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PROVISIONAL APPLICATION COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION under 37 CFR 1.53(c).

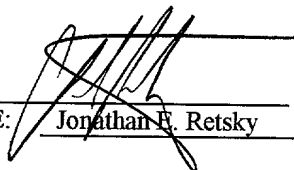| Docket Number	9921-27	Type a plus sign (+) inside this box	+

INVENTOR(S)/APPLICANT(S)

Last Name	First Name	Middle Initial	Residence (City And Either State Or Foreign Country
Lee	Jeffrey	S.	Phoenix, AZ
Bhaskaran	Parvathy		Mesa, AZ
Blanco	Richard	L.	Tempe, AZ
Clayton	Mark		Phoenix, AZ
Cucuzella	Mathew		Phoenix, AZ
Geranen	Scott		Phoenix, AZ
Gubka	Steven	S.	Gilbert, AZ
Hede	William	S.	Lake in the Hills, IL
Knappenberger	David	T.	Tempe, AZ
Smith	Merlin		Chandler, AZ
Weisshaar	Bernhard	P.	Phoenix, AZ
Wharton	Kenneth	E.	Peoria, AZ
Fuchs	Axel		Park Ridge, IL
Wallace	Scott		Flagstaff Hill, Australia

TITLE OF INVENTION (280 characters max)

REMOTELY CONFIGURABLE MULTIMEDIA ENTERTAINMENT AND INFORMATION SYSTEM FOR VEHICLES

CORRESPONDENCE ADDRESS

Jonathan E. Retsky
BRINKS HOFER GILSON & LIONE
P. O. Box 10395
Chicago

STATE	IL	ZIP CODE	60610	COUNTRY	USA

ENCLOSED APPLICATION PARTS (check all that apply)

☒ Specification   Number of Pages   31   ☐ Small Entity Statement
☒ Drawing(s)   Number of Sheets   5   ☐ Other (specify)

METHOD OF PAYMENT (check one)

☒ A check or money order is enclosed to cover the Provisional filing fees.
☐ The Commissioner is hereby authorized to charge filing fees and credit Deposit Account Number **23-1925**

PROVISIONAL FILING FEE AMOUNT(S)	$150.00

The invention was made by an agency of the United States Government or under a contract with an Agency of the United States Government.

☐ No.
☐ Yes, the name of the U.S. government agency and the Government contract number are:_____.

Respectfully submitted,

SIGNATURE: _[signature]_

TYPED OR PRINTED NAME: Jonathan E. Retsky

Date: September 22, 1999

Registration No. 34,415 (if appropriate)

☐ Additional inventors are being named on separately numbered sheets attached hereto.

PROVISIONAL APPLICATION FILING ONLY

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<u>Our Case No. 9921/27</u>

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
APPLICATION FOR UNITED STATES LETTERS PATENT

INVENTORS:	Jeffrey S. Lee
	Parvathy Bhaskaran
	Richard L. Blanco
	Mark Clayton
	Mathew Cucuzella
	Scott Geranen
	Steven S. Gubka
	William S. Hede
	David T. Knappenberger
	Merlin Smith
	Bernhard P. Weisshaar
	Kenneth E. Wharton
	Axel Fuchs
	Scott Wallace
TITLE:	REMOTELY CONFIGURABLE MULTIMEDIA ENTERTAINMENT AND INFORMATION SYSTEM FOR VEHICLES
ATTORNEY:	JONATHAN E. RETSKY BRINKS HOFER GILSON & LIONE P.O. BOX 10395 CHICAGO, ILLINOIS 60610 (312) 321-4200

REMOTELY CONFIGURABLE MULTIMEDIA ENTERTAINMENT AND INFORMATION SYSTEM FOR VEHICLES

BACKGROUND OF THE INVENTION

Entertainment systems commonly found in today's vehicles usually consist of a radio, CD/DVD player, cassette player and optionally a GPS based navigation device. The following problems are common to all such existing vehicular entertainment systems: Inadequate control interface for selecting from large numbers of broadcasts, lack of personalized broadcasts, no feature expansion, inadequate storage capabilities, no integration with portable data devices, inability to manage broadcast advertisements, and outdated navigation entry. Following is a description of each of these sets of problems.

