

Exhibit 2001  
Zynga, Inc. v. Personalized Media Communications, LLC  
Case IPR2013-00164 (SCM)

For Opinion See 2006 WL 2709206, 2006 WL 2699732, 2006 WL 5153153, 2006 WL 5111122, 2006 WL 1207828, 2006 Markman 1049729, 424 F.Supp.2d 896, 2006 Markman 6131015, 416 F.Supp.2d 512

United States District Court, E.D. Texas,  
Beaumont Division.

Finisar CORPORATION, Plaintiff,

v.

THE DIRECTV GROUP, INC.; Directv Holdings, LLC; Directv Enterprises, LLC Directv Operations, LLC; Directv, Inc.; and Hughes Network Systems, Inc., Defendants.

No. 1:05-CV-0264.

March 8, 2006.

Expert Report of Dr. Charles J. Neuhauser Regarding Invalidity of United States Patent No. 5,404,505

**Case Type:** Intellectual Property >> Patent

**Case Type:** Utilities >> Internet/Telecommunications

**Jurisdiction:** E.D.Tex.

**Name of Expert:** Charles J. Neuhauser, Ph.D.

**Area of Expertise:** Engineering & Science >> Electrical Engineer

**Representing:** Unknown

The Honorable Judge Ron Clark.

I, Charles J. Neuhauser, declare as follows:

#### Introduction

My name is Charles J. Neuhauser. I am a principal of Neuhauser Associates, Inc. located at 525 West Remington Drive, Suite 126, Sunnyvale, California 94087. I have been retained by Jones, Day, Reavis and Pogue on behalf of the defendants in the matter of Finisar Corporation ("Finisar") v. DIRECTV Group, Inc. *et al* ("DIRECTV").

In this declaration I will provide opinions on certain prior art related to U.S. Patent 5,404,505 "System for Scheduling Transmission of Indexed and Requested Database Tiers on Demand at Various Repetition Rates" issued April 4, 1995 (the "505 Patent"). This patent was filed on November 1, 1991 and for purposes of this declaration I will assume that this is priority date of the application.

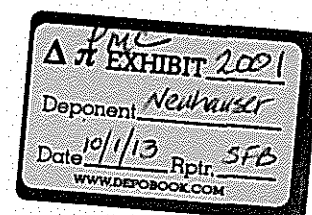
#### Personal Background

I am an electrical engineer by training with a strong formal background in computer science. My area of specialization is in the structure of hardware and software systems.

I have a B.S.E.E. (1968) from the University of Notre Dame, an M.S.E.E. from Northwestern University (1971) and a Ph.D. EE/CS from The Johns Hopkins University (1980). I have also served as a Research Assistant in the Digital Systems Laboratory at Stanford University (1973-1980). My Ph.D. thesis dealt with evaluating computer architectures using an emulation based approach. As a research assistant at Stanford I was responsible for the development of the Stanford Emulation Laboratory, a facility for use in research on computer architectures.

I have over 35 years of experience in the field of computer system design and evaluation. My first job was at The Bell Telephone Laboratories (now Lucent) as a Member of Technical Staff (1968-1971). In this position I worked on the testing of one of the first store and forward message switching systems and later on the system design of the #1A ESS (Electronic Switching System). I obtained my M.S.E.E. through a company sponsored program.

From 1973 to 1980 I worked part time at Palyn Associates, Inc. a consulting company located in San Jose, California. During this time I was responsible for the design and development of various emula-



tion engines for commercial deployment in Europe.

In 1980 I joined Palyn full-time as Director of Engineering and later as the VP of Engineering. Palyn provided a wide range of consulting services for an international clientele, including IBM, ICL, Hitachi, Mitsubishi, Honeywell, Honeywell Bull, Olivetti, Siemens and other similar companies. My responsibilities included the specification, design and testing of various computer architectures for small, medium and large scale systems. During my tenure at Palyn I was deeply involved with clients in the specification of various small and medium scale hardware/software systems.

In 1994 (and up to the present) I began working as an independent consultant doing business as CTCS and later as Neuhauser Associates, Inc. In this capacity I continue to advise clients on the technical aspects of computer and system designs. From time to time I also lead teams in doing comparative analyses of such systems. I have had extensive experience with the Intel based processors and systems, including their internal architecture.

