Title: SYSTEM AND METHOD FOR PAY TELEVISION DATA CAPTURE AND REDISTRIBUTION

Abstract: A system for redistributing television signals including a plurality of local television receiving units which receive local television signals, a plurality of remote receiving stations, and at least one television redistributor including a plurality of local television signal input units which receive the local television signals from the plurality of local television receiving units, a storage unit operative to store the received local television signals, a request receiver which receives requests for a particular local television signal from the plurality of remote receiving stations, a processor which processes received requests for a particular local television signal and retrieves the requested particular local television signal from the storage unit, and a request transmitter which receives the requested particular local television signal from the processor, and transmits the requested particular local television signal to the requesting one of the plurality of local television receiving units. Related apparatus and methods are also described.
SYSTEM AND METHOD FOR PAY TELEVISION DATA CAPTURE
AND REDISTRIBUTION

The present invention relates to systems for data capture and redistribution, and more particularly to capture and redistribution of data sent via satellite within pay television systems.

Published PCT Patent Application WO 01/37562 of SCM Microsystems GmbH describes a system wherein conditional access methods and apparatus are provided for use with digital television receivers and other digital receivers and permits multiple encryption formats. The methods and apparatus are capable of handling several digital transmission protocols in an automatic and flexible manner. An input unit is provided for analyzing and tagging incoming data bytes so that further processing operations are less dependent on the transmission format being received. A cipher handling unit is provided for adapting in real time the scrambling and descrambling performances to match the format, encryption block sized, and desired level of copy protection. A filtering mechanism is provided for filtering and handling multiple asynchronous data streams in a parallel manner.

In a release dated 8 November 2004, Trident Microsystems of California, USA, announced a fully integrated USB 2.0 television-capture device. The device integrates dual 10-bit high-quality ADCs, with a 2D digital comb filter, multi-standard color decoder, dual 16-bit audio ADCs, USB 2.0 controller and PHY, and an embedded MPU to provide high quality TV playback on notebook and desktop PCs. The device also supports digital audio-video streams in transport stream format.

The DAVIC (Digital Audio-Visual Council) 1.5 Specification, Revision 6.0, entitled TV Anytime or TV Anywhere, pages 11 - 13 and 37 - 38, discusses data capture via the user or via an agent based on a user profile.

The following US Patents and US Patent Applications are believed to reflect the state of the art in the realm of distribution and delivery of television content:

2003/0126612 of Ikeda et al;
2003/0121049 of Yurt et al;
2003/0093806 of Dureau et al;
2003/0028893 of H. Addington;
2003/0005454 of Rodriguez et al;
2003/0005453 of Rodriguez et al;
2003/0005428 of Roman;
2002/0059621 of Thomas et al;
2002/0188953 of Kenworthy;
2003/0115606 of Menez;
2002/0194612 of Lundberg et al;
2002/0184639 of Frost;
2002/0170053 of Peterka et al;
2002/0166121 of Rovira;
2002/0144274 of Gaviot et al;
2002/0129375 of Kim et al;
2002/0120936 of Del Beccaro et al;
2002/0059599 of Schein et al;
2001/0034883 of Zigmond;
6,539,548 to Hendricks et al;
6,392,664 to White et al;
5,937,331 to Kalluri et al;
5,717,452 to Janin et al; and
4,381,522 to Lambert.

The disclosures of all references mentioned above and throughout the present specification, as well as the disclosures of all references mentioned in those references, are hereby incorporated herein by reference.

The present invention, in preferred embodiments thereof, seeks to provide an improved system and method of locally capturing pay television broadcasts, and either wholly or partially redistributing the data stream to remote viewers.

There is thus provided in accordance with a preferred embodiment of the present invention a system for redistributing television signals including a plurality of local television receiving units which receive local television signals, a plurality of remote receiving stations, and at least one television redistributor including a plurality of local television signal input units which receive the local television signals from the plurality of local television receiving units, a storage unit operative to store the received local television signals, a request receiver which receives requests for a particular local
television signal from the plurality of the remote receiving stations, a processor which
processes received requests for a particular local television signal and retrieves the
requested particular local television signal from the storage unit, and a request
transmitter which receives the requested particular local television signal from the
processor, and transmits the requested particular local television signal to the requesting
one of the plurality of local television receiving units.

