testified, but the bulk of their testimony became irrelevant once the plaintiffs withdrew their claim for punitive damages.

4. The inventor's testimony relied heavily on his uncorroborated recollections concerning dates, which were shown to be unreliable.

5. I found all of Bell's fact witnesses to be credible.

V. Claim Construction

A. *Applicable Law*

[28] Claims construction is antecedent to consideration of both validity and infringement issues: *Whirlpool Corp v Camco Inc*, 2000 SCC 67 at para 43 [*Whirlpool*].

[29] A patent is not addressed to an ordinary member of the public, but to a worker skilled in the art described as:

> a hypothetical person possessing the ordinary skill and knowledge of the particular art to which the invention relates, and a mind willing to understand a specification that is addressed to him. This hypothetical person has sometimes been equated with the "reasonable man" used as a standard in negligence cases. He is

> assumed to be a man who is going to try to achieve success and not one who is looking for difficulties or seeking failure.

(See *Free World Trust v Électro Santé Inc*, 2000 SCC 66 at para 44 [*Free World Trust*], quoting from Fox, Harold G, *The Canadian Law and Practice Relating to Letters Patent for Inventions*, 4th ed (Toronto: Carswell, 1969) at 184).

[30] The person skilled in the art may also be a team of people: *Pfizer Canada Inc v Pharmascience Inc*, 2013 FC 120 at para 28; *General Tire & Rubber Company v Firestone Tyre and Rubber Company Limited*, [1972] RPC 457 at 482 (Eng CA) [*General Tire & Rubber*].

[31] As stated in *Catnic Components Ltd v Hill & Smith Ltd*, [1982] RPC 183 at 242-243, and quoted in *Whirlpool* at para 44:

> A patent specification should be given a purposive construction rather than a purely literal one derived from applying to it the kind of meticulous verbal analysis in which lawyers are too often tempted by their training to indulge. The question in each case is: whether persons with practical knowledge and experience of the kind of work in which the invention was intended to be used, would understand that strict compliance with a particular descriptive word or phrase appearing in a claim was intended by the patentee to be an essential requirement of the invention so that *any* variant would fall outside the monopoly claimed, even though it could have no material effect upon the way the invention worked.
>
> [Emphasis in original.]

[32] The claims language will, on a purposive construction, show that some elements of the claimed invention are essential while others are non-essential. Identification of elements as essential or non-essential is made:

> (i) on the basis of the common knowledge of the worker skilled in the art to which the patent relates;
>
> (ii) as of the date the patent is published;
>
> (iii) having regard to whether or not it was obvious to the skilled reader at the time the patent was published that a variant of a particular element would *not* make a difference to the way in which the invention works; or
>
> (iv) according to the intent of the inventor, expressed or inferred from the claims, that a particular element is essential irrespective of its practical effect;
>
> (v) without, however, resort to extrinsic evidence of the inventor's intention.
>
> [*Free World Trust* at para 31.]

[33] Claim elements are presumed to be essential, and a party alleging otherwise bears the onus of establishing non-essentiality. The Supreme Court of Canada (SCC) in *Free World Trust* at para 55 stated:

> For an element to be considered non-essential and thus substitutable, it must be shown either (i) that on a purposive construction of the words of the claim it was clearly not intended to be essential, or (ii) that at the date of publication of the patent, the skilled addressees would have appreciated that a particular element could be substituted without affecting the working of the invention, i.e., had the skilled worker at that time been told of both the element specified in the claim and the variant and "asked whether the variant would obviously work in the same way", the answer would be yes: *Improver Corp. v. Remington*, [[1990] F.S.R. 181], at p. 192. In this context, I think "work in the same way" should be taken for our purposes as meaning that the variant (or component) would perform substantially the same function in substantially the same way to obtain substantially the same result. In *Improver Corp. v. Remington*, Hoffmann J. attempted to reduce the essence of the Catnic analysis to a series of concise questions, at p. 182:

> (i) Does the variant have a material effect upon the way the invention works? If yes, the variant is outside the claim. If no: –
>
> (ii) Would this (i.e.: that the variant had no material effect) have been obvious at the date of publication of the patent to a reader skilled in the art? If no, the variant is outside the claim. If yes: –
>
> (iii) Would the reader skilled in the art nevertheless have understood from the language of the claim that the patentee intended that strict compliance with the primary meaning was an essential requirement of the invention? If yes, the variant is outside the claim.

[34] The foregoing questions are sometimes referred to as the *Improver* questions. It is understood that a party seeking to establish that a claim element is not essential (*i.e.* that the variant falls within the scope of the claim) must be successful on all three questions.

[35] In construing the claims of a patent, recourse to the disclosure portion of the specification is (1) permissible to assist in understanding the terms used in the claims, (2) unnecessary where the words are plain and unambiguous, and (3) improper to vary the scope or ambit of the claims: *Mylan Pharmaceuticals ULC v Eli Lilly Canada Inc*, 2016 FCA 119 at para 39 [*Mylan*]; *Beecham Canada v Procter & Gamble Co* (1982), 61 CPR (2d) 1 at 11, [1982] FCJ No 10 (QL) (FCA).

[36] Terms used in the claims must be read in the context of the patent as a whole, and it is therefore unsafe in many instances to conclude that a term is plain and unambiguous without a careful review of the specification: *Whirlpool* at para 52, quoting from William L. Hayhurst,

"The Art of Claiming and Reading a Claim", in Gordon F. Henderson, ed, *Patent Law of Canada* (Toronto: Carswell, 1994) at 190.

[37] Because there is potential for tension between the guidance provided in the preceding two paragraphs, I reproduce here the discussion of Justice Russell Zinn in *Janssen-Ortho Inc v Canada (Health)*, 2010 FC 42 at paras 115-116, 119, on this point, with which I agree:

> [115] In my view, the whole of the specification (including the disclosure and the claims) may be examined to ascertain the nature of the invention. Where the words of the claims are plain and unambiguous and capable of only one interpretation by a person skilled in the art, recourse to the disclosure is unnecessary. This is not to say that the interpreter should not examine the disclosure. In my view, one should do so, but with caution. Recourse may be had to the disclosure for the purpose of confirming the interpretation arrived at from examining the claims alone or to disclose an ambiguity in the language of the claims that was not otherwise evident. However, the patentee cannot expand the monopoly specifically expressed in the claims by borrowing phrases from the disclosure and placing them into the language of the claims.
>
> [116] I agree with Novopharm that when one looks beyond the language of the claims at issue one ought first look at the dependent claims as an aid to interpreting the independent claims, before one resorts to the disclosure.
>
> […]
>
> [119] I do not take the Supreme Court of Canada to be saying that in every case one must examine the disclosure prior to construing the claims of the patent; rather, I take the Court in *Whirlpool* and *Free World Trust* to be raising a caution that one should not reach a firm conclusion as to the meaning of the words in the claims being construed without having tested one's initial interpretation against the words of the disclosure. When that is done, if the disclosure suggests another interpretation of the terms used in the claims, then resort to the meanings given in the disclosure is proper, subject to the proviso that the invention that is protected is what is expressed in the claims which cannot be added to by anything mentioned in the disclosure that has not found its way into the claims as drafted. As was noted by Justice Taschereau in

> *Metalliflex Ltd. v. Rodi & Wienenberger Aktiengesellschaft*, [1961] S.C.R. 117, at p. 122:
>
> > The claims, of course, must be construed with reference to the entire specifications, and the latter may therefore be considered in order to assist in apprehending and construing a claim, but the patentee may not be allowed to expand his monopoly specifically expressed in the claims "by borrowing this or that gloss from other parts of the specifications".

B. *Person Skilled in the Art*

[38] For the most part, the experts do not disagree substantially as to the characteristics of the skilled person to whom the 477 Patent is addressed. The exception is Dr. Ramakrishnan who was something of an outlier. The experts' respective descriptions of the characteristics of the skilled person are as follows:

> Dr. Eldering:
>
> > The person skilled in the art is a person that has at least a bachelor's degree in electrical or computer engineering and several years of experience in the cable and telecommunications industry relating to the design, manufacture, or utilization of equipment for and architecture of communications systems.
>
> Dr. Ramakrishnan:
>
> > In my opinion, the reader of the patent (person skilled in the art) would be represented by a team that includes a physical layer network engineer and a network architect familiar with the concepts of the delivery of data generally known in 2000. I would expect that these team members would include persons having post graduate degrees and at least 5 years of experience in evaluating network technology, system integration, evaluating performance of networks.

Dr. Jones:

> The ‘477 Patent is directed to a team of people including a network engineer with experience working for a telco or telco lab. Each of these people would need an undergraduate degree in engineering but would not necessarily be a detail-level network designer. The skilled person has at least three years working experience and would be familiar with the operation of a telecommunications network.

Dr. Houh:

> In my opinion, the ‘477 Patent is directed to a team of people including an electrical engineer, a computer engineer, a telecommunications specialist, and a broadcast engineer. The team of people would be familiar with audio and video signals and their transmission. Each of these individuals would have either an electrical engineering or computer science undergraduate degree (or equivalent training) and a couple of years of experience working in their field.

Mr. Weeks:

> it is my opinion that the ‘477 Patent is directed to a team of people, including someone with an undergraduate degree in network engineering or related engineering field having at least two years of experience working with audio/video transmission over communications networks.

[39] Dr. Ramakrishnan is the only expert who expects that, in addition to experience in the relevant technology, the skilled person (or rather team of skilled persons) have post-graduate degrees. In addition, Dr. Ramakrishnan focuses on the network aspect of the subject matter more than any other expert. In my view, though experience in telecommunications is important in understanding and implementing the invention described in the 477 Patent, and though a team of people may be required to assemble the necessary skills, the subject matter is not so complex or

advanced as to require a post-graduate degree. I prefer the views of the other experts on the subject of the skilled person.

[40] In my view, the skilled person in respect of the 477 Patent is a team including an electrical engineer, a computer engineer, and a network engineer having bachelor's degrees and several years of experience with the design and operation of telecommunications systems.

C. *Analysis*

[41] All of the claim construction issues in dispute concern terms used in claim 1which is reproduced here for convenience:

> 1. A system for redistributing a plurality of audio/video signals to a plurality of communications interfaces over conductors, comprising
>
> a server,
>
> a redistributor for receiving a plurality of input signals, comprising
>
> for each input signal, a demodulator for demodulating the signal, the server controlling an output channel selection of the input signal responsive to one or more control signals input into the communications interface,
>
> for each communications interface, a switching device for routing the channel selection to an output of the redistributor, the switching device being controlled by the server responsive to one or more control signals input into the communications interface and transmitted to the redistributor over a twisted pair of a telephone wire which carries a telephone signal, and
>
> for each demodulated input signal, a processor for processing the signal for switching,

> wherein the communications interface receives the output of the redistributor for transmission to a receiving unit connected to the communications interface.

[42] To paraphrase, claim 1 of the 477 Patent defines a system for redistributing many input signals to many communications interfaces. The input signals are received at a redistributor which has, for each input signal, a demodulator and a processor for, respectively, demodulating the input signal and then processing it for switching. The redistributor also has, for each communications interface, a switching device which routes a selected channel of the input signal to an output of the redistributor to be received by the communications interface. The channel selection is made in response to control signals that are input into the communications interface and transmitted to the redistributor. The control signals are transmitted over a twisted pair of a telephone wire.

[43] My discussion of the various claim elements in dispute is provided in the following paragraphs.

(1) “audio/video signals”

[44] Claim 1 of the 477 Patent defines audio/video signals that are received by the redistributor (input signals), demodulated by the demodulator (demodulated input signal), processed for switching (output of the redistributor), and received by the communications interface. The parties are agreed that the input signals may be in analog format or digital format.

[45] The key question here is whether the demodulated input signal and the output of the redistributor encompasses digital signals or is limited to analog signals as described in the 477 Patent.

[46] The plaintiffs argue firstly that the claim language itself does not mention either analog or digital and therefore does not exclude digital signals. The plaintiffs argue that a limitation to analog signals should not be read in to claim 1. The plaintiffs also point to wording in the disclosure of the 477 Patent that they argue indicates that both digital and analog signals are contemplated: "The system of the invention may be equipped to receive and redistribute any video or audio/video signal in any format … and the invention is not intended to be limited to the specific types of signals illustrated and described below." The plaintiffs note that it is undisputed that both the input signals received by the various demodulators in the redistributor and the user control signals sent upstream from the communications interface may be digital. The plaintiffs argue that the demodulated and processed audio/video signals sent downstream should be treated no differently. Finally, the plaintiffs argue that the common general knowledge of the skilled person should be considered. They note that it is undisputed that digital audio/video signals were well-known and that it was understood that they would eventually displace analog signals.

[47] With regard to the passage quoted from the 477 Patent in the previous paragraph ("…to receive and redistribute any video or audio/video signal in any format…"), Bell argues that the audio/video signal referred to is the input signal received by the redistributor rather than the demodulated input signal or the output of the redistributor. It is these input signals that are discussed at length immediately after the phrase "the specific types of signals illustrated and

described below". It is these input signals that are contemplated as being in either analog or digital format. Bell also notes that many of the terms used to describe the processing of audio/video signals are particular to analog: *e.g.* equalizing the high frequency components and changing the level of the chroma.

[48] Reading claim 1 alone, there is nothing that suggests that the term "audio/video signals" generally, or the terms "demodulated input signal" or "output of the redistributor" specifically, are intended to be limited to analog signals. That is to say, nothing in claim 1 excludes digital signals. However, this initial view is put into question upon considering claim 3 which depends from claim 1 and adds the following limitation:

> the processors match the impedance of the demodulated input signal to the output impedance of the redistributor, raise the baseband of the demodulated input signal, equalize the high frequency components and increase the level of chroma of the demodulated input signal, and increase the peak-to-peak voltage of the demodulated input signal.

[49] As noted by Bell, steps such as equalizing the high frequency components and increasing the level of the chroma are particular to the processing of analog signals. This suggests that the demodulated input signal and the output of the redistributor of claim 1 are necessarily analog. It certainly gives rise to enough ambiguity in this term to justify recourse to the disclosure in order to assist in understanding its scope.

[50] Upon review of the disclosure, the skilled person sees only reference to analog audio/video signals after demodulation. The disclosure even provides for the demodulators that

are receiving digital input signals to decode them into analog form. There is no suggestion that any audio/video signals could be in digital form after demodulation.

[51] With regard to the plaintiffs' argument that the skilled person was well aware of the existence of digital signals, this appears in fact to be an additional reason to read claim 1 narrowly. The focus uniquely on analog signals, and the failure to make even the slightest suggestion of digital signals being output from the demodulators or the processors and sent downstream from the redistributor to the communications interface, suggest that the inventor contemplated only analog signals at this stage. This is in stark contrast with the input signals which are shown in digital and analog formats and repeatedly described as being in "any format". In fact, a main thrust of the invention is the gathering in one place of a plurality of input signals having different formats and putting them into a common format.

[52] Putting this issue in the terms of the *Improver* questions listed in paragraph [33] above, and particularly the third question, it is my view that the reader skilled in the art would have understood that the patentee contemplated only analog formats for the demodulated and processed audio/video signals.

[53] Therefore, I conclude that the "audio/video signals" defined in claim 1 are limited to analog signals after demodulation. Digital signals are not within the scope of claim 1.