A complete *curriculum vita* is attached as Exhibit A.

#### Technical Background

Generally speaking, the '505 Patent relates to the transmission of information from a central database to a number of receivers. It is my understanding that claims 16, 17, 22, 24, 25, 26, 39 and 44 are currently at issue in this matter. These are all so-called "method" claims. The definitions of certain words and terms in these claims have been defined by the Court (see the Markman Rulings). I will assume these definitions throughout this declaration.

#### Materials Relied Upon

In making this declaration I have relied up on the following materials:

- U.S. Patent 5,404,505, "System for Scheduling

Transmission of Indexed and Requested Database Tiers on Demand at Varying Repetition Rates"; Frank H. Levinson; issued April 4, 1995; (the " '505 Patent").

- The file history of the '505 Patent.
- Expert report of Roy A. Griffin, III, P.E. dated March 1, 2006.
- The Court's February 17 and 21, 2006 Memorandum of Opinions Interpreting Claims of the '505 Patent (the "Markman Rulings")
- Various patents, Internet Requests for Comment (RFCs) and other publications as shown on the charts attached as Exhibits D through Z.

#### One of Ordinary Skill in the Art

It is my understanding from the Markman Rulings that the Court has defined one of ordinary skill in the art of the '505 Patent as a:

"person with at least a Bachelor's degree, with a concentration of courses in computer science, involving topics such as computer operation and programming, software engineering, and data transmission. Depending on the university, this might be designated by a title such as electrical engineering, computer engineering or computer science. The person would also have a minimum of two years experience in the fields of data communications and software engineering." (Feb. 17th Markman Ruling, page 2).

In developing the opinions expressed in this report I have considered how a person of this skill level would have understood and how they would have viewed the prior art at the time the '505 Patent was filed. In doing this I have relied upon my experience in working with and supervising persons with this level of experience in the 1991 time frame.

#### Outline of Opinions

I believe that the art cited in the remainder of this

declaration, properly considered, would render the cited claims of the '505 Patent invalid. It is my understanding that a U.S. Patent filed (or with a priority date) before November 1, 1991 would be considered prior art to the '505 Patent. Similarly, and an article or publication available to the public before November 1, 1990 would also be considered prior art.

It is also my understanding that for an article or device to "anticipate" a '505 Patent claim, and thereby render it invalid, such a device or article must meet each and every element of the claim. In the case of the art presented in this declaration I will present charts illustrating how the claims of the '505 Patent are anticipated based on prior art currently available to me. In some cases it is my understanding and belief that additional materials are available. Further, it is my understanding and belief that these materials will likely enhance the charts presented. I am in the process of trying to obtain this additional information related to the articles and devices presented here and will supplement this report as appropriate once I have had the opportunity to review this information.

In presenting invalidity charts for the information that is currently available I have attempted to specifically identify aspects of such information that relate to particular elements of the '505 Patent claims. Because my evaluation of this information is ongoing it is possible that other aspects of the currently available materials may be relevant and, therefore, reserve the right to supplement this report.

#### The Clark-Molnar System

It is my view that a broadcast information system developed by Wesley A. Clark, Charles E. Molnar (the "Clark-Molnar System") and others anticipates at least claims 16, 17, 22, 24, 26, 39 and 44 of the '505 Patent. This system is exemplified by materials below:

- U.S. Patent 3,602,891 entitled "Continuous Trans-

mission Computer and Multiple Receiver System", issued August 31, 1971 (the "891 Patent").

- "A summary of the Accomplishments of the Washington University Computer Laboratories", 1967-1983, Published 1989. (the "WUCL Summary")

It is my belief and understanding that additional materials are available, including:

- "Broadcast Information Processing Systems", Clark, W. A. and Molnar, C. E.; Technical Memorandum No. 61 Computer Systems Laboratory, Washington University, St Louis Missouri; May 24, 1968.
- The archived papers of Charles E. Molnar, currently located at the Becker Medial Library, Washington University, St Louis, Missouri.

It is my belief and understanding that the Clark-Molnar System was used and known publicly at least as early as May 1974 (see e.g., WUCL Summary, page 39, Para. 3). It would have been known to at least the National Center for Health Services Research and Development, the entity that provided funding for the project. Subsequently, an operational system was made available to and used by the members of the Department of Psychiatry at Washington University. (see e.g., WUCL Summary, page 39, Para. 3 to page 40, Para. 1.). It is my understanding that the system was used to support patient self-entry of interview information and the preliminary diagnosis of patient mental health.