Further in accordance with a preferred embodiment of the present
invention each of the plurality of the remote receiving stations includes a television
signal processor, a first data port in communication with the television signal processor,
operative to receive an input of a television signal and transfer the television signal to
the television signal processor, a power supply providing power to the television signal
processor, an oscillator which provides an operating frequency to the television signal
processor, a control signal input device receives a signal indicating a particular portion
of the television signal to be selected, and a second data port in communication with the
television signal processor, operative to receive a processed television signal and
transfer the processed television signal to an external unit, wherein the television signal
processor includes a television signal receiver which receives the television signal from
the first data port, a control signal receiver which receives the signal from the control
signal input device, a selector which selects a particular portion of the television signal
based on the signal received from the control signal input device, and a television signal
output unit which transfers the selected portion of the television signal to the second
data port.

Still further in accordance with a preferred embodiment of the present
invention the requesting one of the plurality of local television receiving units requests
the particular local television signal in order to perform testing at a site remote to the
local television signal.

Additionally in accordance with a preferred embodiment of the present
invention the requesting one of the plurality of local television receiving units requests
the particular local television signal in order to remotely view the local television signal.

There is also provided in accordance with another preferred embodiment
of the present invention a universal data translator exchanger (UDAX) including a
television signal processor, a first data port in communication with the television signal
processor, operative to receive an input of a television signal and transfer the television signal to the television signal processor, a power supply providing power to the television signal processor, an oscillator which provides an operating frequency to the television signal processor, a control signal input device receives a signal indicating a particular portion of the television signal to be selected, and a second data port in communication with the television signal processor, operative to receive a processed television signal and transfer the processed television signal to an external unit, wherein the television signal processor includes a television signal receiver which receives the television signal from the first data port, a control signal receiver which receives the signal from the control signal input device, a selector which selects a particular portion of the television signal based on the signal received from the control signal input device, and a television signal output unit which transfers the selected portion of the television signal to the second data port.

Further in accordance with a preferred embodiment of the present invention the processor includes an application specific integrated circuit (ASIC).

Still further in accordance with a preferred embodiment of the present invention the processor includes a field programmable gateway array (FPGA).

Additionally in accordance with a preferred embodiment of the present invention the processor includes a complex programmable logic device (CPLD).

Moreover in accordance with a preferred embodiment of the present invention the UDAX is included in a printed circuit board.

Further in accordance with a preferred embodiment of the present invention the UDAX is included in a television signal receiver.

Still further in accordance with a preferred embodiment of the present invention the operating frequency provided by the oscillator includes synchronization information between the television signal receiver and the UDAX.

Additionally in accordance with a preferred embodiment of the present invention the television signal receiver includes a set top box.

Moreover in accordance with a preferred embodiment of the present invention the television signal receiver includes a computer.

Further in accordance with a preferred embodiment of the present invention the first data port is operative to receive a satellite television signal.
Still further in accordance with a preferred embodiment of the present invention the first data port is operative to receive a cable television signal.

Moreover in accordance with a preferred embodiment of the present invention the Ethernet based network includes a local area network.

Still further in accordance with a preferred embodiment of the present invention the Ethernet based network includes the Internet.

Additionally in accordance with a preferred embodiment of the present invention the Ethernet based network includes an intranet.

Further in accordance with a preferred embodiment of the present invention the second data port includes a USB port.

Additionally in accordance with a preferred embodiment of the present invention the second data port includes an Ethernet port.

Still further in accordance with a preferred embodiment of the present invention, the method includes a port operative to receive in-system programming commands.