(2) “conductors”

[54] The word “conductors” appears in the preamble of claim 1 and defines the medium over which audio/video signals are redistributed. The parties are agreed that the word is to be construed broadly, and includes twisted pairs and coaxial cables. In fact, the parties are agreed that it should be construed broadly enough to encompass even other means of communication such as fibre optic cables which are not normally considered to be conductors.

[55] The issue in dispute with regard to “conductors” is whether it can include the same “twisted pair of a telephone wire which carries a telephone signal” as is defined later in claim 1 as the medium for carrying control signals from the communications interface to the redistributor. In other words, does claim 1 encompass audio/video signals that travel downstream over the same twisted pair as the control signals use to travel upstream?

[56] Bell argues that the use in claim 1 of the different terms “conductors” and “twisted pair of a telephone wire which carries a telephone signal” suggests that they are intended to be distinct. Bell also focuses on portions of the disclosure of the 477 Patent which suggest that a single twisted pair is generally unsuitable for carrying both downstream audio/video signals and upstream control signals. Specifically, where two separate twisted pairs are not available, the disclosure does not suggest that signals be carried in both directions on the same twisted pair. Rather, it suggests using the building ground as a common ground to permit the invention to operate effectively over a single twisted pair by having audio/video signals travel downstream on one wire of the twisted pair and user control signals travel upstream on the other wire of the

twisted pair. Also, in addressing the situation of an individual unit (or user) having more than one television receiver, the disclosure suggests that extra twisted pairs may be employed, and states that "an eight pair twisted cable can support up to four separate television receivers 2 in a unit, each television receiver using one pair for incoming and outgoing audio/video signals and another pair for transmitting control signals to the redistributor 8." It is implicit in this statement that each television requires two twisted pairs.

[57] The plaintiffs respond that the word "conductors" is broad and nothing in claim 1 suggests that it cannot encompass the same twisted pair as is defined to carry control signals. The plaintiffs note that signals travelling both downstream and upstream on the same twisted pair were well-known to the skilled person at the time. The plaintiffs also argue that the passages cited by Bell do not suggest that a single twisted pair is unsuitable for carrying signals both upstream and downstream.

[58] In my view, a skilled person reading claim 1 would not conclude that "conductors" unambiguously encompasses the same twisted pair as is used for carrying control signals upstream. Before reaching such an interpretation, the skilled person would have to turn to the disclosure for more information.

[59] I have considered the plaintiffs' interpretation of the passages cited by Bell, but I cannot agree with it. In my view, the disclosure of the 477 Patent clearly suggests that a single twisted pair is unsuitable for carrying both audio/video signals downstream and control signals upstream: see page 5, lines 12-16; page 16, lines 5-10; page 18, lines 20-26; page 19, lines 12-18.

[60] Dr. Eldering testified that he was confused as to why the 477 Patent would suggest using a common ground and sending signals upstream and downstream on separate wires of the twisted pair, since this would remove the performance advantages that are the reason for using a twisted pair, and since signals travelling in both directions on a single twisted pair were known using DSL (Digital Subscriber Line).

[61] I am not convinced by Dr. Eldering's testimony on this point because the DSL to which he refers concerns digital signals which I have already concluded are not within the scope of the claimed downstream audio/video signals. There is no evidence of upstream signals and downstream analog signals carried on the same twisted pair.

[62] I am also not convinced that the 477 Patent's advice to avoid having upstream and downstream signals on the same twisted pair is wrong. Neither side has argued that conclusion. It is therefore not necessary that I decide another issue in dispute concerning whether an incorrect statement in a patent disclosure is binding on the patentee.

[63] I conclude that the "conductors" in claim 1 which carry downstream audio/video signals encompasses twisted pairs of telephone wire, but excludes the "twisted pair of a telephone wire which carries a telephone signal" which also carries upstream control signals. It follows that the system defined in claim 1 required that upstream control signals be carried on a different medium from the downstream audio/video signals.

(3) “server”

[64] Claim 1 of the 477 Patent defines a server that controls (i) “an output channel selection of the input signal”, and (ii) “a switching device for routing the channel selection to an output of the redistributor”.

[65] The parties are agreed that the server must be centralized at least in the sense that it has access to (i) all of the audio/video signals to be redistributed, and (ii) all of the control signals to be transmitted from the communications interface to the redistributor. The parties differ as to whether the centralized server must be located in one place or may comprise a distributed group of elements.

[66] Bell argues that a server cannot be both centralized and distributed. Bell describes these two characteristics as “utterly irreconcilable”. I disagree. In my view, a server can be centralized in the sense described in the previous paragraph without necessarily being physically located in one place. The term “server” is inherently broad, and it is defined in claim 1 in terms of its functions. Even in the disclosure, the server is described mainly in terms of its functions. Moreover, the structure of claim 1 defines the server distinctly from the redistributor, which suggests that the server is not necessarily contained within the redistributor even though it controls components within the redistributor.

[67] I conclude that the word “server” encompasses a distributed network of elements. However, it does not necessarily follow from this that a packet-switching network is

contemplated as asserted by the plaintiffs. Packet-switching is a system whereby a stream of signals is broken down into a series of small data packets prior to transmission to a destination. These packets are carried over a network of nodes such that each packet may follow a different path to the destination. This permits a more efficient network architecture as compared to a circuit-switching system which involves a pre-set path for transmission of audio/video signals. The packets are given an identifier and a destination at the source so that they can be routed to the destination and reassembled there in the correct order. Though it is undisputed that packet-switching networks were well-known at the time, there is nothing in the 477 Patent that suggests any packetizing of signals. Also, packet-switching involves sending digital signals whereas, as discussed above, the 477 Patent contemplates sending only analog signals.

[68] I discount Dr. Ramakrishnan's view that the 477 Patent contemplates packet-switching because his expertise is skewed towards digital signals and packet-switching. Dr. Ramakrishnan acknowledged his limited knowledge of analog signals as described in the 477 Patent. I conclude that Dr. Ramakrishnan's extensive knowledge of digital packet-switching distorts his view of what a skilled person would have in mind when reading the 477 Patent.

(4) "controlling an output channel selection of the input signal"

[69] The full paragraph of claim 1 in which this phrase is found reads as follows:

> for each input signal, a demodulator for demodulating the signal, the server controlling an output channel selection of the input signal responsive to one or more control signals input into the communications interface.

[70] Of the three paragraphs in claim 1 that define the redistributor, this one concerns the demodulator. The other two concern the switching device and the processor, respectively. The foregoing paragraph provides that the server controls "an output channel selection of the input signal" based on control signals from the communications interface.

[71] The dispute here concerns whether the output in the term "output channel selection" refers to the output from the demodulator or from the redistributor.

[72] Bell argues that, based on the context of the paragraph in which the phrase in question appears, it is implicit that the output channel selection refers to the output from the demodulator. Bell notes that claim 1 defines two functions for the server: (i) "controlling an output channel selection of the input signal" at the demodulation step, as discussed in this section, and (ii) controlling a switching device at the switching step. Bell argues that if the phrase "controlling an output channel selection of the input signal" refers to output from the redistributor, then claim 1 contains a redundancy since the output of the switch is essentially the same as the output of the redistributor. Bell also notes that the 477 Patent clearly contemplates the demodulator selecting one channel from a multi-channel input for demodulation, and no other means is defined in claim 1 to perform this channel selection at the demodulation step.

[73] The plaintiffs note that the text of claim 1 does not explicitly state that the output channel selection refers to the output from the demodulator. The plaintiffs also note that Bell's construction improperly excludes single-channel inputs since these do not involve channel selection upon demodulation. The plaintiffs argue that the 477 Patent clearly contemplates both

single-channel and multi-channel inputs, and the Court should not read in channel selection at the demodulator as an essential step of claim 1. The plaintiffs also note that other methods of selecting one channel from a multi-channel input were known, such as having multiple demodulators receiving the input, each tuned to a different channel.

[74] In my view, the phrase "an output channel selection of the input signal" is not plain and unambiguous as to whether it refers to output from the demodulator or the redistributor, and therefore recourse to the disclosure is necessary to construe it. On the one hand, the presence of this phrase in the paragraph that defines the demodulator suggests strongly that it refers to output from the demodulator. On the other hand, claim 1 uses a different expression to refer to the output of the demodulator: "demodulated input signal". This suggests that "an output channel selection of the input signal" may refer to something other than the output of the demodulator.

[75] I agree with Bell that construing "an output channel selection of the input signal" as the output of the redistributor creates an apparent redundancy with the next paragraph in claim 1 in which the switching device routes the channel selection to an output of the redistributor.

[76] Upon review of the disclosure, I conclude that "an output channel selection of the input signal" refers to the output of the demodulator. I am led to this conclusion in part because I agree with Bell's argument that the 477 Patent clearly contemplates the demodulator selecting one channel from a multi-channel input for demodulation (under the control of the server through bus B), and no other means is defined in claim 1 to perform this channel selection at the demodulation step. It may be true that it was known to use multiple demodulators (each tuned to

a different channel) to perform channel selection, but there is no indication in the 477 Patent that this was contemplated by the inventor.

[77] I recognize that my conclusion effectively excludes any of the single-channel inputs that are described in the 477 Patent, since channel selection at the modulator is an essential element. However, I find that this result is less awkward and more reasonable than accepting the redundancy that would otherwise result. The inventor may indeed have had some unstated reason for excluding single-channel inputs from his claim.

(5) "for each communications interface, a switching device"

[78] The dispute here is whether the phrase "for each communications interface, a switching device" requires that there be a different switching device for each communications interface, or simply that each communications interface be served by a switching device, without defining whether a single switching device may serve more than one communications interface.

[79] The plaintiffs point out correctly that, grammatically speaking, claim 1 does not require a separate switching device for each communications interface, and they argue that there is no reason to read in such a requirement as essential. It is undisputed that switches with multiple inputs and multiple outputs were well-known at the relevant time.

[80] On the other hand, I note that each of the three paragraphs defining components of the redistributor begins with "for each". The first reads "for each input signal, a demodulator" and contemplates a dedicated demodulator for each input signal. The third paragraph defining

components of the redistributor begins “for each demodulated input signal, a processor” and contemplates a dedicated processor for each demodulator. Based on this pattern, I am inclined to read “for each communications interface, a switching device” as similarly contemplating a dedicated switching device for each communications interface.

[81] In my view, claim 1 is not plain and unambiguous as to whether the switching device must be dedicated to the communications interface to which it routes audio/video signals. Recourse to the disclosure is therefore necessary.

[82] The disclosure of the 477 Patent shows the switching device as the cross point matrix switcher and describes it as a “many-to-one switch” (page 10, line 3). The disclosure also states that a separate switcher is provided for and dedicated to each communications interface (page 10, line 9). This statement is repeated at page 18, line 16. It is then made more explicit a few lines later: “Where an individual unit has more than one television receiver 2, where the telephone cabling contains extra twisted pairs the redistributor 8 may be equipped with a separate matrix switcher 7 for each television receiver 2 within the unit.”

[83] The disclosure clearly and repeatedly contemplates a dedicated switching arrangement of the kind argued by Bell. Though I accept that switches that send signals to multiple destinations were well-known to skilled persons, I see no suggestion in the disclosure that the inventor contemplated the kind of non-dedicated switching arrangement argued by the plaintiffs.

[84] I conclude that claim 1 contemplates a separate switch for each communications interface.

(6) Other Claims in Issue

[85] The other claims in issue are claims 2, 4 and 18. They read as follows:

> 2. The system of claim 1 in which the input signals are in different signal formats.
>
> 4. The system of claim 1 in which the output of the redistributor is transmitted to the communications interface over an unused twisted pair of a telephone wire.
>
> […]
>
> 18. The system of any one of claims 1 to 8 wherein wherein [*sic*] each communications interface is assigned an identifier, and the redistributor routes the channel selection to a twisted pair corresponding to the identifier.

[86] The plaintiffs submit that there does not appear to be any material dispute regarding the construction of these claims. Indeed, very little time was spent during trial on these claims. However, I must disagree with the plaintiffs' submission on this point. Though there does not appear to be any difficulty construing the term "different signal formats" and the parties appear to agree on the construction of claim 2, the same cannot be said for the term "unused twisted pair" in claim 4.

[87] Bell's experts Drs. Jones and Houh opine that the term "unused twisted pair" refers to a twisted pair that is unused for any purpose other than transmitting the output of the redistributor to the communications interface. However, the plaintiffs' experts construe the term to refer to a

twisted pair that either (i) does not simultaneously carry a telephone signal, or (ii) is not assigned for use with voice calls. Without saying so, this suggests that the term "unused twisted pair" encompasses a twisted pair that carries other signals, such as control signals transmitted from the communications interface upstream to the redistributor. In fact, the plaintiffs' continued assertion of this claim in respect of the stand-by utility of Bell's Fibe TV service (which uses a single twisted pair for both downstream and upstream signals) confirms that this is their position.

[88] I prefer Bell's position. In my view, "unused twisted pair" refers to a twisted pair that is not used for carrying any other signals. I find support for this view by considering the term "twisted pair of a telephone wire which carries a telephone signal" in claim 1, which carries control signals upstream. Clearly, the inventor contemplated one twisted pair for carrying control signals upstream as well as a telephone signal (claim 1), and a separate twisted pair for carrying audio/video signals downstream, and which would not carry a telephone signal.

[89] In terms of the *Improver* questions, it is my view that the variant of having the "unused twisted pair" of claim 4 carry other signals such as telephone signals or control signals would have a material effect upon the way the invention works, and this fact would have been obvious to a skilled reader at the date of publication of the 477 Patent. Finally, the skilled reader would have understood that strict compliance with the primary meaning of "unused" was an essential requirement of the invention.

[90] With regard to the construction of claim 18, I am unable to discern any difference between the parties' respective positions that is material to the issues of infringement and validity discussed below.

D. *Conclusions on Claim Construction*

[91] I conclude that claim 1 of the 477 Patent includes the following four essential elements:

1. The demodulated input signal is in analog format;
2. The "conductors" exclude the "twisted pair of a telephone wire which carries a telephone signal" and which also carries upstream control signals;
3. The server controls channel selection at the demodulator responsive to control signals input into the communications interface;
4. There is a separate, dedicated switching device for each communications interface.

[92] In addition, though this issue does not appear to be in dispute, I note here that another essential element of claim 1 is that the processor processes the demodulated input signal for switching.

[93] For the purposes of these reasons, it is also necessary to note that it is an essential element of claim 4 that the "unused twisted pair" not be used to carry other signals such as control signals or telephone signals.

VI. Invalidity Issues

[94] Subsection 43(2) of the *Patent Act* provides that, in the absence of any evidence to the contrary, a patent is presumed to be valid. Accordingly, Bell bears the burden of proving invalidity.

A. *Anticipation*

(1) Applicable Law

[95] Subsection 28.2(1) of the *Patent Act* addresses the requirement for novelty in a patented invention. Pursuant to s. 28.2(1)(b), the subject matter defined by a claim must not have been disclosed before the claim date in such a manner that it became available to the public. Also, even if the subject matter defined by a claim was not disclosed to the public before the claim date, it may still be anticipated by another Canadian patent application that was co-pending and which had an earlier claim date (s. 28.2(1)(d)).