In summary, the Clark-Molnar system was developed to support access to medical records and to support patient medical entry. The system made use of relatively simple computer based terminals that supported data entry and calculation. However, the memory of the terminals was intended to be small. To make up for this lack of memory the inventors used a data distribution system that continuously broadcast information stored in a central data base. Individual terminals accessed this information by

establishing an address request. When the block of data associated with that address was next presented on the broadcast system the receivers would download the block. The downloaded block could either be data or program code.

One use of this system was to support interactive patient history taking. In this application a patient could select answers to questions and in response the terminal would conditionally download new question screens. In another application the receivers performed preliminary diagnosis based on query answers.

The attached chart for the Clark-Molnar system illustrates my opinion that the Clark-Molnar system would anticipate at least claims 16, 17, 22, 24, 26, 39 and 44 of the '505 Patent.

#### The Sky Cable System

In June of 1990 a consortium of cable and media companies, called Sky Cable, was engaged in the development of a satellite based digital broadcast system. As part of this development effort a request for information ("RFI") document was issued outlining the requirements for the system and particularly for the home receiver. It is my understanding and belief that this document was issued to a number of cable set top box manufacturers for the purpose of soliciting their proposals for developing an end to end digital video program distribution system. In effect, this document was issued to a group of people who were not only skilled in the art, but were working in the field that the '505 Patent alleges to address.

It is my belief that the Sky Cable RFI anticipates at least claims 16, 17, 22, 24, 25, 26, 39 and 44 of the '505 Patent. To support this opinion I have prepared the attached invalidity claim chart.

#### EP 0 472 521 B1 Patent

European Patent EP 0 472 521 B1 (the EP '521 Patent) was filed on 14 August 1989 and is titled "Information Distribution System". The inventors

are Sprague, Peter J. and others. This patent describes an information distribution system that makes use of a ?? and/or TV broadcasts to provide users with access to a library of data, including current data, such as news.

Briefly, the ??EP 521 patent describes a broadcast data transmission system that would distribute information to subscribers. The system was based on a receiving unit that would attach to the subscriber's personal computer. As information was broadcast the receiver would capture data of interest to the subscriber and store it on the disk of the attached personal computer. Thus the subscriber database was always kept up to date with the central data base from which the data was issued on a continuous basis. The system also included provisions whereby the user could request or cancel authorization to different areas of the broadcast data base. *When this occurred the receiver would extend or contract the local database.* By maintaining a local database the system provided the user with very rapid access to items of interest.

In my opinion the EP 0 472 521 B1 Patent anticipates at least claims 16, 17, 24, 26 and 39 of the '505 Patent. The attached invalidity claim chart illustrates how the claims cited are anticipated by the EP '521 Patent.

#### The PROMIS System

The Problem Oriented Medical Information System (PROMIS) was a system developed at the University of Vermont. This system was deployed and in use at the Medical Center Hospital of Vermont from 1976-1981. It was used on several hospital wards to track patient information and provide a medical knowledge database to hospital personnel.

The PROMIS system is intended to replace paper record keeping by providing users with an interactive system that would record medical information related to patient treatment, automate some treatment aspects and provide the user with access to medical information to be used in diagnosing pa-

tients. Structurally, the system was based on a network of distributed nodes. Each node was a minicomputer that managed a number of connected terminals. In addition, each node stored medical history related to a set of patients, typically those being managed by medical workers using the attached terminals.

Nodes of the PROMIS system were connected by a high speed network based on cable TV technology. This network allows for the high speed interchange of information between the nodes. Some node functioned as central databases holding general information that was needed by all the attached terminals in the network. The central database also provided storage for "frames" which were templates or forms for presenting and gathering information at terminals.

The development of the PROMIS system was supported by government grants and as such there is extensive public documentation of this system.

In my view the PROMIS system would anticipate at least claims 16, 17, 22, 24, 25, 26, 39 and 44 of the '505 Patent as summarized by the attached chart.