There is also provided in accordance with still another preferred embodiment of the present invention a method for redistributing television signals, the method including receiving local television signals at a plurality of local television receiving units, and redistributing the local television signals at at least one television redistributor, the redistributing including receiving the local television signals from the plurality of local television receiving units at a plurality of local television signal input units, storing the received local television signals in storage, receiving a request at a receiver for a particular local television signal from a plurality of remote receiving stations, processing the received request for a particular local television signal and retrieving the requested particular local television signal from storage, and transmitting the requested particular local television signal from to a requesting one of the plurality of local television receiving units.
There is also provided in accordance with still another preferred embodiment of the present invention a method for universal data translation and exchange, the method including receiving an input of a television signal at a first data port in communication with a television signal processor, and transferring the television signal to the television signal processor, supplying power to the television signal processor, providing an operating frequency to the television signal processor, indicating a particular portion of the television signal to be selected, and receiving a processed television signal at a second data port in communication with the television signal processor, and transferring the processed television signal to an external unit, wherein processing the television signal includes receiving the television signal from the first data port, receiving the indication of the particular portion of the television signal to be selected, selecting the particular portion of the television signal, and outputting the selected portion of the television signal to the second data port.

The present invention will be understood and appreciated more fully from the following detailed description, taken in conjunction with the drawings in which:

Fig. 1 is a simplified pictorial illustration of a system for television data capture and redistribution constructed and operative in accordance with a preferred embodiment of the present invention;

Fig. 2 is a simplified pictorial illustration of television data being broadcast and captured within the system of Fig. 1;

Fig. 3 is a simplified pictorial illustration of television data being redistributed within the system of Fig. 1;

Fig. 4 is a simplified block diagram illustration of a preferred functional design of a storage and redistribution unit of the system of Fig. 1;

Fig. 5 is a simplified block diagram illustration of a preferred implementation of a Universal Data Translator Exchanger (UDAX), used for capturing and processing television data within the system of Fig. 1;

Fig. 6 is a simplified block diagram of an exemplary stream of bytes in a data stream operated on by the UDAX of Fig. 5;

Fig. 7 is a simplified block diagram illustration of a preferred functional design of a UDAX processor of Fig. 5;
Figs. 8A - 8H are a simplified schematic diagram of one particular implementation of the UDAX of Fig. 5; and

Fig. 9 and Fig. 10 are simplified flowchart diagrams of preferred methods of operation of the system of Fig. 1.

Reference is now made to Fig. 1, which is a simplified pictorial illustration of a system for television data capture and redistribution constructed and operative in accordance with a preferred embodiment of the present invention.

The system of Fig. 1 comprises:

a plurality of Universal Data Translator Exchangers (UDAXes) 100, scattered over the Earth;

at least one storage and redistribution unit 110; and

a plurality of remote receiving stations 120 are scattered over the Earth.

Although the plurality of UDAXes 100 are depicted as computers in Figs. 1 - 3, it is appreciated that the combination of hardware and software comprising the actual UDAXes may be preferably alternatively comprised, as a printed circuit board (PCB), in set top boxes or any other appropriate device. Since the plurality of remote receiving stations 120 are depicted in Figs. 1 - 3 as set top boxes in order to depict the plurality of UDAXes 100 as distinctly as possible, and in order to avoid confusion, the plurality of UDAXes 100 are depicted as computers.

In order to explain the functioning of the system of Fig. 1, reference is now additionally made to Fig. 2, which is a simplified pictorial illustration of television data being broadcast and captured within the system of Fig. 1. Television signals are preferably broadcast throughout the world to subscribers by various broadcasters. At various locations where an individual UDAX would preferably be capable of receiving the broadcast television signals, individual UDAXes among the plurality of UDAXes 100 are preferably placed in order to collect the broadcast television signals. The functioning of the individual UDAX among the plurality of UDAXes 100 is explained below in greater detail, with reference to Figs. 5 and 6.