[96] Anticipation, which is simply the lack of novelty, was discussed by the SCC in *Apotex Inc v Sanofi-Synthelabo Canada Inc*, 2008 SCC 61 [*Sanofi-Synthelabo*]. The SCC explained that there are two distinct requirements for anticipation: disclosure and enablement.

[97] Addressing the issue of disclosure first, the test was discussed in *Beloit Canada Ltd v Valmet OY* (1986), 8 CPR (3d) 289 at 297, [1986] FCJ No. 87 (QL) (FCA) [*Beloit*]:

> One must, in effect, be able to look at a prior, single publication and find in it all the information which, for practical purposes, is

> needed to produce the claimed invention without the exercise of any inventive skill. The prior publication must contain so clear a direction that a skilled person reading and following it would in every case and without possibility of error be led to the claimed invention.

[98] The SCC approved this statement in *Sanofi-Synthelabo*, and expanded on it at para 25, stating first that:

> … the requirement of prior disclosure means that the prior patent must disclose subject matter which, if performed, would necessarily result in infringement of that patent, …

and then:

> … there is no room for trial and error or experimentation by the skilled person. He is simply reading the prior patent for the purposes of understanding it.

[99] Another helpful statement in *Sanofi-Synthelabo* on the issue of anticipation is borrowed from *General Tire & Rubber* at 486:

> A signpost, however clear, upon the road to the patentee's invention will not suffice. The prior inventor must be clearly shown to have planted his flag at the precise destination before the patentee.

[100] Turning briefly to the issue of enablement, this word means that the skilled person would have been able to perform the invention. Here, the skilled person is assumed to be willing to make trial and error experiments to get the invention to work (*Sanofi-Synthelabo* at para 27), but not so many as to create an undue burden or require any inventive step (*Sanofi-Synthelabo* at para 33).

(2) Analysis

[101] Bell cites four references in support of its anticipation arguments. US Patent No. 5,172,413 (Bradley) and PCT Patent Publication No. WO 98/30002 (Rogers) are cited based on Bell's asserted claim construction, and US Patent No. 5,539,449 (Blahut) and CA Patent Application No. 2,334,203 (Cameron/iMagicTV) are cited in the event that the Court adopts the claim construction asserted by the plaintiffs.

[102] The Bradley, Rogers and Blahut references were all published prior to the August 3, 1998 claim date of the 477 Patent. They are therefore all citable for the purposes of anticipation under s. 28.2(1)(b) of the *Patent Act*. The Cameron/iMagicTV reference was published only after the claim date, but it was co-pending with the 477 Patent and its priority date pre-dates that of the 477 Patent, so it is citable for the purposes of anticipation under s. 28.2(1)(d) of the *Patent Act*.

[103] Not surprisingly, my conclusions on claim construction have an important effect on the anticipation analysis. An example is my conclusion that claim 1 defines a separate, dedicated switching device for each communications interface. In my view, none of the references cited by Bell for anticipation discloses a separate, dedicated switch for each user. I consider each of these references in greater detail below, but the absence of this feature is, by itself, sufficient to conclude that Bell's anticipation argument must fail.

[104] I have limited my analysis of the allegedly anticipating references to the features of claim 1 that I find are missing. This is sufficient to support my conclusion that none of these references anticipates claim 1.

[105] The Bradley reference discloses a hierarchical switched video delivery system. As indicated, I find that this reference does not disclose a separate, dedicated switch for each user. Dr. Jones points to bus selector switch 91 which selects input from one of a number of buses that are dedicated to each user. Output is then delivered to each user over a dedicated twisted pair. At paragraph 181 of his expert report, volume 1 (Claim Construction, Anticipation and Obviousness), Dr. Jones states as follows:

> Since the input busses are dedicated to each user and the output is delivered to the user over a dedicated twisted pair, the skilled person would know with certainty that there is one bus selector switch for each user. This is also disclosed in the drawing of a single connection from the dedicated busses to the selector switch.

[106] Despite Dr. Jones' assertion, I am not convinced that a separate bus selector switch 91 dedicated to each user is described in the Bradley reference.

[107] Moreover, I find that the Bradley reference does not describe a processor for processing a signal for switching as defined in claim 1 of the 477 Patent. Dr. Jones points to baseband video transmitter 28 as the processor. However, processing by the baseband video transmitter 28 takes place after switching. Though I accept that the Bradley reference describes processing for transmission, it does not describe processing for switching.

[108] Accordingly, I find that the Bradley reference does not anticipate claim 1 of the 477 Patent because it fails to disclose either (i) a separate, dedicated switch for each user, or (ii) a processor for processing a signal for switching.

[109] With regard to the Rogers reference, I begin by noting that Dr. Jones (the only expert who supports this anticipation argument) acknowledges that this reference does not disclose the essential element of a separate, dedicated switch for each user.

[110] In addition, the Rogers reference (which describes a system for the delivery of a variety of audio/video applications from multiple sources, including live broadcast television, using a crosspoint switch) does not disclose a processor for processing a signal for switching. Much as in the Bradley reference, the processors cited by Dr. Jones (modem/diplexers 251 through 253) are located downstream of the switch. They process the signal for transmission but not for switching.

[111] Moreover, the upstream control signals from the user in the Rogers reference travel over the same telephone line 230a as is used for downstream audio/video signals from the switch. Thus, the Rogers reference fails to disclose the essential feature of upstream and downstream signals carried on separate media.

[112] To conclude on the Rogers reference, I find that it does not anticipate the 477 Patent because it fails to disclose any of (i) a separate, dedicated switch for each user, (ii) a switching device for processing a signal for switching, or (iii) a twisted pair for carrying upstream control signals that is separate from the conductor carrying downstream audio/video signals.

[113] I turn now to the Blahut reference which is asserted as anticipating claim 1 in the event that I agree with the plaintiffs' construction of claim 1. Since I disagree with the plaintiffs' claim construction, it follows that the Blahut reference does not anticipate. Specifically, I find that the Blahut reference fails to describe any of the following essential elements of claim 1: (i) analog signals after demodulation, (ii) a separate twisted pair for carrying upstream control signals, (iii) channel selection at the demodulator, and (iv) a separate, dedicated switch for each user.

[114] The plaintiffs also argue that the Blahut reference fails to disclose a centralized processor because the functions of a processor are performed independently by two separate components, control processor 100/101 and application processor 102. I disagree with this argument on the basis of my conclusion above that the components of the centralized processor of claim 1 of the 477 Patent need not be co-located. Even if I had not reached that conclusion, I would be satisfied that the statement in the Blahut reference to the effect that the functions of both processors could be combined in a single processor is sufficient to disclose a centralized processor whose components are co-located. I am not convinced by the plaintiffs' counterargument that the Blahut reference does not describe how this combination could be made, and therefore does not enable this feature. I see no reason to conclude that a skilled person would have any difficulty combining the functions of the two processors.

[115] The final reference asserted by Bell (in the alternative) in support of its anticipation argument is the Cameron/iMagicTV Patent Application. Again, my conclusions above concerning claim construction lead me to conclude that this reference does not describe any of

the following essential elements of claim 1: (i) analog signals after demodulation, (ii) a separate twisted pair for upstream control signals, and (iii) a separate, dedicated switch for each user.

[116] In the event that I am wrong about the four essential elements of claim 1 listed in paragraph [91] above, then I agree with Bell's alternative argument that the Blahut and Cameron/iMagicTV references each anticipate claim 1.

(3) Conclusion on Anticipation

[117] Claim 1 of the 477 Patent is not invalid for anticipation by any of the references asserted by Bell. In view of this conclusion, it follows that claims 2, 4 and 18 are likewise not invalid for anticipation.

B. *Obviousness*

(1) Applicable Law

[118] The issue of obviousness begins with s. 28.3 of the *Patent Act*:

Invention must not be obvious	**Objet non évident**
28.3 The subject-matter defined by a claim in an application for a patent in Canada must be subject-matter that would not have been obvious on the claim date to a person skilled in the art or science to which it pertains, having regard to	28.3 L'objet que définit la revendication d'une demande de brevet ne doit pas, à la date de la revendication, être évident pour une personne versée dans l'art ou la science dont relève l'objet, eu égard à toute communication :
(a) information disclosed more than one year before the filing	a) qui a été faite, plus d'un an avant la date de dépôt de la

date by the applicant, or by a person who obtained knowledge, directly or indirectly, from the applicant in such a manner that the information became available to the public in Canada or elsewhere; and	demande, par le demandeur ou un tiers ayant obtenu de lui l'information à cet égard de façon directe ou autrement, de manière telle qu'elle est devenue accessible au public au Canada ou ailleurs;
(b) information disclosed before the claim date by a person not mentioned in paragraph (a) in such a manner that the information became available to the public in Canada or elsewhere.	b) qui a été faite par toute autre personne avant la date de la revendication de manière telle qu'elle est devenue accessible au public au Canada ou ailleurs.

[119] Pursuant to s. 28.3(b), a patent claim will be invalid if, based on information that was available to the public before the claim date, its subject-matter would have been obvious to a person skilled in the art or science to which it pertains.

[120] The threshold for inventiveness (non-obviousness) has long been understood to be low. As stated in *Beloit* at 294-295:

> The test for obviousness is not to ask what competent inventors did or would have done to solve the problem. Inventors are by definition inventive. The classical touchstone for obviousness is the technician skilled in the art but having no scintilla of inventiveness or imagination; a paragon of deduction and dexterity, wholly devoid of intuition; a triumph of the left hemisphere over the right. The question to be asked is whether this mythical creature (the man in the Clapham omnibus of patent law) would, in the light of the state of the art and of common general knowledge as at the claimed date of invention, have come directly and without difficulty to the solution taught by the patent. It is a very difficult test to satisfy.
>
> …
>
> Every invention is obvious after it has been made, and to no one more so than an expert in the field. Where the expert has been

> hired for the purpose of testifying, his infallible hindsight is even more suspect. It is so easy, once the teaching of a patent is known, to say, "I could have done that"; before the assertion can be given any weight, one must have a satisfactory answer to the question, "Why didn't you?"

[121] Obviousness was discussed by the SCC in *Sanofi-Synthelabo*. At para 67 of that decision, the Court borrowed the following approach to assessing obviousness from *Pozzoli SPA v BDMO SA*, [2007] EWCA Civ 588 at para 23:

> (1) (a) Identify the notional "person skilled in the art";
>
> (b) Identify the relevant common general knowledge of that person;
>
> (2) Identify the inventive concept of the claim in question or if that cannot readily be done, construe it;
>
> (3) Identify what, if any, differences exist between the matter cited as forming part of the "state of the art" and the inventive concept of the claim or the claim as construed;
>
> (4) Viewed without any knowledge of the alleged invention as claimed, do those differences constitute steps which would have been obvious to the person skilled in the art or do they require any degree of invention?

(2) Person Skilled in the Art

[122] The first of the steps set out in *Sanofi-Synthelabo* for assessing obviousness is to identify the notional person skilled in the art. It is generally understood that this person is sufficiently skilled to understand the nature and description of the invention, and reasonably diligent in keeping up with advances in the field, but unimaginative. I will repeat here a portion of the extract from *Beloit* reproduced above as it relates to the skilled person:

> The classical touchstone for obviousness is the technician skilled in the art but having no scintilla of inventiveness or imagination; a paragon of deduction and dexterity, wholly devoid of intuition; a triumph of the left hemisphere over the right.
>
> [at 294]

[123] In general, the qualities and capabilities of the person skilled in the art for the purposes of assessing obviousness are the same as those for the purpose of construing the patent: Donald H MacOdrum, *Fox on the Canadian Law of Patents*, 5th ed (Toronto: Carswell, 2013) at § 4:13(b), quoting from *Ratiopharm Inc v Pfizer Limited*, 2009 FC 711 at para 30.

[124] Accordingly, and as indicated above, the skilled person from whose point of view the patent should be read and understood is a team including an electrical engineer, a computer engineer, and a network engineer having bachelor's degrees and several years of experience with the design and operation of telecommunications systems.

(3) Common General Knowledge

[125] Not all publicly available information is common general knowledge. Common general knowledge is limited to knowledge that is generally known by persons skilled in the relevant art at the relevant time: *Sanofi-Synthelabo* at para 37; *Mylan* at para 24. As stated in *Eli Lilly and Company v Apotex Inc*, 2009 FC 991 at para 97, quoting from *General Tire & Rubber* at 482-483, itself quoting from a 1935 decision of the UK High Court of Justice – Chancery Division in *British Acoustic Films Ltd v Nettlefold Productions* (1936), 53 RPC 221 at 250:

> In my judgment it is not sufficient to prove common general knowledge that a particular disclosure is made in an article, or series of articles, in a scientific journal, no matter how wide the

> circulation of that journal may be, in the absence of any evidence that the disclosure is accepted generally by those who are engaged in the art to which the disclosure relates. A piece of particular knowledge as disclosed in a scientific paper does not become common general knowledge merely because it is widely read, and still less because it is widely circulated. Such a piece of knowledge only becomes general knowledge when it is generally known and accepted without question by the bulk of those who are engaged in the particular art; in other words, when it becomes part of their common stock of knowledge relating to the art. …
>
> It is certainly difficult to appreciate how the use of something which has in fact never been used in a particular art can ever be held to be common general knowledge in the art.

[126] It appears to be undisputed that the following was common general knowledge at the claim date of the 477 Patent:

1. Traditional cable television distribution systems received, demodulated and processed a plurality of input signals at a central headend and subsequently delivered the full channel complement to subscribers over coax or hybrid-fibre-coax distribution networks.
2. Telephone companies were motivated to develop technologies to deliver audio/video signals over twisted pair telephone wires to compete with cable television providers.
3. The bandwidth of twisted pair telephone wires (widely deployed by telephone companies) for carrying any significant amount of information was limited.
4. Due to these bandwidth limitations, telephone companies would not be able to broadcast the full complement of channels to subscribers' premises (as was done by cable companies), but would require channel selection upstream of the twisted pair.
5. The concept of channel selection upstream of the user, or "switching", was well-developed.

6. Various methods and technologies that facilitated the transmission of larger amounts of data over twisted pair wire were well-developed. These methods and technologies included:
    a. Digitization of analog audio/video signals;
    b. Compression and encoding of digital signals into such formats as MPEG;
    c. Packetization of digital data, along with corresponding protocols including ATM, IP, TCP, RTP, UDP;
    d. IP unicast and IP multicast routing (described in the next section); and
    e. DSL technology for transmission of data over twisted pair.

(4) State of the Art

[127] Bell also argues that the skilled person had access, as of the claim date, to various systems that had been disclosed, developed, demonstrated and/or deployed and that delivered switched video over twisted pair wire via either circuit-switching (*e.g.*, Bradley, Rogers), or packet-switching (*e.g.*, Blahut, Cameron/iMagicTV). For the purposes of Cameron/iMagicTV, Bell relies, in addition to the Canadian patent application, on brochures that were allegedly distributed at a major telecommunications trade show called SuperComm in June 1998. Moreover, a working prototype of the iMagicTV system was allegedly demonstrated and described at that SuperComm show.

[128] Bell also cites a system offered by Next Level Communications (NLC) prior to the claim date which was likewise a packet-switched system for delivering video over twisted pair, and

which was likewise the subject of brochures distributed, as well as a prototype that was demonstrated and described, at the SuperComm show in June 1998.

