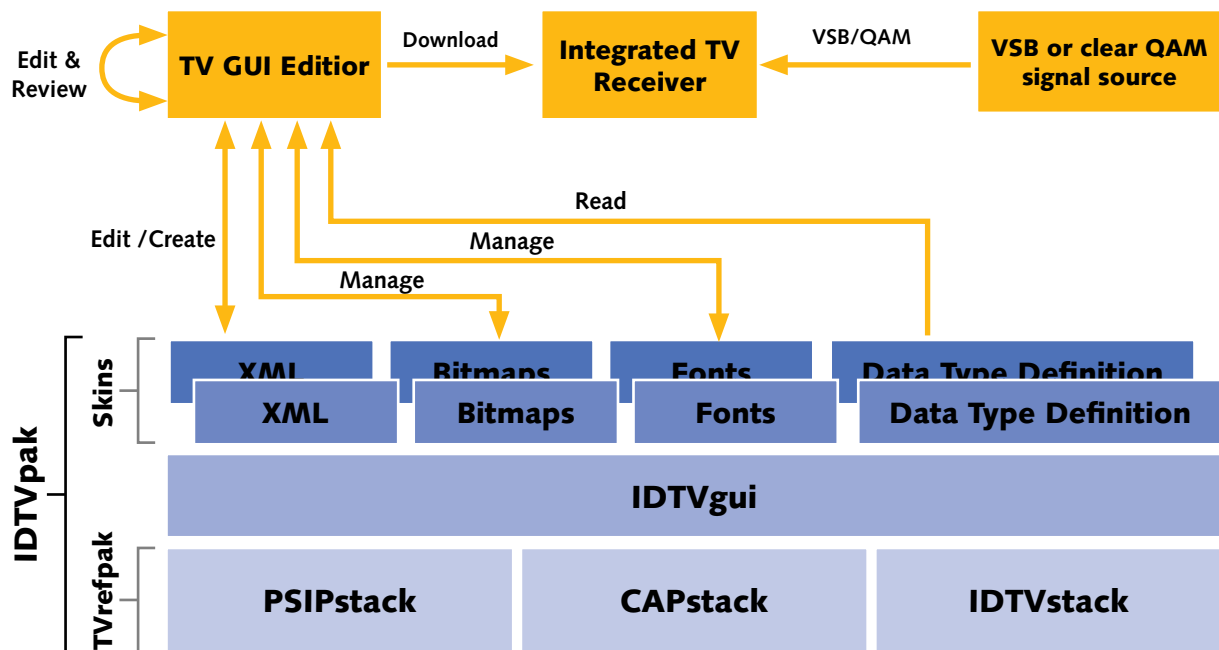


# ● IDTVpak

## Integrated Digital TV Software

### TECHNOLOGY

IDTVpak is a complete software package for implementing an integrated analog plus digital TV receiver for the North American market. It includes all the required protocols and customizable user interfaces to support ATSC, NTSC, clear QAM, S-Video, composite, component and HDMI inputs. CableCARD™ interface is optional. BitRouter also provides a graphical environment for editing and simulating the user interface. The complete IDTVpak environment looks as follows:



### PSIPstack

BitRouter's implementation of the ATSC T3S8 A/65B PSIP (Program and System Information Protocol for Terrestrial Broadcast and Cable, Rev. B) and ANSI/SCTE 65 2002 (formerly DVS 234, Service Information Delivered Out-of-Band for Digital Cable Television) protocols. It includes support for the optional ATSC Directed Channel Change table and full support for processing of SCTE 18 2002 (formerly DVS 208, Emergency Alert Message for Cable, approved as a joint standard with CEA as ANSI-J-STD-042-2002). Over fifty API calls are provided to support frequency scan, channel navigation, retrieval of EPG information and retrieval of private data. PSIPstack supports both analog and digital tuners and stores both analog and digital channels in its channel map. More details on PSIPstack can be found at [www.bitrouter.com/products/psipstack.htm](http://www.bitrouter.com/products/psipstack.htm).