Individual UDAXes among the plurality of UDAXes 100 preferably capture and process local television signals. A UDAX host, in which the UDAX 100 is comprised as a PCB, for example, and without limiting the generality of the foregoing, may comprise a set top box or a computer. The UDAX host preferably receives a
processed local television signal from the UDAX 100. The UDAX host preferably
transfers the processed local television signal to the at least one storage and
redistribution unit 110.

Reference is now additionally made to Fig. 3, which is a simplified
pictorial illustration of television data being redistributed within the system of Fig. 1.
Upon receiving a request from one of the plurality of remote receiving stations 120 for a
particular local television signal, the at least one storage and redistribution unit 110, as
explained below with reference to Fig. 4, preferably retrieves, in accordance with the
request, the particular local television signal. The particular local television signal is
then preferably sent to the requesting remote receiving station 120.

Those skilled in the art will appreciate that, although references in the
above discussion are to satellite television, the system of Fig. 1 is, in fact, equally
operative if the source of the television signal is not from a satellite, but from cable, the
Internet, or any other appropriate source, or from any appropriate combination thereof.

Reference is now made to Fig. 4, which is a simplified block diagram
illustration of a preferred functional design of the storage and redistribution unit 400 of
the system of Fig. 1. The storage and redistribution unit 400 preferably comprises at
least one input unit 410, here depicted as a plurality of input units. Each input unit 410
is preferably operative to receive an input of a local television broadcast preferably sent
by one of the plurality of UDAXes 100 (Fig. 1). Each input local television broadcast is
then preferably transferred to storage 420. The storage and redistribution unit 400 also
preferably comprises a request receiver 430, preferably operative to receive a request for
a particular local television signal preferably from one of the plurality of remote
receiving stations 120 (Fig. 1). Upon receipt of the request, the request receiver 430
preferably passes the request to a storage and redistribution unit processor 440. The
storage and redistribution unit processor 440 preferably retrieves the requested particular
local television signal from the storage 420. The processor 440 preferably then passes
the requested particular local television signal to a request outputter 450. The request
outputter 450 is preferably operative to transfer the requested particular local television
signal, preferably to the requesting one of the plurality of remote receiving stations.

Reference is now made to Fig. 5, which is a simplified block diagram
illustration of a preferred implementation of a Universal Data Translator Exchanger
(UDAX) 500, used for capturing and processing television data within the system of Fig. 1. The UDAX 500 is preferably connected to an external television signal receiver 510. As described above, the external television signal receiver 510 may preferably be a set top box or a computer. The external television signal receiver 510 preferably receives the local television signal and preferably passes the local television signal, as data 520, to a UDAX processor 530. The UDAX processor 530 is also preferably operative to exchange control information 535 with the television signal receiver 510.

The UDAX also preferably comprises a switch bank 540, in communication with the UDAX processor 530, which is preferably operative to enable select specific data for the UDAX processor 530 to select. For instance, a developer of conditional access software might only want to receive Entitlement Control Messages (ECMs) comprised in the local television signal, or an expatriate might wish to see the local news broadcast of his home town. The switch bank 540 preferably enables selecting only the ECMs comprised in the local television signal, or only the video and audio data comprised in the local television signal.

The external television signal receiver 510 preferably comprises a power supply 550, preferably 3.3 V, which is preferably operative to supply the UDAX 500 with an appropriate operating voltage. The power supply 550 preferably provides power to the UDAX processor 530, an oscillator 555, a USB or Ethernet interface 560, and a LED power indicator 565.

The oscillator 555 preferably provides an operating frequency, preferably 6 MHz, which preferably comprises a synchronization signal between the television signal receiver 510 and the UDAX 500.

The USB or Ethernet interface 560 preferably provides a data port for passing the processed local television signal to the UDAX host (described above with reference to Fig. 2). The processed local television signal is preferably further transferred to the at least one storage and redistribution unit 110 (Figs. 1 - 3) for storage.