[129] The plaintiffs argue that the iMagicTV and NLC systems are not citable for the purposes of obviousness because they do not meet the requirement of public availability. In support of this position, the plaintiffs cite jurisprudence to the effect that (i) prior art relevant for the purpose of assessing obviousness is limited to that which would have been found in a reasonably diligent search by a skilled person (*Novartis Pharmaceuticals Canada Inc v Teva Canada Limited*, 2015 FC 770 at para 53), and (ii) a public poster demonstration is insufficient to establish obviousness (*Janssen-Ortho Inc v Novopharm Ltd*, 2006 FC 1234 at para 57).

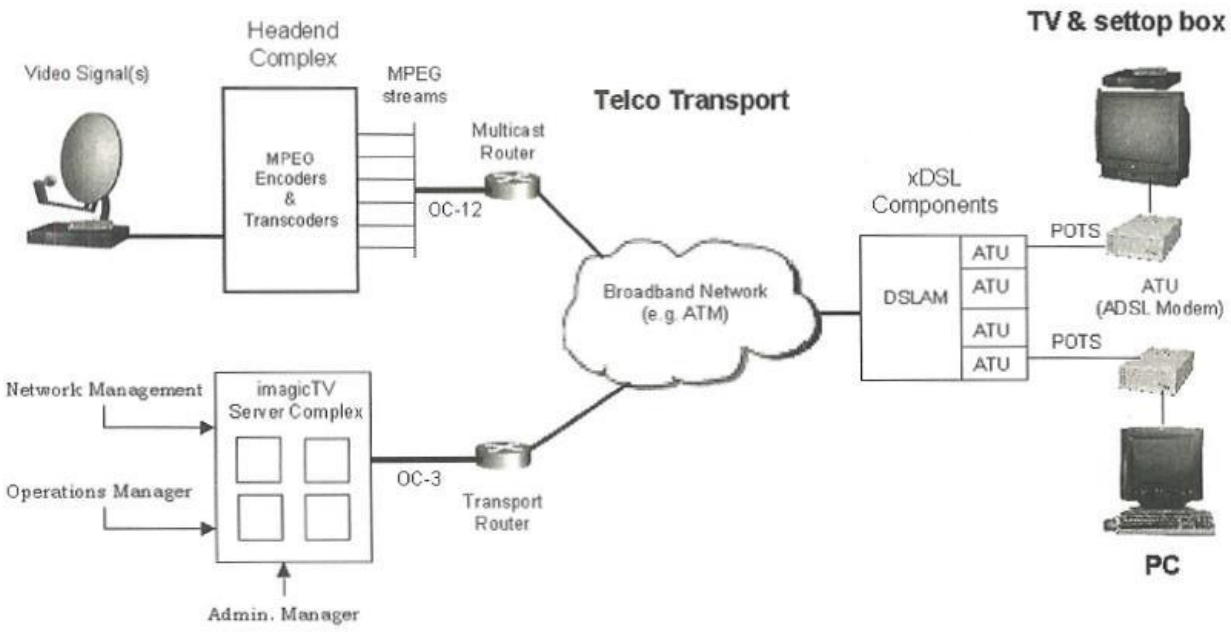
[130] I must first observe that there is evidence that both of these systems were described to many people (without any obligation of confidentiality) at the 1998 SuperComm show, and further that working prototypes of both systems were also demonstrated to many show attendees without any obligation of confidentiality. The evidence on this point for both systems is comprehensive.

[131] With regard to the iMagicTV system, Bell offers the testimony of two witnesses: Allan Cameron (founder of iMagicTV and named inventor of the Cameron/iMagicTV patent application), and Donna Redmond Gates (iMagicTV's communications officer at the time of the 1998 SuperComm show). Both Mr. Cameron and Ms. Gates attended the 1998 SuperComm show on behalf of iMagicTV and described (i) the distribution of a media kit (including the iMagicTV brochures) to attendees, and (ii) the demonstrations of their prototype. Referring to a

slide presentation that was available at the show, Mr. Cameron also provided a detailed narrative of how the iMagicTV system was described to attendees. Ms. Gates also testified that she prepared the media kit and the brochures therein after consultation with technical people within and outside iMagicTV. She explained that she found the sample of the media kit that was put into evidence in her basement at home after Bell's counsel asked her about her time at iMagicTV; she had kept it as a significant example of her work at the time.

[132] I have heard no reason to disregard or disbelieve the testimony of Mr. Cameron and Ms. Gates with regard to the iMagicTV system shown at SuperComm in 1998. I accept that the brochures were distributed and that the prototype was demonstrated and described. I accept that Mr. Cameron's memory for the events surrounding the 1998 SuperComm show is better than for other events from 1998 because it concerned the launch of the flagship product for a company that he founded and which was based on a system that he invented. In short, I accept that the iMagicTV system as described was made available to the public prior to the claim date.

[133] One iMagicTV brochure that was shown at the 1998 SuperComm show was entitled "The ImagicTV Solution Product Overview". The back side of this single-sheet two-sided brochure shows a figure (reproduced below) that is similar to Figure 2 of the Cameron/iMagicTV patent application.



[134] One thing that is notable about this figure is that it describes a system that has similarities to Bell's IPTV systems. A plurality of signals are collected at the satellite dish on the left, apparently decoded by the box underneath the satellite dish, and then sent to the headend complex for encoding into a format for transmission to subscribers over a broadband network, and through a DSLAM. A DSLAM is a Digital Subscriber Line Access Multiplexer which serves a number of subscribers receiving multicast signals. All of the input channels are available at the headend complex. As indicated in the brochure, "[t]his integrated solution takes advantage of IP Multicasting, ATM switching, MPEG and xDSL technologies, allowing home access to television and internet content, with a TV set-top box or PC, utilizing an electronic program interface."

[135] Multicasting, mentioned in the quote in the previous paragraph and implied by the presence of a multicast router in the diagram of the iMagicTV system, is a technique for

streaming data from one source host to many destination hosts over an IP multicast network. Unlike broadcasting, multicasting delivers signals only to destinations that have requested the signal stream. A different but related concept is unicasting, whereby signals are sent from one source to a single destination.

[136] ATM and DSL, mentioned in the quote in paragraph [134], stand for Asynchronous Transfer Mode and Digital Subscriber Line, respectively. These are technologies that were available prior to 1998 for delivering digitized data packets over a twisted pair. MPEG, also mentioned in the quote in paragraph [134], stands for Moving Pictures Experts Group and refers to a standard for compression of audio/video signals. The compressed signals are in digital format.

[137] The evidence is that the channel sent to a particular television set is based on a selection made by the subscriber (the user), which selection is sent upstream.

[138] As is described in greater detail below, Bell's IPTV systems receive signals from multiple sources in multiple formats, demodulate/decode them, and then process them into a common format for multicasting over a broadband network, through DSLAMs and on to subscribers. Subscribers' requests for particular channels are sent upstream over the same twisted pair that carries the audio/video signals downstream.

[139] Turning now to the NLC system that was described, shown and demonstrated at the 1998 SuperComm show, Bell relies on the testimony of three witnesses: William Weeks, Phil

McDonald and Tony Clouter. It should be noted at the outset that, in addition to the 1998 SuperComm show, the NLC system was built and demonstrated to potential customers in a trial in Arizona called DC Ranch, also prior to the claim date.

[140] Mr. Weeks is one of Bell's experts, but from 1995 to 2003 he was the Chief Technology Officer of NLC. He testified that NLC was offering telephone, television and data services (triple play) to customers over twisted pair by 1997. He stated that he and his colleagues at NLC presented and described the company's technology to prospective customers at the SuperComm shows in 1997 and 1998. At the 1998 SuperComm show, they distributed brochures describing the NLC system. Mr. Weeks also described the deployment at DC Ranch. Both at the SuperComm shows and at DC Ranch, prospective customers were given detailed descriptions of the NLC system without any obligation of confidentiality.

[141] Mr. McDonald is a long-time employee of Bell Canada and its predecessors including Bell Aliant. With reference to a contemporaneous journal of his activities and other documents, he described a visit to NLC on July 13 and 14, 1998 to view its system. Mr. McDonald stated that he was given detailed information about the NLC system and was not obliged to keep the information confidential.

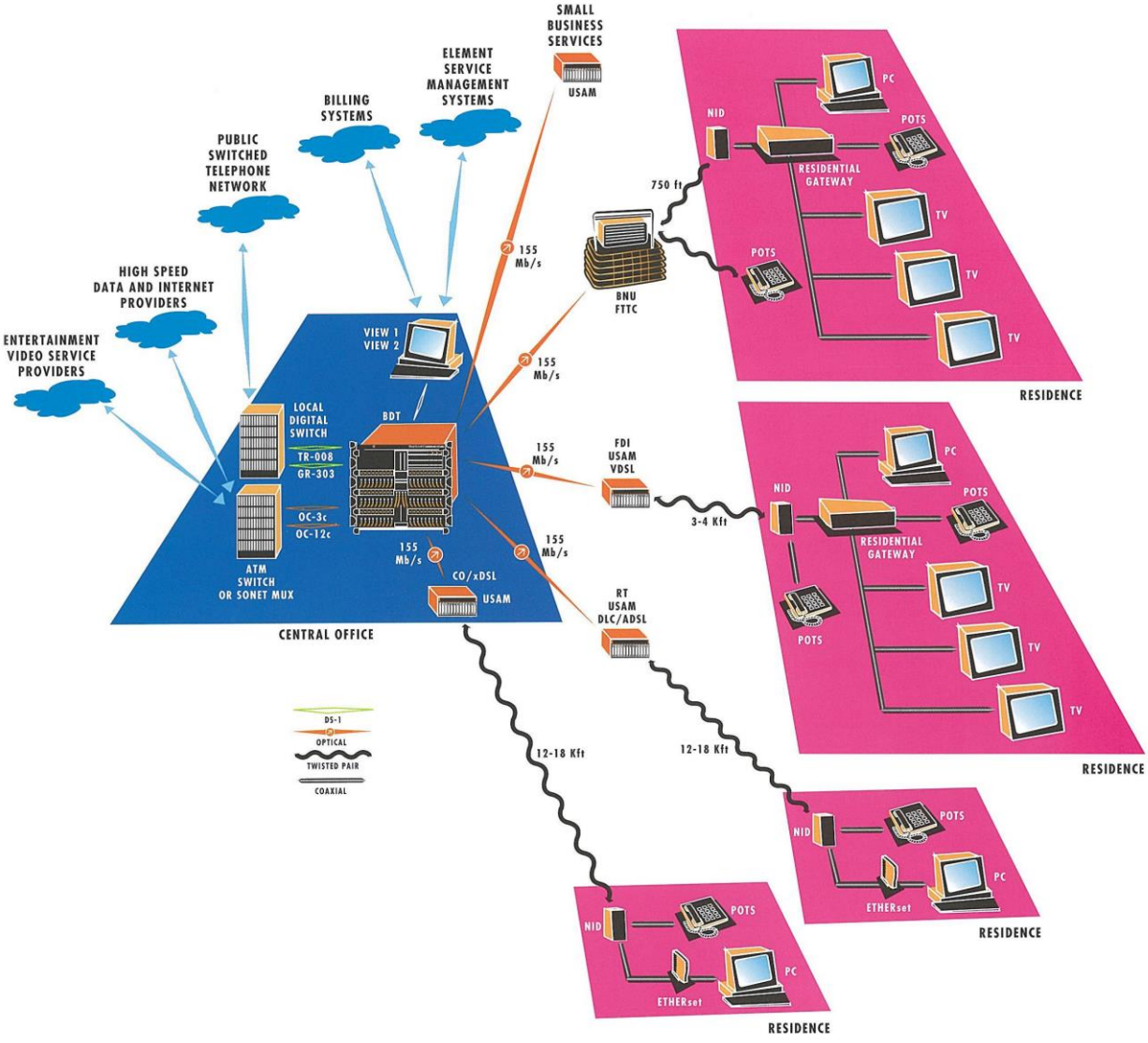
[142] Mr. Clouter is also a long-time employee of Bell Canada. He described an NLC system that was deployed at a location in Toronto called Palace Pier in 2002. Because his evidence concerning the NLC system postdates the claim date, I will not discuss it further.

[143] However, the evidence of Messrs. Weeks and McDonald as to the public availability of detailed information about the NLC system prior to the claim date is entirely credible. I also accept these witnesses' testimony as to the nature of the public disclosures of information that were made about the NLC system.

[144] Dr. Eldering, who was an employee and later a consultant for NLC from 1995, testified that he had knowledge of NLC's treatment of technical information during that time, and of the steps it took to protect many details of its system as trade secrets. He stated that Mr. Weeks' characterization of NLC's willingness to divulge information to third parties without any obligation of confidentiality was "incongruent with [his] recollection". While I accept that NLC would have been careful to keep certain details of its system confidential, I accept Mr. Weeks' testimony that NLC freely shared information to prospective customers to the extent needed to market the system.

[145] In all, Bell cites three separate public disclosures of the NLC system prior to the claim date: (i) the brochure distributed at the 1998 SuperComm show, (ii) the demonstrations and detailed descriptions of the NLC system itself to prospective customers at SuperComm, and (iii) the demonstrations and detailed descriptions of the NLC system to prospective customers at DC Ranch.

[146] The brochure describes the NLC system and provides the diagram below:



[147] In the central office is a BDT (Broadband Digital Terminal) which is the hub element of the system, receiving audio/video signals from various sources, and routing selected signals downstream to subscribers through various devices and over twisted pairs. Channel selection was made by the subscriber, and the signal associated with that selection would be sent upstream.

[148] I return now to the plaintiffs' argument that Bell has failed to establish that information concerning the iMagicTV and NLC systems would have been found in a reasonably diligent search by a skilled person. In view of the fact that these systems were demonstrated at a well-known trade show, that descriptive brochures were distributed, and that working systems were shown to prospective customers, I conclude that Bell has indeed established that information concerning these systems would have been found in a reasonably diligent search.

[149] Because of the variety of ways in which information about the iMagicTV and NLC systems were made available to the public, it is not necessary for me to consider the plaintiffs' argument that a public poster demonstration is insufficient to establish obviousness.

(5) Inventive Concept

[150] Bell's expert, Dr. Jones, characterized the inventive concept of claim 1 of the 477 Patent as a system:

1. with a central site, remote from the user, to receive multiple input signals in different formats where each signal may contain multichannel inputs;
2. that employs user control of the output channel selection of a demodulator at the central site and user control of a switch at the central site such that a user-requested channel is transmitted to the user over conductors (that include twisted pair telephone wire) without transmitting other signals that were not requested by the user;
3. in which user control of demodulation and switching is effected by sending a user control signal to a server which controls the tuning of the demodulator and the operation of the switch in response to that signal; and

4. that uses a twisted pair telephone wire to carry the user's control signal without interfering with telephone voice traffic.

[151] This definition of the inventive concept was not seriously challenged by the plaintiffs except for Dr. Eldering's opinion that the central site that receives the multiple input signals, and from which the requested channel is transmitted to the user, is located "far up in the network". Dr. Eldering explains that by sending only the channels that users have chosen to watch down through the network, bandwidth is preserved.

