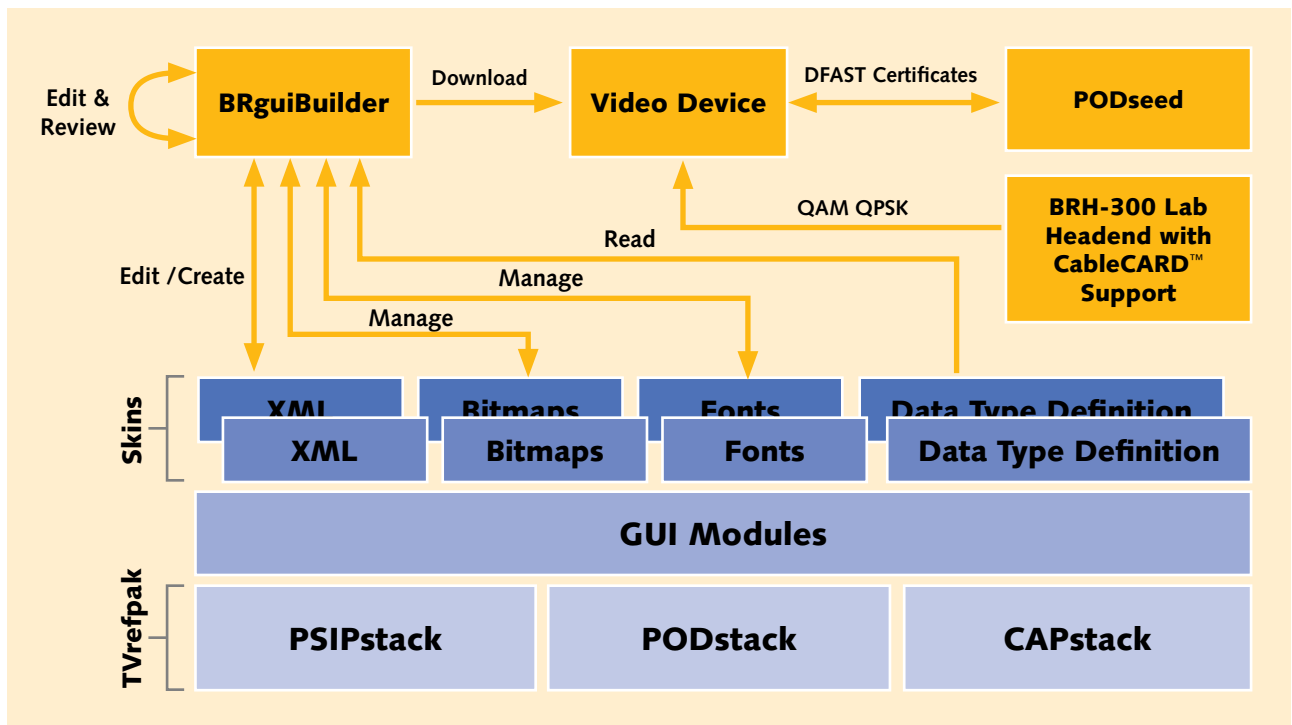


Digital TV

BitRouter provides a suite of configurable digital TV protocols, GUI modules, GUI authoring tool, CableCARD™ and TV software development platform.

Products

The following figure illustrates how digital TV engineers can develop with BitRouter's digital TV products, development tools and test tools.



PSIPstack

BitRouter's implementation of the ATSC 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 in the PSIPstack data sheet located at www.bitrouter.com/products/psipstack.htm.

Digital TV

PODstack

PODstack implements the CableCARD™ interface mandated by the FCC for digital televisions as specified by ANSI/SCTE 28 2004 and SCTE 41 2004. PODstack is easily adaptable to OEM specific models and functionality because the CableCARD™ Interface is isolated from specific features by a well defined API. BitRouter provides a unique CableCARD™ software simulator with this implementation. M-CARD™ and DCAS™ support is currently under development. More details on PODstack can be found at www.bitrouter.com/products/podstack.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 in the CAPstack data sheet located at www.bitrouter.com/products/capstack.htm.

TVrefpak

TVrefpak is a complete software solution for a silicon reference board. It is a combination of PSIPstack, PODstack, CAPstack and a reference UI application. TVrefpak has been BitRouter's flagship product for the past few years. More details on TVrefpak can be found at www.bitrouter.com/products/tvrefpak.htm.

GUI Modules

BitRouter offers several configurable GUI modules for TV receivers. The GUI modules are based on a BitRouter's patent pending XML State Machine (XSM) technology. XSM defines a concept called "pre-defined state machines". These state machines implement the core functionality for the targeted device. This core is then skinned using XML, bitmaps and fonts. All GUI modules include a complete XML engine, data type definition and sample skins. More details on the core GUI technology can be found at www.bitrouter.com/products/cbgui.htm. The currently shipping and planned GUI modules include:

CBgui	ATSC Converter Box
IDTVgui	Integrated TV
DCRgui	Digital Cable ready TV
JPEGgui	JPEG Viewer
DHNGui	Digital Home Network Media Center
DVRgui	Digital Video Recorder
DVDgui	DVD recorder and player
IPTVgui	IPTV receiver

XSM Graphical Editor (XGE)

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

BRH-300

The BRH-300 is a standalone, rack mounted, digital cable television headend system that can be used in applications from the laboratory to tradeshow. The BRH-300 serves clear QAM and scrambled QAM streams for testing and demonstrating uni-directional digital cable products (UDCP) which are digital cable ready (DCR). BitRouter plans to enhance the BRH-300 with support for bi-directional & M-Stream CableCARD™ and add support for DCAS. More information about the BRH-300 can be found at www.bitrouter.com/products/brh-300.htm.

PODseed

PODseed is a manufacturing solution which allows DFAST certificates to be securely embedded in DCR TV receivers after they have been manufactured. It supports audits and secure reporting of DFAST royalties to CableLabs®.

Video Device

BitRouter's TV software is completely portable to any silicon platform and any operating system. BitRouter provides a prototype development system, called "BitRouter Development Platform" or BRD, based on Linux and the x86 architecture. All BitRouter software components work on the BRD. Any software developed on the BRD is fully portable to the final target device.

Portability

All software is written in completely portable ANSI C and uses a kernel abstraction layer with only 35 calls. The software is already shipping on MIPS, ARM, x86, Sparc and ST21 architectures. It works with Linux, uC/OS-II, VxWorks, OS20, Win32 and Nucleus PLUS kernels.

Services

BitRouter provides the following porting, integration and testing services:

Integration	Port BitRouter products to reference boards provided by silicon vendors
Production	Work with OEMs and ODMs to take TV receivers to production
Certification	Testing, practice-run and certification of UDCP products at CableLabs®
Field Testing	Field test reference boards and receivers for ATSC and Cable illegal stream compliance in various US cities