The UDAX processor 530 is preferably also in communication with First In, First Out (FIFO) Random Access Memory (RAM) 570. The operation of the FIFO RAM 570 is now explained with additional reference to Fig. 6, which is a simplified block diagram of an exemplary stream of bytes in a data stream operated on by the UDAX of Fig. 5. The local television signal is received by the UDAX processor 530 as
a data stream. The data stream is comprised of bytes of data. The data stream is sent by the UDAX processor 530 as data in 572 to the FIFO RAM 570. Control data 575 sent by the UDAX processor 530 to the FIFO RAM 570 instructs the FIFO RAM 570 to return only a desired portion of the data stream. A first byte of the desired portion of the stream comprises the first byte returned as data out 577 by the FIFO RAM 570 to the UDAX processor 530. A second byte of the desired portion of the stream comprises the second byte returned as data out 577 by the FIFO RAM 570 to the UDAX processor 530. Each byte in the desired portion of the data stream is thereby returned to the UDAX processor in the correct sequence, while those bytes not in the desired portion of the data stream are thereby discarded. For example, in Fig. 6, a series of bytes in a data stream is depicted going into the FIFO RAM 570. The bytes in the data stream are sequentially numbered for ease of depiction. For illustrative purposes only, the bytes in the data stream depicted going into the FIFO RAM 570 are numbered as bytes 0 - 3, ..., 1056 - 1058, ... A second series of bytes, comprising only those bytes which comprise the desired portion of the data stream, is depicted as coming out of the FIFO RAM 570. For illustrative purposes only, the bytes in the data stream depicted coming out of the FIFO RAM 570 are numbered as bytes 1, 2, ..., 1056, 1058, ...

Returning to the explanation of the operation of the UDAX 500 and Fig. 5, the UDAX 500 also preferably comprises an in-system programming (ISP) port 575, which is preferably in communication with the UDAX processor 530. The ISP port 575 preferably enables downloading new versions of programming code into the UDAX processor 530. For example, and without limiting the generality of the foregoing, if a bug is discovered in the programming of the UDAX 500, it is preferable to be able to directly reprogram the UDAX processor 530 so as to overcome the bug. Otherwise, it might be necessary to replace each and every individual UDAX PCB board.

The UDAX processor 530 preferably also controls a plurality of status indicators, such as, for example, LEDs 580, as is well known in the art.

It is appreciated that the UDAX 500 of Fig. 5 may also comprise a suitable subcombination of the present invention.

Reference is now made to Fig. 7, which is a simplified block diagram illustration of a preferred functional design of the UDAX processor 530 of Fig. 5. The UDAX processor 530 preferably receives the local television signal at a television signal
receiver 710. The local television signal preferably is passed by the television signal receiver 710 to a selector 720. The UDAX processor 530 also preferably receives control signals from a control signal input device, such as the switch bank 540 (Fig. 5) at a control signal receiver 730. Typical control signals received from the switch bank 540 (Fig. 5) are discussed above with reference to Fig. 5. The control signals are preferably passed by the control signal receiver 730 to the selector 720. The selector 720 preferably selects a particular portion of the local television signal, preferably based on the control signals received at the control signal receiver 730. The selected particular portion of the local television signal is preferably sent by the selector 720 to a television signal output unit 740. The television signal output unit 740 then preferably outputs the selected particular portion of the local television signal preferably for forwarding to the remote receiving station 120 (Fig. 1) which initiated a now processed request for the selected particular portion of the local television signal.

Reference is now made to Figs. 8A - 8H, which are a simplified schematic diagram of one particular implementation of the UDAX of Fig. 5. The particular detailed implementation shown in Figs. 8A - 8H is provided by way of example only, and is not meant to be limiting.

U1, the ASIC / FPGA (Figs. 8D and 8E) is a programmable hardware device. U1 allows programming, and thus configuring the UDAX as an application specific custom processor. U1 preferably is field programmable after its initial configuration. Those skilled in the art will appreciate that field programming is rarely used.

U2 (Fig. 8G) is a FIFO buffer, preferably allowing storage and retrieval of captured data. New data can be written and old data retrieved simultaneously from U2 in a first in first out order. U3a (Fig. 8B) is an RS232 interface for slow speed communications with the UDAX.