[152] I agree with Bell's response that the 477 Patent does not contemplate more than two places in the network where audio/video signals may flow: the redistributor (with the demodulators, the switching devices and the processors) and the communications interface. It is difficult to understand how the redistributor can be considered far up in the network, especially since it is connected to the communications interface by twisted pair, which is known to have a limited effective range. The redistributor need merely be remote from the communications interface.

[153] In my claim construction, I have found that claim 1 contemplates only analog audio/video signals once the input signals have been demodulated. I have also found that, though the conductor that carries an audio/video signal downstream may be a twisted pair, it cannot be the same twisted pair as is used for carrying control signals upstream. Moreover, I have found that the switch that sends an audio/video signal downstream must be dedicated to the communications interface to which the signal is destined. These findings must be kept in mind

when assessing obviousness. With this qualification, I accept Dr. Jones' characterization of the inventive concept of claim 1.

(6) Differences between the Prior Art and the Inventive Concept and Whether those Differences Constitute Obvious Steps

[154] The most important prior art references relied upon by Bell for the purposes of their obviousness argument are the iMagicTV and NLC systems. The fact that they were both developed independently and demonstrated at the same major trade show suggests that the ideas that are common to both were not inventive. These common ideas are:

1. receiving a plurality of input signals at a central location (the headend complex in the iMagicTV system, the BDT in the NLC system) for redistribution to a plurality of communications interfaces (at users' locations) after demodulation/decoding and processing the signals into a common format;
2. the signals received by the communications interface are transmitted to a receiving unit (television set) connected thereto;
3. sending audio/video signals downstream as streams only to those users who have requested them; and
4. users request streams by input of control signals which are carried upstream (possibly as high as the redistributor) over twisted pair telephone wires that are also used for telephone service.

[155] What the iMagicTV and NLC systems do not show is:

1. multi-channel inputs to the redistributor, or user control of channel selection at the demodulator/decoder;
2. downstream audio/video signal streams being carried over a conductor different from the twisted pair that carries the control signals upstream;
3. analog audio/video signal streams after demodulation/decoding; and
4. dedicated switches between the redistributor and each communications interface.

[156] With regard to selection of one channel from a multi-channel input based on a user's request, I accept Bell's argument that this was well-known from several prior art references. There was nothing inventive in adding this feature to the iMagicTV and NLC systems.

[157] I reach the same conclusion concerning both (i) the use of separate conductors for downstream and upstream signals, and (ii) the downstream audio/video signals being analog. If anything, having upstream and downstream channels carried on the same twisted pair is an advance on using separate twisted pairs. Separating these functions is not inventive. Likewise, if anything, digital signals would have to be seen as an advance on analog signals, and there is no invention in disclosing analog signals.

[158] The last of the above-listed features not incorporated in the iMagicTV and NLC systems is the use of a dedicated switch from the redistributor to each user. I have heard no reason to conclude that it would have been obvious to change either the iMagicTV system or the NLC system to employ separate, dedicated switches for each user. It is not apparent to me that employing a network of switches per the iMagicTV and NLC systems is an advance over the use

of separate, dedicated switches for each user. In view of this, and given the burden of proof on Bell to overcome the presumption of validity of the 477 Patent and the low threshold for inventiveness, I am not prepared to find that claim 1 is obvious.

[159] Since claim 1 is not obvious, it follows that claims 2, 4 and 18 are likewise not obvious.

[160] It should be noted that my conclusion would be different if claim 1 did not define separate, dedicated switches between the redistributor and each communications interface. In that event, I would conclude that claim 1 is obvious. I would also conclude that claims 2 and 4 are likewise obvious since they add limitations which are obvious: different signal formats in claim 2, downstream audio/video signals carried over an unused twisted pair in claim 4.

[161] However, even in the event that claim 1 is obvious, I would not conclude that claim 18 is obvious. Claim 18 defines each communications interface being assigned an identifier that the redistributor uses for routing. I have heard no reason to conclude that this feature was not inventive.

(7) Conclusion on Obviousness

[162] None of the claims in issue of the 477 Patent is invalid for obviousness.

C. *Overbreadth/Insufficiency*

[163] Since Bell's allegation that the 477 Patent is invalid for overbreadth and/or insufficiency is in the alternative that I adopt the plaintiffs' claim construction, and since I have not adopted the plaintiffs' claim construction, it is not necessary to consider or reach any conclusions on overbreadth or insufficiency.

D. *Inutility*

[164] Though paragraph 4 of Bell's Closing Argument suggests that its allegation of inutility is also in the alternative, I will nevertheless consider this allegation because its application is not entirely dependent on adopting the plaintiffs' claim construction.

(1) Applicable Law

[165] The definition of "invention" in section 2 of the *Patent Act* requires that an invention be useful. A claim that is not useful is invalid for inutility. This may occur where the claimed invention will not work at all, or where it will not do what the patent promises: *Consolboard Inc v MacMillan Bloedel (Saskatchewan) Ltd*, [1981] 1 SCR 504 at 525.

[166] An inventor need not describe the utility of his/her invention, in which case a "mere scintilla" of utility will be sufficient: *Eli Lilly Canada Inc v Novopharm Ltd*, 2010 FCA 197 at para 76 [*Eli Lilly Canada*]. If, however, an inventor does promise a specific result, utility will be measured against that promise.

[167] The promise doctrine will hold an inventor to an elevated standard of utility only where a clear and unambiguous promise has been made. Where the validity of a patent is challenged on the basis of an alleged unfulfilled promise, the patent will be construed in favour of the patentee where it can reasonably be read by the skilled person as excluding this promise: *Apotex Inc v Pfizer Canada Inc*, 2014 FCA 250 at para 66.

[168] In order for a patent to have utility, it is necessary to establish that, at the filing date thereof, the inventor had demonstrated or soundly predicted the utility of the invention: *Apotex Inc v Wellcome Foundation Ltd*, 2002 SCC 77 at para 46 [*Wellcome*]; *Sanofi-Aventis v Apotex Inc*, 2013 FCA 186 at para 46.

[169] As stated by the SCC in *Wellcome* at para 70, the doctrine of sound prediction has three components:

1. there must be a factual basis for the prediction;
2. the inventor must have at the date of the patent application an articulable and "sound" line of reasoning from which the desired result can be inferred from the factual basis; and
3. there must be proper disclosure.

(2) Analysis

[170] Bell argues that the 477 Patent makes a promise of utility of the invention over the existing wires of the public switched telephone network (PSTN) and over a considerable distance with minimal signal loss. Bell argues further that such utility was neither demonstrated nor soundly predicted prior to the filing date of the 477 Patent (July 30, 1999).

[171] In a distinct attack, Bell argues that there is no reliable evidence of the utility of any digital embodiment having been demonstrated or soundly predicted prior to the July 30, 1999 filing date.

[172] I can dispose of this second attack quickly because it depends on a conclusion that the scope of the claims of the 477 Patent encompasses digital audio/video signals being sent downstream from the redistributor to the communications interface. I have concluded that the claims do not encompass such digital signals.

[173] I would add that, having heard and considered the evidence concerning the digital prototype allegedly made by the inventor (Mr. Jeffery) as the demonstration of utility, I am not convinced that this was done prior to July 30, 1999. It appears to be common ground between the parties (and I agree) that Mr. Jeffery's memory for dates was unreliable. Also, though there was evidence other than Mr. Jeffery's testimony that the digital prototype was made, there was no other reliable evidence as to when. The plaintiffs' argument that (i) the HPNA card that was allegedly incorporated into the digital prototype was on the market by February 1, 1999, and (ii) that the Bell representatives who allegedly saw the digital prototype agreed to a Mutual Non-Disclosure Agreement for that purpose after that date (on February 23, 1999), can establish no more than that the existence of the digital prototype prior to the filing date was possible. It is not solid proof; it does not amount to a probability. It also does not overcome the evidence that the version of the HPNA card that could carry television-quality video was not available on the market until after the filing date.

[174] That said, it does not necessarily follow that claim 1 of the 477 Patent lacks utility if (i) it encompasses digital signals after demodulation, and (ii) no digital version of the invention was demonstrated or soundly predicted prior to the filing date. If an analog version of the invention has been shown to work, I am not convinced that there is anything about digital signals that would suggest that a digital version of the invention would not work equally well.

[175] The jurisprudence provides that, where an embodiment falling within the scope of a patent claim has not been demonstrated to have utility prior to the filing date, the requirements of the doctrine of sound prediction apply. As indicated above, the three requirements are (i) a factual basis for the prediction of utility, (ii) an articulable and sound line of reasoning, and (iii) a proper disclosure. A factual basis for the prediction that a digital embodiment would have utility could be the analog embodiment that had been demonstrated to have utility (subject to the discussion in the following paragraphs of this section). An articulable and sound line of reasoning could be that a skilled person, using only common general knowledge and perhaps some routine testing, could make a digital embodiment based on the analog embodiment. Finally, since the factual basis could be found in the common general knowledge, no particular disclosure would be required in respect of the digital embodiment: *Eurocopter v Bell Helicopter Textron Canada Ltée*, 2013 FCA 219 at para 153.

[176] I turn now to the argument concerning promised utility "over a considerable distance with minimal signal loss." In support of its argument, Bell cites the following passages from the 477 Patent:

> This invention relates to communications systems. In particular, this invention relates to an interactive audio/video

> telecommunications system which integrates and redistributes audio/video signals received in multiple formats to multiple users over existing telephone wires. [page 1, lines 3-6]
>
> …
>
> Still further, the invention can be implemented over existing telephone wires, which considerably reduces the cost of the system and renders installation of the system easy and inexpensive. [page 2, lines 17-19]
>
> …
>
> The multi-user site may be any site or network which provides a common distribution point for conventional twisted-pair telephone wire, for example PSTN, network category five copper cable or any other local area network cabling, distributed to individual units within the site. [page 5, lines 23-25]
>
> …
>
> The audio/video signal output by the redistributor 8 is transmitted to the communications interfaces 100 in the individual units over the unused wires in the PSTN, which are typically black/yellow. The PSTN is not limited by voltage or frequency, and can transmit the full bandwidth of the audio/video signal over a considerable distance with minimal signal loss. [page 11, lines 12-16]
>
> [Emphasis added throughout.]

[177] Bell argues that the foregoing passages amount to a promise of utility over the typical length of twisted pair between a subscriber and the last node in the network, roughly 5,000 feet.

[178] In my view, the above-cited passages do not constitute a clear and unambiguous promise of the kind required to support Bell's inutility attack. Certainly, the 477 Patent represents that it can work using the existing PSTN system, but I find that the use of the term "considerable distance" suggests deliberate vagueness and points away from a clear and unambiguous promise.

(3) Conclusion on Inutility

[179] Claim 1 is not invalid for inutility.

E. *Conclusion on Invalidity*

[180] None of the claims of the 477 Patent has been shown to be invalid.

VII. Infringement Issues

[181] As indicated above, the vestige infringement issue that remains in dispute concerns the stand-by utility of Bell Canada's multicasting network. Citing *Monsanto Canada Inc v Schmeiser*, 2004 SCC 34 [*Schmeiser*], the plaintiffs argue that Bell infringes by virtue of the fact that it could easily modify its system (by removing certain components) so that it would fall within the scope of the claims in issue.

[182] Because the plaintiffs argue that they should be awarded costs in any event of the cause (based on having had a good arguable case before they received the Corrected Information), it will also be necessary to consider the issue of infringement under the Bell Canada and Bell Aliant networks as Bell had described them prior to providing the Corrected Information.

[183] I recognize that some of the details of Bell's networks are confidential and sensitive. Accordingly, I have limited my discussion of those details in an effort to avoid or minimize disclosure of confidential information.

A. *Applicable Law*

[184] Infringement is not defined in the *Patent Act*, but it has been defined in the jurisprudence. Section 42 of the *Patent Act* provides that, during the term of a patent, the patentee and the patentee's legal representatives have "the exclusive right, privilege and liberty of making, constructing and using the invention and selling it to others to be used". Per *Schmeiser* at para 34:

> The purpose of s. 42 is to define the exclusive rights granted to the patent holder. These rights are the rights to full enjoyment of the monopoly granted by the patent. Therefore, what is prohibited is "any act that interferes with the full enjoyment of the monopoly granted to the patentee": H. G. Fox, *The Canadian Law and Practice Relating to Letters Patent for Inventions* (4th ed. 1969), at p. 349; see also Li*shman v. Erom Roche Inc.* (1996), 68 C.P.R. (3d) 72 (F.C.T.D.), at p. 77.

[185] The SCC has recognized that there may also be infringement even when an invention is not used for its intended purpose: see *Schmeiser* at para 47 and following. A classic example is a fire extinguisher, which may be "used" in the sense contemplated for patent infringement even if it is never employed to extinguish a fire. Its value lies in being <u>available</u> for the intended purpose if and when desired. This is sometimes referred to as stand-by utility. In *Schmeiser*, the stand-by utility arose from the fact that the infringing canola contained a gene that made it resistant to a pesticide. Even though Mr. Schmeiser never applied the pesticide to the canola in question, he was found to have used the patented invention because he <u>could have</u> applied pesticide. He thereby benefited from the patented invention.

[186] Generally, intention is not relevant to patent infringement. However, it becomes relevant when assessing whether a patent's stand-by utility has been exploited: *Schmeiser* at para 49 and following. Where someone simply possesses a patented invention without any intention to use it, there is no infringement. However, possession of an invention may give rise to a presumption of an intention to use it. Therefore, the burden of establishing that possession of a patented invention is without intention to use it may fall to the possessor.

[187] More generally, it may be stated that in order to establish infringement of a patent claim, the party alleging infringement must show that all of the essential elements of the claim (properly construed) are incorporated in the alleged infringement. There is no infringement if an essential element is different or omitted. There may still be infringement, however, if non-essential elements are substituted or omitted: *Free World Trust* at para 31.

B. *Bell Canada's System, as Described at Trial*

[188] Bell Canada's system for providing IPTV service has evolved over time. The architecture at the time of launch in September 2010 was called "drop and continue". There is no assertion that this architecture infringed the 477 Patent. Therefore, it is not necessary to describe its function.

[189] Beginning in September 2011, Bell Canada began migrating to a new architecture called NGCE (Next Generation Carrier Ethernet). This migration involved replacing existing DSLAMs from the drop and continue architecture one by one, and continued until June 2012. Customers

whose associated DSLAM had not yet been replaced continued to be served by the drop and continue architecture until its replacement.

[190] The NGCE architecture involves a single headend at which content is received from various sources and demodulated/decoded. A separate IRD (Integrated Receiver Decoder) is used for each of the channels received. No IRD receives more than one channel. [redacted] Each of the [redacted] constitutes a node in Bell Canada's network.

[191] The foregoing describes Bell Canada's IPTV service as it is provided to subscribers located in Ontario. Service to subscribers located in Quebec is slightly different but the difference is not relevant to my conclusions on infringement.

[192] A key feature of the NGCE architecture is that multicast streams are sent downstream only when requested. Requests for multicast streams can come from subscribers by means of

control signals that are entered into a set-top box and propagated as "join messages" upstream through the network (to the residential gateway, then to the DSLAM, and so on) until they find a node that is already receiving the multicast stream due to an earlier join message from another subscriber. Once such a node receives a join message, it propagates the requested stream downstream toward the subscriber who made the request. The join message goes no farther upstream.