#### The '305 Patent

U.S. Patent 5,241,305 (the '305 Patent) describes a wireless message distribution system that makes use of pager technology, a technology that was well developed in the late 1980s. At that time pagers could be used to distribute notifications and simple messages to users. For many paging systems this was done using the so called "POCSAG" standard, a protocol that identified pagers and groups of pagers using addresses sent over the air. The '305 Patent discusses an extension of the POCSAG protocol that would allow pager technology to send much more complex messages to users. These messages, in effect, would be able to copy over a portion of a central database into the pagers of selected users. This information could then be accessed by the user. A typical application would be the transmission of sports scores or stock market prices.

To accomplish this, information was broadcast continuously and each pager was able to extract from the broadcast stream those data items of interest based on filtering patterns maintained within each pager. In addition, users could request changes to their filtering patterns. These requests were relayed to the paging provider who would then issue messages addressed to the pager that would change how received data was filtered.

In my opinion the '305 Patent anticipates at least claims 16, 22, 26 and 44 of the '505 Patent as shown on the attached chart.

#### The '866 Patent

U.S. Patent 4,868,866 (the '866 Patent) describes a broadcast system for distributing information (such as current stock prices) to a number of receivers. The system is designed to provide real-time information from a centralized database. The central database is maintained by collecting information from a number of sources and integrating it for transmission. Information for transmission is placed in various queues for transmission. A priority scheme between the queues determines when information is to be sent.

At the receiver, entitlement files determine which information the receiver will capture and display. Entitlements are distributed from the central database in response to request by users. Based on the entitlement messages broadcast, information is captured and used to update a local subscriber database. Contents of this database may then be used by the subscriber.

In my opinion the '866 Patent anticipates at least the following claims of the '505 Patent 16, 17, 22, 24, 26, 39 and 44. Attached is a chart that summarizes my opinion.

#### Internet Background

The current Internet system has been under continuous development since at least 1974, where it began

as the Arpanet, a government sponsored research project in distributed communications systems. Even in 1991 the Internet was a highly developed system based on the transmission of packet data between nodes. The actual data in the packets was very diverse and included audio, data, E-mail, real-time interchange, files and system control packages. Because the Internet was developed as an open and experimental system many different usages and techniques were developed.

The distribution of information on the Internet is (and has been) based on a data packet based technology. The purpose of data packets is simply to act as a carrier (essentially an envelope) for arbitrary data to be transferred between two addresses. The packet stream that emerges from a server is a sequence of packets that may be addressed to a great many different destinations. The network of systems that comprises the Internet itself sorts this stream of packets and passes them from one system to the next until they reach their individual and, likely different, physical destinations.

Another important aspect of Internet structure is its use of a very wide variety of technical transmission means to interconnect the various systems. In fact, the path that a packet travels from source to destination may be composed of a number of different transmission media (e.g. optical fiber, satellite channel, microwave link, coaxial cable and so forth). This is true today as it was in 1990.

One of the engines of development in the Internet environment is the Request for Comment (RFC). These are open documents developed by skilled workers interested in introducing extensions to the Internet. Work is performed publicly and the public is welcome to participate in the development of any document (of course, a reasonable level of skill is required to make any real contribution). Using this process many successful extensions to the Internet have occurred. Below I will discuss a few that bear on the '505 Patent.

#### The Domain Name System (DNS)

Nearly everything on the Internet is accessed via a name. However, the underlying transmission mechanism makes use of numerical addressing. In order to perform the translation between the human readable name and the underlying numerical address the Internet makes use of a distributed database known as the Domain Name System. This is a distributed, hierarchical database, that does not reside in one single place on the Internet. Rather, it arises from the cooperative action of many different nodes. Users requiring a translation from names to addresses access servers near them to have the translation carried out. Maintaining consistency between servers the organized interchange of messages between servers is carried out according to defined schedules.

In my view the Internet and its associated Domain Name System, as it stood in 1991, anticipates at least claims 16, 17, 22, 24, 25, 39, 44 of the '505 Patent. The attached chart summarizes the basis for my opinion and is based on materials that were widely available in 1990, or provide an overview of the technical situation in 1991.