U3b (Fig. 8A) is either an Ethernet interface or a USB interface. The Ethernet or USB interface is for connecting the UDAX to an external device such as a computer, a modem, or a router. U3a or U3b provides the UDAX with the ability to interface with varied types or topologies for transfer of captured data and external control.

U4 (Fig. 8H) regulates the supply voltage for the UDAX. JP1 (Fig. 8H)
preferably allows selection of one of two supply unregulated power sources to the regulator U4. JP1 selects power source from either external power or power supplied by U3b. When JP1 is in position 1, the supply source is U3. When JP1 is in position 3, the source is an external unregulated power supply.

JP2 (Fig. 8H) preferably selects regulated power sources. JP2 position 1 selects external regulated 3.3v source from the UDAX host. JP2 position 3 selects power from U4 the onboard power regulator.

LED D4 (Fig. 8H) indicates power is applied to the UDAX. LEDs D1, D2, D3 (Fig. 8H) are LED status indicators. D1, D2, D3 are programmable to indicate any status the programmer wishes to display to the end user.

Y1 (Fig. 8F) is a 6Mhz crystal oscillator providing the base operating frequency for U1, and thus the UDAX.

Dipswitches SW1, SW2, SW3 (Fig. 8F) are used for field operational changes such as mode selection.

J2 JTAG (Fig. 8G) interface is used for loading the initial programming to the U1. J2 can also be used to reprogram the U1 in the field.

J3 (Fig. 8A) connects the UDAX to the UDAX host for data collection. Incoming data is streamed through J3 to the U1 for parsing, selection, and transfer to U2 for storage while waiting for retransmission to U3a or U3b. Captured and parsed data is save in U2 for transfer to the host computer or external device by use of either an USB (U3a) or an Ethernet interface (U3b).

J4 (Fig. 8C) is for future expansion use.

Reference is now made to Fig. 9 and Fig. 10, which are simplified flowchart diagrams of preferred methods of implementation of the system of Fig. 1. The methods of Fig. 9 and Fig. 10 are believed to be self explanatory in light of the above discussion.

It is appreciated that various features of the invention which are, for clarity, described in the contexts of separate embodiments may also be provided in combination in a single embodiment. Conversely, various features of the invention which are, for brevity, described in the context of a single embodiment may also be provided separately or in any suitable subcombination.

It will be appreciated by persons skilled in the art that the present
invention is not limited by what has been particularly shown and described hereinabove. Rather the scope of the invention is defined only by the claims which follow:
CLAIMS

1. A system for redistributing television signals comprising:
a plurality of local television receiving units which receive local
television signals;
a plurality of remote receiving stations; and
at least one television redistributor comprising:
a plurality of local television signal input units which receive the
local television signals from the plurality of local television receiving units;
a storage unit operative to store the received local television
signals;
a request receiver which receives requests for a particular local
television signal from the plurality of the remote receiving stations;
a processor which processes received requests for a particular
local television signal and retrieves the requested particular local television signal from
the storage unit; and
a request transmitter which receives the requested particular local
television signal from the processor, and transmits the requested particular local
television signal to the requesting one of the plurality of local television receiving units.
2. The system for redistributing television signals according to claim 1, and
wherein each of the plurality of the remote receiving stations comprises:
a television signal processor;
a first data port in communication with the television signal processor,
operative to receive an input of a television signal and transfer the television signal to
the television signal processor;
a power supply providing power to the television signal processor;
an oscillator which provides an operating frequency to the television
signal processor;
a control signal input device receives a signal indicating a particular
portion of the television signal to be selected; and
a second data port in communication with the television signal processor,
operative to receive a processed television signal and transfer the processed television
signal to an external unit,
wherein the television signal processor comprises:

a television signal receiver which receives the television signal from the first data port;

a control signal receiver which receives the signal from the control signal input device;

a selector which selects a particular portion of the television signal based on the signal received from the control signal input device; and

a television signal output unit which transfers the selected portion of the television signal to the second data port.