[193] Requests to join may also be fixed in Bell Canada's network without the involvement of a subscriber. [redacted] Since all channels are present at the [redacted], no subscriber-generated join message can reach any farther upstream.

[194] Another situation in which a fixed join request prevents upstream propagation of subscriber-generated join messages concerns probes manufactured by [redacted]. These probes, which are deployed at various points in the network to monitor its performance, pull channels downstream. Accordingly, if a subscriber requests a channel that has been pulled down to an [redacted] probe, the subscriber's join message goes no farther upstream than the node where the [redacted] probe is located. Bell Canada's network includes two kinds of [redacted] probes, small and large. Small probes pull down <u>some</u> of the available channels, whereas large probes pull down <u>all</u> of them. Bell Canada began adding large [redacted] probes to its Ontario [redacted] in July 2012 and, by October 30, 2012, large [redacted] probes covering all of the Ontario trunk switches had been installed. Once this was done, no subscriber-generated join message could reach farther upstream than the

trunk switches. In Quebec, the first large [redacted] probe was installed in May 2012 and the last probes covering the trunk switches was installed by October 1, 2013.

[195] One important issue in this case concerns whether, and in what circumstances, a join message initiated by a subscriber could ever have reached the [redacted] at the [redacted] redundant pair. Based on the previous paragraph, it is clear that no subscriber-generated join message could reach the [redacted] after (i) in Ontario, October 30, 2012, and (ii) in Quebec, October 1, 2013.

[196] The next evolution of Bell Canada's network, referred to herein as the third architecture, is called [redacted]. It modifies the NGCE architecture by configuring static join messages in the network to send all channels downstream to the [redacted] regardless of the presence of [redacted] probes. This third architecture prevents any subscriber-generated join messages from propagating upstream beyond the [redacted], even if no [redacted] probe is present. Evolution to the third architecture began in October 2013. All but one of Bell Canada's [redacted] has now been patched over to the third architecture.

[197] Bell Canada's network also includes architecture to provide a requested channel by unicasting [redacted]. This is done to improve response time. Since the plaintiffs no longer assert that this aspect of Bell Canada's system infringes the 477 Patent, it is not necessary to describe it further.

[198] Having considered Bell Canada's system as described in the preceding paragraphs, I find that four essential elements of claim 1 of the 477 Patent are not present.

[199] First, the audio/video signals that are encoded at the headend and then sent downstream as multicast streams are in digital form, whereas claim 1 encompasses such signals only in analog form.

[200] Second, Bell Canada's network uses the same twisted pair at a subscriber's residence for carrying downstream audio/video signals as it does for carrying upstream control signals. This is contrary to what is contemplated in claim 1.

[201] Third, all of the demodulating/decoding of input signals at the headend of Bell Canada's system relates to a single channel. There are no multi-channel decoders or demodulators. Accordingly, there is no channel selection at the demodulator responsive to control signals received from a subscriber, as is essential in claim 1.

[202] Fourth, though Bell Canada's system employs a network of switches for routing audio/video signals, it does not have a separate switch dedicated to each communications interface (subscriber) as is essential in claim 1.

C. *Bell Canada's System, as Described before the Corrected Information*

[203] Because the plaintiffs seek costs in any event of the cause due to the late corrections made to Bell's discovery answers, it is necessary to consider the infringement case that the plaintiffs believed they had prior to receiving the Corrected Information. I will begin by explaining the nature of the corrections and clarifications that were made, and then discuss the situation as the plaintiffs saw it prior to receiving the Corrected Information.

[204] Bell began correcting its discovery answers by means of an email message dated January 31, 2016, from its counsel to the plaintiffs' counsel. That email identified and detailed the three different architectures of Bell Canada's network over time, and corrected the date of the migration from the drop and continue architecture to the NGCE architecture. I note that this corrected date was itself re-corrected later. The January 31, 2016 email, including accompanying attachments providing updated answers to several specific discovery questions, also emphasized and detailed the role of [redacted] probes of pulling channels down in the network and noted that "[r]arely, if ever, did a user request go to a [redacted] router or to a [redacted]." This corrected a misstatement by Bell Canada's counsel during examination for discovery in June 2015 to the effect that IQ probes were located only at the headend. Another updated answer noted that, in the third architecture, all channels are pulled down to the [redacted].

[205] Shortly after the January 31, 2016 email, the plaintiffs also provided a similar communication concerning updates to Bell Aliant's discovery answers, as well as two documents that describe Bell's systems: *Bell Canada's IPTV Network "How It Works"* and *Bell Aliant's IPTV Network "How It Works"* (the How-It-Works documents). It should be noted that these documents were also themselves updated in July 2016, two months before the trial began.

[206] Among the plaintiffs' reactions to receiving the Corrected Information was a demand that Bell review all of its original answers to discovery questions and provide any additional required corrections. Bell provided these additional corrections in several communications over the coming months.

[207] The plaintiffs complain that the Corrected Information altered the key fact on which they relied: that subscriber-generated control signals could reach the [redacted] at the [redacted]. This fact was critical to their theory of infringement that requires a single centralized server where all channels are available and where subscriber requests are received. The plaintiffs argue that the addition of the first large [redacted] probe in May 2012 made all channels available in another location, such that the [redacted] was not a centralized server as contemplated in claim 1 of the 477 Patent. The plaintiffs also argue that the information that the migration from the drop and continue architecture to the NGCE architecture was not complete until June 2012 (after installation of the first large [redacted] probe) means that "there may have been no time when there was only one location where all channels were available for switching." Prior to July 2016, the information made available to the plaintiffs indicated that the migration to the NGCE architecture was completed in October 2011, many months before installation of the first large [redacted] probe.

[208] My first observation concerning this argument is that neither changes arising from the Corrected Information nor information about the evolution of Bell Canada's network could have been determinative on the issue of infringement. For one thing, the presence of a single centralized server where all channels are available and which subscriber requests are received does not overcome the absence of any of the four essential elements discussed in the previous section. Bell Canada's system still does not have (i) analog audio/video signals after demodulation, (ii) separate twisted pairs for upstream and downstream signals, (iii) subscriber-controlled demodulation, or (iv) separate dedicated switches for each subscriber.

[209] Another observation is that the fact that the deployment of the first large [redacted] probe in the network predated completion of the migration to the NGCE architecture does not mean that no subscriber-generated request ever reached the [redacted]. It was, and remains, the case that such a request could, in rare cases, have reached the [redacted] under the NGCE architecture.

[210] The plaintiffs also argue that, because of Bell's delay in providing the Corrected Information, they were denied the opportunity to withdraw their infringement claims or negotiate a settlement, and thus avoid the expense of a trial. Mr. Lloyd testified that he would not have invested the substantial resources to bring this case to trial if he had known then how Bell's systems actually worked.

[211] In my view, the plaintiffs' actions after receiving the Corrected Information suggest otherwise. The plaintiffs could not have expected to have received the Corrected Information any earlier than September 2015, when Bell provided answers from the second round of examinations for discovery. I have heard no reason to conclude that the plaintiffs' actions would have been different if they had received the Corrected Information then instead of a few months later in January 2016.

[212] The plaintiffs also argue that it was reasonable for them to continue to pursue their infringement claims even after receiving the Corrected Information because of inconsistencies with others of Bell's discovery answers. My view is that, if those inconsistencies had been the real reason for the plaintiffs' unwillingness to accept the Corrected Information, they would have sought further examination for discovery to explore and resolve those inconsistencies before

trial. They did not. I do not accept the plaintiffs' argument that further examination for discovery would have been useless because Bell's answers kept changing. Though it is true that they produced the Corrected Information in several installments, these were usually clarifications rather than corrections. I am not convinced that portions of the Corrected Information that were produced earlier were unreliable in any substantial way.

[213] Moreover, I accept Bell's assertions that (i) in 2014, it had provided information to the plaintiffs concerning the intended deployment of [redacted] probes at [redacted], and (ii) it could not have been expected to understand the importance of the [redacted] to the plaintiffs' theory of infringement until they received a discovery answer from the plaintiffs in December 2015.

[214] With regard to information about deployment of the [redacted] probes, Bell cited a document that was made Exhibit D-83 at trial, and the evidence indicates that Bell disclosed that document to the plaintiffs.

[215] With regard to the [redacted], Bell notes that it asked the plaintiffs during the first round of examinations for discovery to identify where in its network Bell Canada had a server as contemplated in the 477 Patent. The plaintiffs' answer listed a number of components in Bell Canada's network, but did not identify the [redacted]. Further, at the second round of examinations for discovery in June 2015, Bell asked NorthVu Inc.'s corporate representative, the inventor Mr. Jeffery, to identify any other servers not mentioned in its original answer. Mr. Jeffery identified more components, but still did not identify the [redacted]. It was only in December 2015, in updating one its discovery answers, that the plaintiffs identified the [redacted] as a server. I

accept Bell's submission that it was this updated answer that prompted it to look more closely at the [redacted] in the context of its discovery answers and to provide the Corrected Information beginning in January 2016.

D. *Bell Aliant's System*

[216] Bell Aliant has some subscribers who have fibre-to-the-node (FTTN) in which fibre optic cable is used as far as a node outside the home (*e.g.*, the DSLAM), and twisted pair telephone wire is used from there to the home. Other subscribers of Bell Aliant have fibre-to-the-home (FTTH) in which fibre optic cable is used all the way to the home, and no twisted pair is used. Since the infringement allegation in respect of the FTTH subscribers was dropped in December 2015, no further description of the FTTH network is necessary.

[217] Bell Aliant's network is similar to Bell Canada's with a few differences. When its FibreOp TV service was launched, only FTTH subscribers were served. Bell Aliant served FTTN subscribers beginning only in July 2011. Bell Aliant never employed a drop and continue architecture. It employs an architecture in which all channels are received and demodulated/decoded and then encoded at a headend which pushes them to several [redacted](each [redacted]) by means of [redacted] probes or D-servers (it is not necessary to describe D-servers further). Accordingly, [redacted]. A subscriber-generated request will be propagated upstream from the home until it

finds a node that is receiving the requested channel. That control signal can reach no higher than the [redacted] that serves the subscriber.

[218] Just as with Bell Canada's system, I find that Bell Aliant's system omits four essential elements of claim 1 of the 477 Patent, and therefore does not infringe the 477 Patent.

[219] Bell Aliant first corrected its discovery questions by means of an email dated February 11, 2016. This email described the evolution of Bell Aliant's IPTV architecture, and corrected some discovery questions. The corrections, including further updates provided on May 12, May 19 and June 3, 2016, clarified that join messages originating from users could not reach farther upstream than the [redacted]. As mentioned above, Bell Aliant also provided the original version of its How-it-Works document in February 2016.

[220] My views concerning the Corrected Information as it relates to Bell Aliant are roughly the same as those relating to Bell Canada: Bell Aliant's system was non-infringing because it was missing four essential elements of the claims in issue, and these missing elements are unrelated to the Corrected Information. Also, I do not accept that any delay in providing the Corrected Information was the fault of Bell Aliant or had a substantial effect on the plaintiffs' strategy in this case.

E. *Stand-by Utility*

[221] I turn now to the plaintiffs' remaining infringement argument: that Bell Canada's network infringes because it could be made to infringe by simply removing certain components.

The components in question would appear to be the [redacted] probes and static join messages that have the effect of pulling all channels down from the [redacted] at the [redacted] pair, thus preventing any subscriber-generated request from reaching the [redacted].

[222] As stated above, I do not accept the plaintiffs' theory of infringement or that the removal of the components in question would result in a system that falls within the scope of claim 1. For this reason alone, I conclude that Bell Canada's network has never infringed claim 1. It follows that claims 2, 4 and 18 are likewise not infringed.

[223] Moreover, even if removal of the components in question would result in an infringing system, I do not accept that Bell infringes by virtue of the stand-by utility of its system. As the plaintiffs acknowledge, there is absolutely no indication that Bell has any intention to modify its system to permit subscriber-generated requests to reach the [redacted]. I do not accept that the decision in *Schmeiser* has the effect of placing the burden on an accused patent infringer, in all cases, to adduce evidence that it has no intention of modifying its non-infringing system so as to infringe. The principles discussed in *Schmeiser* were directed to cases in which the benefit of the invention is taken even when the actions described in the patent (*e.g.*, extinguishing a fire or spraying pesticide) are not performed. That is not the case here.

[224] Of course, in the event that a party whose system is found to be non-infringing later modifies it to be infringing, the patentee may then seek a remedy for the infringement.

F. *Conclusion on Infringement*

[225] There has been no infringement of claims 1, 2, 4 and 18 of the 477 Patent.

VIII. Costs

[226] As stated above, developments during the course of this litigation have changed its main thrust from patent infringement and validity to allocation of costs. Accordingly, I devote more discussion in these reasons to costs than would normally be warranted in a patent infringement action. That said, I address only the costs allocation issues that were raised by the parties and argued during trial. Other costs-related issues of the type that would typically arise in a patent infringement action may be addressed by the parties, in the event that they are unable to agree, in submissions after issuance of these reasons.

[227] I have divided the parties' arguments on costs into the six categories in the subsections below. The first three concern requests by the plaintiffs for cost consequences against Bell. The remainder concern requests by Bell for cost consequences against the plaintiffs.

[228] In reading this Costs section of these reasons, it is best to bear in mind that Bell has successfully defended itself from the patent infringement allegations and therefore the general rule is that it is entitled to have its costs. The issues discussed below concern arguments to stray from that general rule.

[229] In preparing this section of these reasons, I have considered the factors in awarding costs as listed in Rule 400(3) of the *Federal Courts Rules*, SOR/98-106, and particularly Rules 400(3)(i) and (k) which provide:

(i) any conduct of a party that tended to shorten or unnecessarily lengthen the duration of the proceeding;	i) la conduite d'une partie qui a eu pour effet d'abréger ou de prolonger inutilement la durée de l'instance;
…	[…]
(k) whether any step in the proceeding was	k) la question de savoir si une mesure prise au cours de l'instance, selon le cas :
(i) improper, vexatious or unnecessary, or	(i) était inappropriée, vexatoire ou inutile,
(ii) taken through negligence, mistake or excessive caution;	(ii) a été entreprise de manière négligente, par erreur ou avec trop de circonspection;

A. *The Corrected Information*

[230] As discussed above, the Corrected Information provided corrections and added information concerning (i) the migration of Bell Canada's system from its original drop and continue architecture to its intermediate NGCE architecture and then to its current third architecture, (ii) the locations of different types of [redacted] probes in Bell Canada's network, as well as when they were placed there and what they do, and (iii) the possibility of control signals from a subscriber reaching Bell Canada's [redacted].

[231] The plaintiffs seek costs in any event of the cause from the beginning of discovery because, in failing to provide the Corrected Information sooner, Bell "ignored their

responsibilities regarding discovery with the result that the plaintiffs were denied the opportunity to know the case they had to meet and to assess whether to continue the action at an early date."

[232] I have already concluded that, considering the plaintiffs' own answers to discovery questions, Bell could not have been expected to understand that the plaintiffs' theory of infringement centered on the [redacted], and hence the importance of [redacted] probes, before December 2015. I accept that Bell acted in good faith in answering discovery questions and in providing the Corrected Information.