#### NetNews

*NetNews is an Internet wide service that distributes news articles to interested users. Like many Internet based technical approaches it does not rely upon a single, centralized database; rather the database of news articles is distributed over a number of servers. Each server stores a subset of the total news database. The storage is highly redundant. Users (or systems) that want to access the current news do so by requesting a news update from the one of the servers that holds the news items of interest to them. A hierarchical database holds the articles at each server.*

In my opinion the NetNews service as it was defined and implemented in 1991 anticipates claims 16, 17, 22, 24, 25, 39 and 44 of the '505 Patent. The attached chart illustrates my opinions.

#### E-mail Fetching

E-mail is among the earliest Internet applications. It is a distributed application where a subset of systems on the Internet provide mail services to clients. In effect they act like post offices, receiving mail for transmission and holding mail for pickup. To receive mail (or to send it) client systems contact an assigned mail server. Command data packets interchanged between the client and the mail server initiate the mail transfer. Client systems may contact the E-mail server for the purpose of fetching new mail on a periodic schedule which may differ from client to client. Transmission and exchange of E-mail data packets follows the basic outline of Internet operation that I have discussed above.

In my opinion the Internet based E-mail fetch operation anticipates at least claims 16, 22, 24, 25 and 44 of the '505 Patent. The attached chart summarizes my opinions.

#### LISTSERV

LISTSERV is an early Internet mailing list system deployed in the 1980s. It allows communities of interest to exchange information without knowing explicitly who the recipients are. This is done using a server that maintains lists of recipients. Users may subscribe to a particular list (or lists) in which case they will receive postings when other users make them. Likewise, a user may post to the list, triggering mailing of that post to the list subscribers. Subscribers may interact with the LISERSERV server to define how they wish to receive postings. For instance they might receive them individually, or by digests.

In my opinion the LISERSERV mechanism as it stood in 1990 anticipates at least claims 16, 22, 24, 25 and 44 of the '505 Patent as summarized by the attached chart.

#### DIRECTV Development

I understand there may evidence that DIRECTV started development of its system in the 1980s. To the extent that evidence is elicited that DIRECTV

developed its system before the effective date of Mr. Levinson's invention, I may testify at trial as to the anticipation by DIRECTV's development work of Mr. Levinson's invention.

#### Obviousness of '505 Patent Claims

The defined person of skill in the art practicing in 1990 would have had an array of technologies available for use in implementing systems of the type contemplated in the prior art. For example, the notion that analog video and audio program material could be converted into a digital stream was well known. The person of skill in the art working in the field of the '505 Patent would have been aware of the development of the MPEG video and audio compression standards. The advantages of this technology in terms of storage and transmission of information would have been obvious. In fact, the notion of data compression as a technique to reduce the size and transmission time of digital information was widely known and practiced. The fact that analog signal streams may be converted to digital data streams (and vice versa) was well known to students of electrical and computer engineering.

One of the challenges of replacing high speed analog signal transmission with encrypted and compressed digital signal transmission is making the required equipment small enough and inexpensive enough for general consumer user, especially in the IRDs where cost is critical. The person of ordinary skill in would have been aware of the very rapid progress of VLSI (Very Large Scale Integrated [Circuit]) technology which would have allowed the placement of many thousands of logic circuits on a single mass produced chip. Thus it would have been obvious to the person skilled in that art in 1990 to convert analog based systems of the prior art to digital base systems because such systems would be less expensive to build, more reliable and would provide much improved performance.

As noted in previous sections of this report, it is my opinion that claims 16, 17, 22, 24, 25, 26 39 and 44 are anticipated by the prior art discussed above



("principal prior art"). In the event, however, that some limitations of any of those claims is not found in a particular item of principal prior art according to my opinion described above, various supplementary items of prior art would fulfill the missing limitation, and it would have been obvious to one of ordinary skill to combine those supplementary items with the principal prior art. My analysis of the supplementary prior art and its content is summarized in the charts attached as Exhibits N through Z.

#### Generating, Storing and Embedding Indices

Independent claims 16, 39 and 44 each include within the methods they recite a step of generating, storing and embedding indices. In my opinion one of ordinary skill in given the '505 Patent application and the state of knowledge in the art in 1991 could not have devised and implemented a system for generating in an automated way a set of indices that reflected the logical organization of large sets of data of a diverse character.

I declare under penalty of perjury that the contents thereof are true and correct to the best of my own personal knowledge.

END OF DOCUMENT