3. The system according to either claim 1 or claim 2, and wherein the requesting one of the plurality of local television receiving units requests the particular local television signal in order to perform testing at a site remote to the local television signal.

4. The system according to either claim 1 or claim 2, and wherein the requesting one of the plurality of local television receiving units requests the particular local television signal in order to remotely view the local television signal.

5. A universal data translator exchanger (UDAX) comprising:

a television signal processor,

a first data port in communication with the television signal processor, operative to receive an input of a television signal and transfer the television signal to the television signal processor;

a power supply providing power to the television signal processor;

an oscillator which provides an operating frequency to the television signal processor;

a control signal input device receives a signal indicating a particular portion of the television signal to be selected; and

a second data port in communication with the television signal processor, operative to receive a processed television signal and transfer the processed television signal to an external unit,

wherein the television signal processor comprises:

a television signal receiver which receives the television signal from the first data port;
a control signal receiver which receives the signal from the
control signal input device;

a selector which selects a particular portion of the television
signal based on the signal received from the control signal input device; and

a television signal output unit which transfers the selected portion
of the television signal to the second data port.

6. The UDAX according to claim 5, and wherein the processor comprises
an application specific integrated circuit (ASIC).

7. The UDAX according to claim 5, and wherein the processor comprises a
field programmable gateway array (FPGA).

8. The UDAX according to claim 5, and wherein the processor comprises a
complex programmable logic device (CPLD).

9. The UDAX according to claim 5, and wherein the UDAX is comprised
in a printed circuit board.

10. The UDAX according to claim 9, and wherein the UDAX is comprised in
a television signal receiver.

11. The UDAX according to claim 5, and wherein the operating frequency
provided by the oscillator comprises synchronization information between the television
signal receiver and the UDAX.

12. The UDAX according to claim 11, and wherein the television signal
receiver comprises a set top box.

13. The UDAX according to claim 11, and wherein the television signal
receiver comprises a computer.

14. The UDAX according to claim 5, and wherein the first data port is
operative to receive a satellite television signal.

15. The UDAX according to claim 5, and wherein the first data port is
operative to receive a cable television signal.

16. The UDAX according to claim 5, and wherein the first data port is
operative to receive a television signal over an Ethernet based network.

17. The UDAX according to claim 16, and wherein the Ethernet based
network comprises a local area network.

18. The UDAX according to claim 16, and wherein the Ethernet based
network comprises a wide area network.

19. The UDAX according to claim 16, and wherein the Ethernet based
network comprises the Internet.

20. The UDAX according to claim 16, and wherein the Ethernet based
network comprises an intranet.

21. The UDAX according to claim 5, and wherein the second data port
comprises a USB port.

22. The UDAX according to claim 5, and wherein the second data port
comprises an Ethernet port.

23. The UDAX according to claim 5, and also comprising a port operative to
receive in- system programming commands.

24. A method for redistributing television signals, the method comprising:
receiving local television signals at a plurality of local television
receiving units; and

redistributing the local television signals at at least one television
redistributor, the redistributing comprising:

receiving the local television signals from the plurality of local
television receiving units at a plurality of local television signal input units;

storing the received local television signals in storage;

receiving a request at a receiver for a particular local television
signal from a plurality of remote receiving stations;

processing the received request for a particular local television
signal and retrieving the requested particular local television signal from storage; and

transmitting the requested particular local television signal from
to a requesting one of the plurality of local television receiving units.