[233] Moreover, I do not accept that the timing of Bell providing the Corrected Information made the difference between proceeding with the trial and reaching a settlement before trial. In my view, the evidence does not support such a conclusion, as discussed in paragraphs [210] and [211] above.

[234] Finally, I have noted that the Corrected Information makes no difference to the absence of four distinct essential elements of claim 1 from Bell's systems. The absence of even one of these elements leads to a conclusion of non-infringement. Cumulatively, the case for non-infringement is so compelling that I am not prepared to accept that the plaintiffs had a reasonable belief that they had a good arguable case before receiving the Corrected Information.

[235] I decline to make any special award of costs surrounding the Corrected Information.

B. *Bell's "Patent Trolls" Allegation*

[236] The plaintiffs seek aggravated costs as a consequence of Bell's allegation in its Statement of Defence that the plaintiffs are patent trolls. The plaintiffs complain that Bell knew from the beginning that the plaintiffs were attempting to commercialize the patented invention, and therefore knew the "patent trolls" allegation to be false. Mr. Lloyd testified regarding the embarrassment resulting from this allegation to the plaintiffs and to well-respected members of the business community who are associated with the plaintiffs.

[237] Bell replies that the plaintiffs are, in fact, patent trolls in that they are non-practising entities whose only business is the present litigation. Bell also argues that the "patent trolls" allegation is not an allegation of fraud or dishonesty of the type contemplated in *Hamilton v Open Window Bakery Ltd*, 2004 SCC 9 [*Open Window*], to prompt costs consequences.

[238] I observe first that the term "patent troll" means different things to different people. Some, like Bell, use this term to describe an entity that asserts patent rights it does not use. A less pejorative term is non-practising entity. Others, like the plaintiffs, view the term "patent troll" as connoting an entity that asserts patent rights that it did not develop and that are invalid and/or are asserted far beyond the scope contemplated at the time of the invention.

[239] Clearly, the word "troll" is not complimentary. It is intended to evoke the image of an ugly, evil creature that may live under a bridge and may attempt to extort money from someone

who wishes to use the bridge. The suggestion is that the patent troll is one who seeks to profit improperly from an asset it did not earn at the expense of the public.

[240] In my view, the plaintiffs are not patent trolls in the sense that this expression is generally used, and its use to characterize them was not warranted. However, whether or not the plaintiffs are patent trolls is more a question of opinion rather than fact. Bell's use of that term is an expression of (i) its opinion that the plaintiffs' infringement allegations are meritless, and (ii) the fact that the plaintiffs do not use the invention. As discussed above, I agree with Bell that the plaintiff's infringement allegations are meritless. I am not convinced that Bell's use of the term "patent trolls" is an allegation of fraud or dishonesty. The plaintiffs may rightly feel insulted by Bell's characterization, but there is no objective untruth in it.

[241] It is also my view that the evidence concerning the negative effects of Bell's "patent trolls" allegations is not sufficiently detailed to make a compelling case for aggravated costs. I would expect that any negative effects of the kind alluded to in Mr. Lloyd's testimony would be corrected by the issuance of these reasons. There was no evidence to suggest the contrary.

[242] I decline to award aggravated costs as a consequence of Bell's "patent trolls" allegation.

C. *Bell's Citation of 753 Prior Art References*

[243] The plaintiffs also seek cost consequences against Bell for citing 753 prior references in its Statement of Defence and Counterclaim, and for waiting until about three months prior to trial

(after the exchange of expert reports) to identify 62 references on which it intended to rely at trial.

[244] 753 is indeed an unusually large number of prior art references to be cited by a party alleging patent invalidity. But I have heard nothing to suggest that any of them was irrelevant or unrelated to the present litigation. I have indicated earlier in these reasons that it is not unusual or improper for a party to assert many prior art references in its pleadings and then to narrow the number that will be relied upon after discussing the matter with experts, and perhaps further narrow the number as the trial approaches.

[245] I am not convinced that the plaintiffs were put to unwarranted expense as a consequence of Bell's behaviour with regard to the cited prior art. By the end of February 2016, Bell had served its three experts' reports on invalidity. Mr. Weeks limited his discussion of patent invalidity to obviousness in view of the common general knowledge and the NLC system. Schedule D to his expert report listed nine prior art references. Dr. Houh considered the issues of anticipation and obviousness with reference to 30 prior art references in his Schedule D. Dr. Jones provided two expert reports whose respective Schedule Ds listed 16 distinct prior art references, 13 of which were not listed by Dr. Houh. Accordingly, by the end of February 2016, the plaintiffs knew that Bell's three experts listed 52 different prior art references in their respective Schedule Ds. The plaintiffs had an opportunity to reply to these expert reports (and did reply) and could have confidence that if Bell tried to rely on any prior art references not identified by its experts, it would not have the support of an expert opinion on the subject.

[246] For these reasons, I decline to impose cost consequences against Bell due to the number of prior art references it listed in its pleadings.

D. *Infringement Allegations in respect of Bell Aliant*

[247] I turn now to the requests by Bell for cost consequences against the plaintiffs.

[248] The first request concerns infringement allegations relating to Bell Aliant's system in respect of which Bell seeks solicitor-and-client costs. Bell's argument here comes in two parts.

[249] The first argument is the plaintiffs' decision to include Bell Aliant's FTTH subscribers in its infringement allegations at the time this action was commenced, and to maintain that position until December 2015 even though it was clear that control signals from those subscribers are not carried over a twisted pair of a telephone wire as required by claim 1. The removal of FTTH subscribers from the infringement allegations was important for Bell Aliant because the evidence is that 96% of its FibreOp TV subscribers are FTTH.

[250] The second part of Bell's argument for costs related to Bell Aliant concerns the plaintiffs' withdrawal, on day 14 of the trial, of infringement allegations in respect of all of Bell Aliant's subscribers. Bell argues that the plaintiffs received no new information between February 2016 and when they withdrew the case against Bell Aliant at trial. The plaintiffs respond that the information necessary to exculpate Bell Aliant came as part of the Corrected Information, and sworn evidence thereon came only during trial. The plaintiffs argue that they withdrew the infringement allegations against Bell Aliant promptly after hearing that evidence.

[251] In my view, it is not unusual or improper for a party to cast the net broadly in formulating its infringement allegations and then to narrow them after obtaining information during discovery. Though Bell should have its costs, those costs should not be elevated by reason of having maintained infringement allegations in respect of Bell Aliant's FTTH customers until December 2015.

[252] With respect to the late withdrawal of infringement allegations against Bell Aliant as a whole, I agree with Bell that the plaintiffs had the information necessary to conclude that Bell Aliant's system does not infringe the 477 Patent in February 2016. If the plaintiffs had doubts as to its veracity, they could have sought further examination for discovery to clear up such doubts before trial.

[253] While I am not convinced that the plaintiffs' actions with regard to Bell Aliant are such as to merit solicitor-and-client costs, I do accept that costs should be elevated because the plaintiffs commenced and pressed forward with their claim against Bell Aliant in the face of information indicating that Bell Aliant was not infringing. This information includes not just the Corrected Information which, once proven, seems to have convinced the plaintiffs that there was no infringement. It also includes the information to which the plaintiffs had access before that, indicating that Bell Aliant's system was missing the four essential elements identified above in discussion of infringement issues. I would be more understanding of the plaintiffs' perseverance with the case against Bell Aliant if there were not four distinct claim elements missing in Bell Aliant's system and if the system described in the 477 Patent was not so different from Bell

Aliant's. Based on the contortions of the claims in issue that would be required in order to find infringement, the plaintiffs should have known that Bell Aliant did not infringe.

E. *Infringement Allegations in respect of Bell Canada*

[254] Bell seeks elevated costs associated with defending the case against Bell Canada because the plaintiffs' conduct during the discovery process "(i) was deliberately complicated and obfuscating, and (ii) caused unnecessary fees to be incurred." While I recognize that there were many skirmishes between the parties during examinations for discovery that required intervention by this Court, I have not been directed to any comment from a member of this Court who was seriously critical of the plaintiffs' conduct.

[255] Moreover, while I accept that the plaintiffs were slow to provide a clear theory of infringement to Bell, I recognize that doing so may have been challenging for the plaintiffs until they had learned more about Bell's systems through the discovery process. Bell notes that they were not informed until December 2015 that the [redacted] was the focus of their theory of infringement, even though Mr. Jeffery admitted during his testimony that the plaintiffs had formed this theory as early as the fall of 2014. However, it is common ground that Mr. Jeffery's memory for dates is unreliable, and I accept the plaintiffs' argument that his recollection of the plaintiffs' knowledge in the fall of 2014 is likely incorrect.

[256] On the other hand, I find that the plaintiffs commenced the present patent infringement action against Bell Canada without a clear theory of infringement, and the theory they did eventually form was weak. Just as with regard to the case against Bell Aliant, the contortions of

the claims in issue that would be required in order to find infringement indicate that the plaintiffs should have known that Bell Canada did not infringe. Costs in relation to the case against Bell Canada should be elevated.

F. *Plaintiffs' Punitive Damages Claim*

[257] A considerable amount of time was spent during the trial, and in preparation for trial, on the issue of punitive damages. All of the evidence concerning the allegation of Bell's misappropriation of confidential information belonging to the plaintiffs is not relevant to the issue of patent infringement and could only relate to punitive damages. The total time spent at trial on the testimony of Messrs. Bowman and Lloyd (the bulk of whose testimony was relevant only to this issue) was between two and two and a half days. This was about one third of the time devoted to the plaintiffs' case in chief.

[258] Bell's request for costs in respect of the punitive damages claim is stated as "full indemnity costs" and also as "solicitor-and-client costs". When this difference was brought to the attention of Bell's counsel, the Court was directed to the decision of the SCC in *Open Window*, on which Bell relies, as well as the different costs scale available in the Federal Court. I understand Bell to read the terms "full indemnity costs" and "solicitor-and-client costs" as synonymous. Accordingly, I will treat Bell's request as one for solicitor-and-client costs. I will leave it to the parties to argue later, if necessary, the amount of those costs and whether the terms "full indemnity costs" and "solicitor-and-client costs" are indeed synonymous.

[259] Having reviewed the *Open Window* decision, I find that the key passage for the purposes of my decision is in paragraph 26:

> An unsuccessful attempt to prove fraud or dishonesty on a balance of probabilities does not lead inexorably to the conclusion that the unsuccessful party should be held liable for solicitor-and-client costs, since not all such attempts will be correctly considered to amount to "reprehensible, scandalous or outrageous conduct". However, allegations of fraud and dishonesty are serious and potentially very damaging to those accused of deception. When, as here, a party makes such allegations unsuccessfully at trial and with access to information sufficient to conclude that the other party was merely negligent and neither dishonest nor fraudulent …, costs on a solicitor-and-client scale are appropriate.

[260] Bell argues that the plaintiffs' allegations created the false impression of misconduct or impropriety by Bell. Bell specifically denied breaching any agreement with the plaintiffs, misusing the plaintiffs' confidential information, and appropriating any property of the plaintiffs.

[261] The plaintiffs' key submission in response to Bell's argument on this issue is that the allegations in support of the claim for punitive damages did not amount to allegations of dishonesty, breach of confidence or breach of trust as would be required to justify an award of solicitor-and-client costs.

[262] I recognize that there is no explicit allegation in the Statement of Claim that Bell breached any agreement with the plaintiffs, misused the plaintiffs' confidential information, or appropriated any property of the plaintiffs. However, these allegations must be implicit in the plaintiffs' pleading. Certainly, Prothonotary Martha Milczynski was satisfied that the allegations were sufficiently serious and specific to overcome Bell's motion to strike the claim for punitive damages in 2014. In her May 1, 2014 Order on the motion, Prothonotary Milczynski said:

> it is clear to me that what is alleged is that Bell had notice of the Plaintiffs' patent rights, was given access to their IPTV systems under express conditions of confidence, knew thereby details and the specifics of the invention covered by the Plaintiffs' patent rights, entered into a relationship with the Plaintiffs to commercialize the invention and then, in the words of the Plaintiffs, betrayed that relationship and proceeded to unilaterally to deploy IPTV systems that infringe those very patent rights.
>
> [Emphasis added.]

[263] In my view the word "betrayed" is key. An allegation of betrayal is effectively an allegation of dishonesty. I was not shown evidence of the plaintiffs' characterization of Bell's actions as a betrayal, but the plaintiffs did not argue that Prothonotary Milczynski was wrong in attributing that characterization to them. I accept that the plaintiffs used this characterization to overcome Bell's motion to strike. The dismissal of that motion indicates a finding that the plaintiffs alleged actions by Bell that were sufficiently malicious, oppressive and high-handed as to justify, potentially, an award of punitive damages.

[264] The plaintiffs admit that they overstated Bell's acts and do not challenge Bell's submission that they had access to information to conclude that Bell was neither dishonest nor fraudulent. Indeed, the fact that the punitive damages claim was withdrawn based on the plaintiffs' own evidence (the testimony of Messrs. Bowman and Lloyd), and before Bell adduced any evidence on the issue, indicates that the plaintiffs had access to this information prior to commencement of this action.

[265] The plaintiffs argue that many of the allegations in support of their claim for punitive damages were proved. Indeed, there is no dispute that Bell signed non-disclosure agreements

with the plaintiffs and attended meetings with them about their patented invention. The plaintiffs also argue that they withdrew their claim for punitive damages once it had been shown to have no merit following the cross-examination of Mr. Lloyd. However, neither of these arguments alters the fact that, from the beginning of this case, the plaintiffs had access to information that Bell was neither dishonest nor fraudulent.

[266] It is also relevant that the plaintiffs were made aware very early in this case of the serious cost consequences that could follow in the event that its allegations were shown to be unwarranted.

[267] In my view, Bell should have its costs in relation to the punitive damages claim awarded on a solicitor-and-client basis.

G. *Conclusion on Costs*

[268] Though I am prepared to consider the parties' submissions on costs (on issues not addressed here) following issuance of this decision, I find that the amount of those costs, with the exception of costs associated with the punitive damages claim, should be elevated by 50% to reflect the weakness of the plaintiffs' case for infringement. In addition, costs associated with the punitive damages claim should be calculated on a solicitor-and-client basis.

IX. Conclusion

[269] The plaintiffs' action and Bell's counterclaim will be dismissed. The claims in issue of the 477 Patent are valid but not infringed.

[270] The plaintiffs shall pay Bell's costs in an amount to be determined after consideration of submissions from the parties as contemplated in the Judgment below, and elevated by 50% for all issues except the punitive damages claim which will be calculated on a solicitor-and-client basis.

JUDGMENT

THIS COURT'S JUDGMENT is that:

1. The action and the counterclaim are dismissed.

2. The plaintiffs shall pay Bell Canada's costs in an amount to be determined on the basis of submissions on aspects not addressed in this judgment, and elevated by 50% for all issues except the punitive damages claim which are to be calculated on a solicitor-and-client basis.

3. If the parties are unable to agree on the quantum of costs, Bell Canada shall serve and file submissions, of no more than 12 pages, within 30 days following the date of this decision. The plaintiffs shall have 15 days following receipt of Bell Canada's submissions to serve and file their responding submissions which shall be limited to 15 pages. Thereafter, Bell Canada may, within five (5) days following receipt of the plaintiffs' responding submissions, serve and file reply submissions of no more than three (3) pages.