Radios in vehicles have historically received only amplitude modulation (AM) band and frequency modulation (FM) band terrestrial radio broadcasts. AM and FM radio stations have a transmission range limited to a relatively small geographic area by government regulations. Because the number of broadcasts that can be received in most geographic areas has been relatively small, selecting a broadcast to hear in a vehicle has traditionally required no more than four types of simple receiver controls: (1) an AM/FM band selector, (2) a tuning control to allow the listener to manually scan all possible broadcast frequencies within a band, (3) a scan control that finds and plays a few seconds of each station that has sufficient signal strength to be clearly heard, and (4) a small number of preset push buttons that can each be programmed by the listener to tune to one radio station of a set band and frequency.

The small and inflexible number of radio controls creates the following two related problems: First, no method exists to select all existing AM/FM radio stations by station format or to select by format from thousands of forthcoming digital audio broadcasts. Radio stations broadcast a set format of programming (country music, news, rock music, talk, etc.). Many large metropolitan areas have up to 100 combined AM and FM stations of as many as 20+ different possible formats whose signals can be clearly received throughout most of the metropolitan area with as many more fringe stations that

can be received in parts of the area. A listener must now know the band and frequency of a radio station having a desired format he enjoys. Because most listeners prefer certain formats over other formats, it would instead be ideal to be able to tune to only stations of the preferred formats rather than have to tune through all types of broadcasts.

5 Unfortunately, in a large metropolitan area, there may be more stations of a desired format or formats than can be selected with an existing radio's few simple preset buttons.

Several proposals have unsuccessfully tried to correct this problem by enhancing broadcast systems. Some FM stations do broadcast format information along with other digital data about the station's programming using a method known as Radio Broadcast

10 Data System (RBDS), also known as RDS, involving the use of FM sub-carriers. The Program Type Category (PTY) feature of an RDS radio allows searching for radio stations by their format. There are now approximately 13 manufacturers of RBDS car receivers. With an RBDS car radio, a user could tune to FM stations by their format.

However, RBDS/RDS has not been well received in the United States. Since the

15 introduction of RDS in 1995 there were only 706 RDS broadcasters versus approximately 7,700 total FM radio stations as of a July 1998 report by the Electronic Industries Alliance. Worse yet, a February 1999 report by the Consumer Electronics Manufacturers Association shows that of this small number of RDS broadcasters in the United States, only 41% broadcast their format. Therefore, RDS broadcasts do not now solve the

20 problem for the vast majority of listeners.

The 4,784 AM stations licensed by the FCC as of May 1999 do not have an equivalent sub-carrier available to them as do FM stations to send out data about their programming. Although an international consortium of 40 broadcasters and electronic manufacturers known as Digital Radio Mondiale (DRM) have proposed a digital AM

25 broadcast system that would allow a DRM radio to tune to stations by their format, the standards for such a system have not yet been established.

Compounding the problem, new multimedia devices with wireless Internet and satellite connectivity are expected to appear in vehicles in the very near future. These multimedia devices will be able to receive existing analog AM, FM and TV audio

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broadcasts as well as receive and record thousands of new digital audio broadcasts. A wireless Internet receiver can receive thousands of digital broadcasts from the Internet from cellular (AMPS, GMS, etc.), paging, FM sub-carrier, satellite and other frequencies. As of June 1999, BRS Media consultant's report shows 2,415 Internet audio broadcasts from worldwide AM/FM radio stations that simulcast their live audio broadcasts onto the Internet, up from 1,252 the previous year. Similar future Internet audio broadcast growth is expected. In addition, satellite broadcasters such as CD Radio, XM Radio and WorldSpace are expected to transmit to vehicles at least 100 new digital audio stations apiece over satellite S-band and L-band frequencies within the next few years. These stations can be received over broad geographic areas.

The vast amount of broadcast content soon to be available easily overloads existing simple vehicle radio control designs. A new method of organizing, presenting and selecting audio broadcasts is required. An ideal solution would allow users to organize all broadcasts, no matter how they are transmitted, into the few program formats they prefer and then to easily navigate among these format categories to hear the broadcasts they desire. The listener would be freed from having to remember the band or frequency of any broadcaster in order to enjoy their favorite broadcast formats.

Another shortcoming of today's vehicles is that presets for existing AM/FM radio stations are only good for one geographic location. When traveling long distances outside an area where radio station formats are known by the listener, the most desirable radio stations from the old area that are stored in the radio's preset button memory no longer work. The listener must manually tune the radio to each available station in the new area and listen to each station to determine if it has a desired format. If the traveler is used to hearing a syndicated program that is broadcast over many radio stations throughout a country, then he may not know what station in the new area carries the syndicated program or what time the broadcast appears in the new area. Several prior attempts have unsuccessfully overcome these two related problems. They fall into two categories.

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