25. A method for universal data translation and exchange, the method
comprising:

receiving an input of a television signal at a first data port in
communication with a television signal processor, and transferring the television signal
to the television signal processor;

supplying power to the television signal processor;

providing an operating frequency to the television signal processor;
indicating a particular portion of the television signal to be selected; and receiving a processed television signal at a second data port in communication with the television signal processor, and transferring the processed television signal to an external unit,

wherein processing the television signal comprises:

receiving the television signal from the first data port;

receiving the indication of the particular portion of the television signal to be selected;

selecting the particular portion of the television signal; and

outputting the selected portion of the television signal to the second data port.
FIG. 8D

VCC VCC VCC

VCCio VCCio

#26 - FIFO D0
#27 - FIFO D1
#28 - FIFO D2
#29 - FIFO D3
#30 - FIFO D4
#31 - FIFO D5
#32 - FIFO D6
#33 - FIFO D7
#34 - FIFO D8

#01 - SNIFFIN 0
#02 - SNIFFIN 1
#03 - SNIFFIN 2
#04 - SNIFFIN 3
#05 - SNIFFIN 4
#06 - SNIFFIN 5
#07 - SNIFFIN 6
#08 - SNIFFIN 7

#09 - AVAL0
#10 - AVAL1

#11 - BYTECLK/GCK1
#12 - PACKCLK

U1 FPGA OR ASIC

#35 - FIFO Q0
#36 - FIFO Q1
#37 - FIFO Q2
#38 - FIFO Q3
#39 - FIFO Q4
#40 - FIFO Q5
#41 - FIFO Q6
#42 - FIFO Q7
#43 - FIFO Q8

#44 - EF
#45 - FF

#46 - FIFO PAE
#47 - FIFO PAF
FIG. 9

RECEIVE LOCAL TELEVISION SIGNALS AT A PLURALITY OF LOCAL TELEVISION RECEIVING UNITS

REDISTRIBUTE THE LOCAL TELEVISION SIGNALS AT AT LEAST ONE TELEVISION REDISTRIBUTOR, THE REDISTRIBUTION COMPRISING:

RECEIVE FROM THE PLURALITY OF LOCAL TELEVISION RECEIVING UNITS THE LOCAL TELEVISION SIGNALS AT A PLURALITY OF LOCAL TELEVISION SIGNAL INPUT UNITS

STORE THE RECEIVED LOCAL TELEVISION SIGNALS

RECEIVE A REQUEST AT A RECEIVER FOR A PARTICULAR LOCAL TELEVISION SIGNAL FROM A PLURALITY OF REMOTE RECEIVING STATIONS

PROCESS THE RECEIVED REQUEST FOR A PARTICULAR LOCAL TELEVISION SIGNAL AND RETRIEVE THE REQUESTED PARTICULAR LOCAL TELEVISION SIGNAL FROM STORAGE

TRANSMIT THE REQUESTED PARTICULAR LOCAL TELEVISION SIGNAL FROM TO A REQUESTING ONE OF THE PLURALITY OF LOCAL TELEVISION RECEIVING UNITS
FIG. 10

RECEIVE AN INPUT OF A TELEVISION SIGNAL AT A FIRST DATA PORT IN COMMUNICATION WITH A TELEVISION SIGNAL PROCESSOR, AND TRANSFER THE TELEVISION SIGNAL TO THE TELEVISION SIGNAL PROCESSOR

SUPPLY POWER TO THE TELEVISION SIGNAL PROCESSOR

PROVIDE AN OPERATING FREQUENCY TO THE TELEVISION SIGNAL PROCESSOR

INDICATE A PARTICULAR PORTION OF THE TELEVISION SIGNAL TO BE SELECTED

RECEIVE A PROCESSED TELEVISION SIGNAL AT A SECOND DATA PORT IN COMMUNICATION WITH THE TELEVISION SIGNAL PROCESSOR, AND TRANSFER THE PROCESSED TELEVISION SIGNAL TO AN EXTERNAL UNIT, WHEREIN PROCESSING THE TELEVISION SIGNAL INCLUDES:

RECEIVE THE TELEVISION SIGNAL FROM THE FIRST DATA PORT

RECEIVE THE INDICATION OF THE PARTICULAR PORTION OF THE TELEVISION SIGNAL TO BE SELECTED

SELECT THE PARTICULAR PORTION OF THE TELEVISION SIGNAL

OUTPUT THE SELECTED PORTION OF THE TELEVISION SIGNAL TO THE SECOND DATA PORT