"George R. Locke"
Judge

APPENDIX

Plaintiffs' Expert Witnesses

1. *Charles A. Eldering*

Dr. Eldering obtained his PhD in Electrical Engineering from the University of California at Davis. He has over 20 years of work and research experience spanning the fields of electronics and microelectronics, cable and telephone communications systems, optics, and intellectual property. Dr. Eldering is a registered United States patent agent who currently provides patent consulting services through his own company.

The parties agreed upon the following Expert Stipulation:

> Dr. Eldering is an expert in the fields of cable and telecommunications with respect to the design and development of systems for delivering voice, video and data to homes and businesses.

Dr. Eldering provided an expert report on claim construction and infringement, and two reply expert reports (one on infringement and the other on the validity of the 477 Patent). In his initial expert report, he construes the claims in issue and opines that the Bell Canada and Bell Aliant systems infringe.

After this report, Bell provided the Corrected Information and disclosed two documents that describe the allegedly infringing systems (*Bell Canada's IPTV Network "How It Works"* and *Bell Aliant's IPTV Network "How It Works"*). In his reply expert report on infringement, Dr. Eldering considers the new information and opines that, if true, the Bell Aliant system does not infringe the 477 Patent. Dr. Eldering, however, remains of the opinion that the Bell Canada

system infringes. In his reply expert report on validity, Dr. Eldering opines that the asserted claims are neither anticipated nor obvious, and that the 477 Patent is not invalid for lack of utility, insufficiency of the disclosure, or overbreadth.

Dr. Eldering is an experienced expert witness who spoke clearly and precisely and ensured that he was not led astray during cross-examination. However, he was highly reticent to answer questions directly when it could negatively affect the plaintiffs and repeatedly responded to questions by using his own words rather than answering "yes" or "no". This tendency sometimes went further than was necessary to ensure that he was understood, and came close to advocacy.

2. *K.K. Ramakrishnan*

Dr. Ramakrishnan is currently a Professor with the Department of Computer Science and Engineering at the University of California, Riverside. He obtained his PhD in Computer Science from the University of Maryland, College Park, Maryland, and has over 30 years of work experience in network architecture, protocols, and systems.

The parties agreed upon the following Expert Stipulation:

> Dr. Ramakrishnan is an expert in computer and communication network architectures and protocols relating to packet-switched networks and their design and implementation.

Dr. Ramakrishnan provided two expert reports. In his first expert report, he provides background information on the IPTV industry and its evolution, and then construes the claims in issue of the 477 Patent. In his second report, Dr. Ramakrishnan explains his understanding of how Bell Canada and Bell Aliant systems work based on the documents he had at that time (prior to Bell's

sharing of the Corrected Information and the How-it-Works documents), and opines that they infringe the 477 Patent.

Dr. Ramakrishnan testified in a straightforward manner and I found him to be honest. However, I am somewhat concerned with (i) Dr. Ramakrishnan's limited expertise in respect of analog systems, such as the one disclosed in the preferred embodiment of the 477 Patent, and (ii) the staleness of the information upon which his infringement opinions are based. Importantly, in the face of cross-examination, Dr. Ramakrishnan was not able to adequately defend his conclusion that the disclosure of the 477 Patent contemplates packet-switching. Repeatedly, when he pointed to something to support his view, it was shown to be a flawed position.

Plaintiffs' Fact Witnesses

1. *Timothy Bowman*

Mr. Bowman is the President of the plaintiff, NorthVu Inc. (NorthVu). He provided evidence on the chain of title of the 477 Patent, and on the license arrangements between MediaTube Corp. (MediaTube) and NorthVu's predecessor Techbanc Inc. (Techbanc). Mr. Bowman also provided evidence of discussions between Techbanc and Bell Canada concerning the patented invention, including a February 2004 meeting and a related Mutual Non-Disclosure Agreement. Moreover, Mr. Bowman testified regarding the impact of Bell Canada's Fibe TV business on MediaTube's ability to earn royalties from its license.

The bulk of Mr. Bowman's testimony went to the issue of punitive damages, which was withdrawn during trial.

2. *Douglas Lloyd*

Mr. Lloyd is President and CEO of MediaTube, and was its representative for examination for discovery. Like Mr. Bowman, he provided evidence on the chain of title and license arrangements concerning the 477 Patent. He also testified on MediaTube's efforts to commercialize an IPTV service.

Mr. Lloyd was at times reluctant to give straightforward answers that were unfavourable to the plaintiffs. On cross-examination, his evidence that Bell took advantage of the plaintiffs collapsed. At times, his memory of dates and events was unreliable. There is also reason to doubt his frankness. During examination for discovery before trial, he had stated that there was a binding verbal license agreement with precise terms between Bell and NorthVu and/or MediaTube that remained in force. Since it was clear that the plaintiffs' patent infringement claim was inconsistent with the existence of a license agreement, the plaintiffs and Mr. Lloyd had to back away from this statement. Mr. Lloyd stated at trial that he had been thinking of the arrangement between the plaintiffs. However I find this difficult to accept since the questions posed to Mr. Lloyd on this issue during his examination for discovery were clear. I find it easier to believe that Mr. Lloyd played fast and loose with the facts in his testimony. This is more consistent with my impression of much of his testimony. For example, he testified in cross-examination that he had followed technological developments and the competitive landscape closely since 2003, with a particular focus on Bell Canada. He was aware of a 2003 announcement that Bell Canada was working with Microsoft software to test and deploy IPTV. But he also testified that he was taken completely by surprise when Bell Canada announced in September 2010 that it was launching its Bell Fibe TV service, despite multiple announcements and public statements on the subject that preceded the launch. It is difficult to understand how a

person who was following the market closely could be unaware of the publicly-announced efforts of the biggest player in that market.

As with Mr. Bowman, much of Mr. Lloyd's testimony went to the issue of punitive damages, which is no longer in dispute.

3. *Ross Jeffery*

Mr. Jeffery is the named inventor of the 477 Patent and Chief Technology Officer of a subsidiary of NorthVu. He was examined for discovery as both the inventor and corporate representative of NorthVu. Though he has assigned his rights in the patented invention, he retains a 5% interest in any award to the plaintiffs in the present litigation.

Mr. Jeffery testified concerning his background in the cable television business and his development of the patented invention. He also testified about demonstrations of his system made to various people, including representatives of Bell Canada, and his work with Messrs. Lloyd and Bowman.

Mr. Jeffery's testimony seemed generally honest, but I am concerned about (i) the reliability of his memory for several dates, and (ii) the lack of corroborating evidence concerning his development work because of his failure to make and/or keep records.

<u>Bell's Expert Witnesses</u>

1. *John Richard Jones*

Dr. Jones obtained his PhD in Applied Physics from Cornell University. He was Adjunct Professor of Electrical and Computer Engineering at North Carolina State University for 6 years,

where he taught the graduate level course "Optic Fiber Communications Systems". He has over 25 years of work, research and entrepreneurial experience in the fields of fiber optic transmission systems and switched video delivery systems. Dr. Jones is currently the Owner and Chief Engineer of Acoustic Image (a company concerned with musical instrument amplifiers), and no longer works in the telecommunications industry.

The parties agreed upon the following Expert Stipulation:

> Dr. Jones is an expert in switched digital video systems and their application in telephone networks.

Dr. Jones provided an expert report in two volumes (volume 1 on claim construction, anticipation and obviousness, and volume 2 responding to the plaintiffs' expert reports) and a reply expert report. In volume 1 of his expert report, Dr. Jones construes the claims of the 477 Patent and, based on his construction of the claims, concludes that the 477 Patent is anticipated and obvious. In volume 2 of his expert report, Dr. Jones criticises the plaintiffs' experts' broad construction of the claims of the 477 Patent, and opines that under that construction, the claims in issue in the 477 Patent are not just anticipated and obvious, but they are also invalid for insufficiency of the disclosure, overbreadth, and lack of utility. In that report, Dr. Jones also provides his opinion that Bell's IPTV systems do not infringe the 477 Patent. Finally, in his reply expert report, Dr. Jones addresses validity issues discussed in Dr. Eldering's reply expert report.

Despite having never before testified as an expert witness, Dr. Jones clearly expressed his opinions on the subject matter and documents referred to in his expert reports. In cross-examination, he conceded points that did not favour Bell and defended his position when he felt

counsel for the plaintiffs was misinterpreting either his testimony or relevant documentation. Overall, Dr. Jones was a helpful and credible witness.

2. *Henry Houh*

Dr. Houh obtained his PhD in Electrical Engineering and Computer Science from the Massachusetts Institute of Technology (MIT) and has extensive research and work experience in the fields of data networking and video over Internet Protocol (IP). Dr. Houh is currently an entrepreneur and consultant in the fields of social networking, Web 2.0, web site development, data networking, optical networking, telecommunications, media streaming and voice over IP.

The parties agreed upon the following Expert Stipulation:

> Dr. Houh is an expert in the field of data networking, including video over IP.

Dr. Houh provided an expert report and a reply expert report. In his expert report, he construes the claims of the 477 Patent at issue, and then opines that Bell's systems do not infringe the claims in issue of the 477 Patent. Dr. Jones also responds to aspects of the plaintiffs' experts' reports, and then provides his opinion that, if the plaintiffs' experts' construction of the claims is adopted, then the 477 Patent is invalid for anticipation, obviousness and overbreadth.

Like Dr. Eldering, Dr. Houh is an experienced expert witness who spoke clearly and precisely and ensured that he was not led astray during cross-examination. Also like Dr. Eldering, I find that he was at times reticent to answer questions directly when it could negatively affect his client and repeatedly responded to questions by using his own words rather than answering "yes" or "no", even when this was not necessary to ensure that he was understood. As with Dr.

Eldering, I felt that Dr. Houh's testimony came close at times to advocacy. Nevertheless, I have given Dr. Houh's opinions greater weight because I find his conclusions and reasoning easier to accept.

3. *William Weeks*

Mr. Weeks obtained a Master of Science degree in computer science from North Central College in Illinois. His thesis project focused on the technical and economic trade-offs of various architectures to deliver "triple play" services (phone, television and data). Mr. Weeks has over 30 years of experience in the telecommunications industry, and extensive and varied experience in the telecommunication and technology industries. He is currently a Fellow of Advance Product Development at a TE Connectivity, where he has worked on technologies and architectures employing fibre optics to bring telecommunications services to the home.

The parties agreed upon the following Expert Stipulation:

> Mr. Weeks is an expert in telecommunications systems, including switched digital video systems and sending video over twisted pair wire.

Mr. Weeks provided an expert report and a reply expert report. In his expert report, he describes the system for providing television service that was developed and marketed by Next Level Communications (NLC) and which is discussed in greater detail in these reasons, and opines that the 477 Patent is invalid for obviousness in view of the NLC system. In Mr. Weeks' opinion, the 477 Patent is also invalid for failing to meet its alleged promise of utility. In his reply expert report, Mr. Weeks addresses matters raised in Dr. Eldering's reply expert report. He confirms that information concerning the NLC system was disclosed to prospective customers without any

obligation of confidentiality, and criticises Dr. Eldering's opinion concerning the inventive concept of the 477 Patent.

Mr. Weeks' testimony concerning the NLC system and his opinion concerning obviousness in light thereof are credible and useful. His opinion on inutility, which was not addressed in his oral testimony, is weaker.

Bell's Fact Witnesses

I found all of Bell's fact witnesses to be credible.

1. *Cory Wishak*

Mr. Wishak was the Senior Manager of Architecture for IPTV at Bell Canada from 2011 until he left Bell in 2016. As such, he knew all about Bell's IPTV architecture. He was also involved in preparing answers to discovery questions before trial, and in preparing corrections and clarifications thereto.

Mr. Wishak detailed his involvement in preparing discovery answers as well as corrections and clarifications thereof. He also described the evolution of the network architecture of Bell Canada's IPTV service.

2. *Tony Clouter*

Mr. Clouter has been a Bell Canada employee since 1999 and has worked closely with technical support of Bell's IPTV network. He explained details of Bell Canada's network and its evolution over time. He also described a deployment of NLC's system in Toronto in 2002.

3. *Clayton Hassen*

Mr. Hassen has been a Bell Canada employee since 2005. He was closely involved in building Bell Canada's IPTV network and its migration from one architecture to another. He was also involved in preparing and later correcting Bell Canada's How-it-Works document.

4. *Brent Conrad*

Mr. Conrad is the Senior Network Architect at Bell Aliant and has held that position throughout Bell Aliant's introduction of IPTV. Mr. Conrad described the architecture of Bell Aliant's network and gave evidence on his involvement in preparing Bell Aliant's How-it-Works document and various discovery answers, as well as corrections and clarifications to the foregoing.

5. *Marty Weston*

Mr. Weston has been an employee of [redacted] for the past 11 years. [redacted] is the supplier of probes [redacted] that are deployed in Bell's IPTV networks to monitor the networks' performance. Mr. Weston is currently a senior solution expert and the Technical Account Manager for Bell Canada. As such, he is the first line of support from [redacted] in respect of Bell's [redacted] probes. Mr. Weston has detailed knowledge of the [redacted] probes and how they operate within Bell's networks, and testified in that regard.

6. *Mark Carpenter*

Mr. Carpenter was employed at Compaq from 1997 to 2000. During that time, he was involved in product development, business development, product marketing and media relations with

regard to home networking products and a desktop product. He was also Vice President of the HomePNA (Home Phoneline Networking Alliance or HPNA), whose goal was to create a standard and a certification system for home PC networking using home phone lines. Mr. Carpenter testified as to the dates when the standard was defined, when the certification lab opened, and when the first product using the HPNA standard was launched. Mr. Carpenter also testified concerning the nature and date of revisions to the original version of the standard.

Mr. Carpenter's testimony was relevant to parts of Mr. Jeffery's testimony regarding details and dates of discussions and products related to HPNA.

7. *Phil McDonald*

Mr. McDonald is a Bell employee who, in 1998, was responsible for the efforts of MT&T (Bell Aliant's predecessor) to compete with cable companies with regard to triple play services. He described meetings with NLC in July 1998 to see a deployment of its IPTV system.

8. *Allan Cameron*

Mr. Cameron was Founder and Chief Technology Officer of iMagicTV, a start-up company which, in 1998, was developing a system for providing television and high speed internet over twisted pair telephone wire. Mr. Cameron testified about the details of iMagicTV's system, including disclosures and demonstrations thereof, including at a telecommunications trade show in June 1998 called SuperComm.

9. *Donna Redmond Gates*

Ms. Gates was the Communications Officer at iMagicTV in 1998. She prepared for and attended the SuperComm show at which iMagicTV's system was presented. Her testimony primarily related to her preparation for and participation at the 1998 SuperComm show. Her testimony complemented that of Mr. Cameron.

10. *Christopher Butler*

Mr. Butler works as Office Manager for the Internet Archive, a website that provides access to a digital library of Internet sites and other cultural artifacts in digital form. The Internet Archive has created a service known as the Wayback Machine, which makes it possible for visitors to search archives of web pages by URL (*i.e.*, a website address).

Mr. Butler has submitted an affidavit which, on consent of the parties and with my agreement, was accepted in lieu of his testifying before the Court. Mr. Butler's affidavit attaches software manuals and other documents that were available on the Internet in January 1997.

FEDERAL COURT

SOLICITORS OF RECORD

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