## CAPstack

CAPstack implements the digital TV closed captioning standard specified by EIA-708-B and CEA-608-B as mandated by the FCC order number "FCC 00-259." It is a complete implementation of the standard. The implementation provides a font engine interface to allow any commercial font engine to be used. An API is provided to allow applications to change font and display settings as per the FCC mandate. More details on CAPstack can be found at [www.bitrouter.com/products/cap-stack.htm](http://www.bitrouter.com/products/cap-stack.htm).

## IDTVstack

IDTVstack is a collection of features required to support:

- Analog tuning
- eXtended Data Services (XDS) found in the NTSC vertical blanking interval (VBI)
- Analog video decoding
- HDMI input
- Interface to analog input and output sources
- Interface to the display device such as LCD panel, CRT, PDP, etc.
- Picture and sound controls

These features are implemented using a TV Abstraction Layer API to minimize porting effort across platforms.

## PODstack

PODstack is an optional component of IDTVpak. It is only required to support the CableCARD™ interface as specified by ANSI/SCTE 28 2004 and SCTE 41 2004. OEM Specific functionality is isolated in a CableCARD™ Interface API for easy adaptability to individual models. The implementation is provided with a unique CableCARD™ software simulator. More details on PODstack can be found at [www.bitrouter.com/products/podstack.htm](http://www.bitrouter.com/products/podstack.htm).

## IDTVgui

Integrated digital TV GUI is based on BitRouter's, patent pending, XML State Machine (XSM) technology. Using XSM, pre-defined state machines implement the core logic and menu tree for the product. This core can be skinned using XML and bitmaps. A few sample skins are included with IDTVgui. Skins can be modified by manually editing the XML source code or using the XSM Graphical Editor tool. The UI implements channel change, channel setup, EPG, parental control, input source selection, picture and sound controls and preferences menus.

## LCD Panel Tuning Utility

This is a Windows based utility which sets up all the relevant registers of the LCD display driver. It communicates with the target over RS-232 and "tunes" the LCD display driver's registers in terms of the target LCD panel parameters. An OEM can use this utility to input the target LCD panel characteristics, manipulate them and visually make sure that the display port registers are set up optimally for the LCD panel being used.

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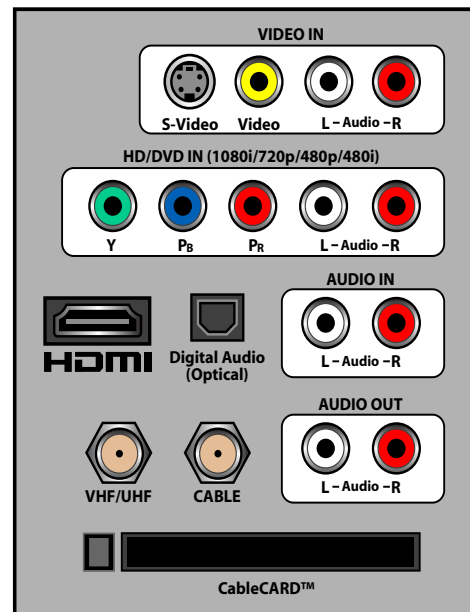
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## TV GUI Editor

TGE is a graphical utility which allows a GUI designer to modify the XML skins provided with IDTVpak. TGE runs on a standard PC and includes an IDTVpak simulator. This simulator is the exact same code which runs on the final target, however, has been ported to run on Win32 and OpenGL on a PC. This allows the entire video device to be simulated on a PC. TGE also includes a virtual remote control so that the GUI designer can simulate the complete user experience with the modified skin.

## Automated Software Updates

IDTVpak licensees have the option to include pre-integrated UpdateTV™ technology from UpdateLogic, Inc. UpdateTV™ is a complete service which automates the distribution of software patches and upgrades directly to digital TV devices over terrestrial and cable networks.



Above: IDTVstack supports all digital and analog interfaces