

NetFront™ Browser DTV Profile HbbTV Edition

A Market-Proven, Modular, Extremely Compact, Platform-Independent, Fast-to-Market HbbTV Software Solution for OEMs, Middleware Companies and Operators

ACCESS and HbbTV

ACCESS CO., LTD. is a leading global provider of advanced software technologies for the digital TV, set-top box and mobile markets. ACCESS' NetFront™ technologies have been deployed in over 900 million devices from major global operators, service providers, set-top box middleware vendors, handset manufacturers and consumer electronics manufacturers throughout the world. NetFront™ Browser, a key ACCESS technology, is specifically designed and optimized to deliver high performance in resource-constrained environments. NetFront™ Browser supports all major Internet-browsing standards for digital television, including CE-HTML, Open IPTV Forum and BML.

HbbTV (Hybrid Broadcast Broadband TV) is a consortium of industry leaders, including broadcasters, software and media solutions providers and consumer electronics manufacturers, committed to delivering a seamless entertainment experience to consumers that combines the richness of broadcast and broadband. The combination of linear broadcasting and the Internet significantly expands and enhances the television experience with both advanced interactivity and the vast content available online. As an HbbTV supporter, ACCESS has actively participated in HbbTV standardization and has built alliances with leading set-top box middleware vendors and digital TV manufacturers. ACCESS is also one of the few companies in the world to offer a commercially proven HbbTV software solution.



HbbTV Service Sample: EPG © ARD Digital



HbbTV Service Sample: Start Bar © ARD Digital

NetFront Browser DTV Profile HbbTV Edition

NetFront Browser DTV Profile HbbTV Edition is a market-proven, modular, extremely compact, scalable, upgradeable, platform-independent HbbTV software solution that enables OEMs, middleware companies and operators to upgrade or launch HbbTV capable devices and services quickly, efficiently and affordably.

As the key module in this complete HbbTV software solution, NetFront™ Browser presents and executes an interactive application that is an associated collection of documents (typically JavaScript™, CSS and HTML documents) as well as the content from the DSM-CC Object Carousel. In addition to NetFront Browser DTV Profile HbbTV Edition, ACCESS also provides the following optional HbbTV modules:

- **HbbTV Application Lifecycle Management (ALM)**

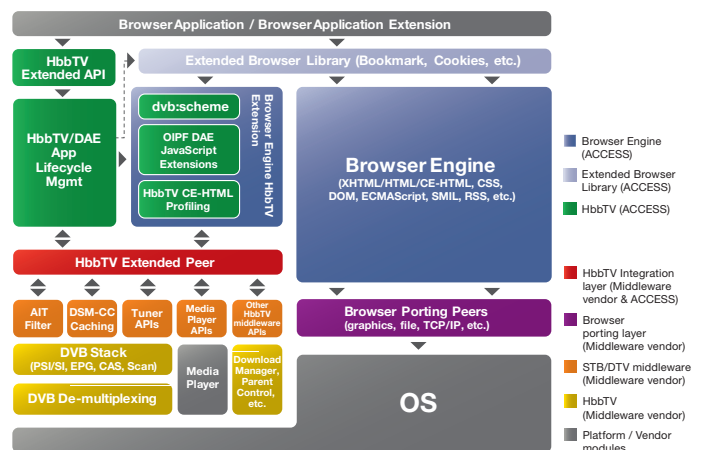
ALM receives signals from the DVB stream and the Remote Control Unit (RCU), and has the following objectives:

- Maintain a tree of applications
- Control application lifecycles
- Create and destroy HbbTV applications in response to:
 - A signal from the updated AIT (Application Information Table)
 - A JavaScript API call on the oipfApplicationManager object
- Hide and show HbbTV applications

- **XML parsing**

NetFront Browser DTV Profile HbbTV Edition can also include an XML parsing module to extract information from the XML files, defined in HbbTV as Content Access Download Descriptor XML and XML AIT.

Shown below is a module diagram of NetFront Browser DTV Profile HbbTV Edition.



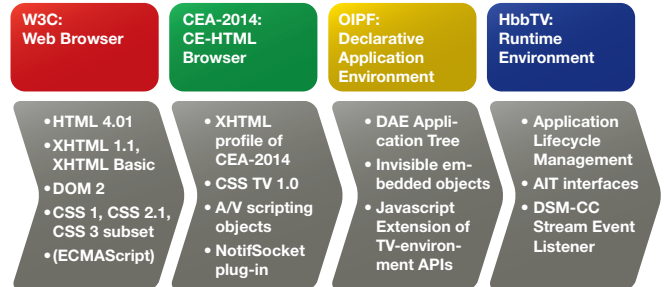
Module Diagram of NetFront Browser DTV Profile HbbTV Edition

As a leading global browser vendor, ACCESS works very closely with leading middleware companies that provide AIT filters, DSM-CC (Digital Storage Media – Command and Control) modules and the implementation of embedded JavaScript objects for OIPF DAE (Open IPTV Forum Declarative Application Environment). ACCESS recommends also working with its various partners such as CABOT Communications to acquire the complete HbbTV software solution.

Why NetFront Browser DTV Profile HbbTV Edition?

NetFront Browser DTV Profile HbbTV Edition gives OEMs, middleware companies and service providers the ability to significantly upgrade their existing devices and solutions by adding interactivity to linear broadcasting and seamless access to hybrid broadcast and broadband content. NetFront Browser DTV Profile HbbTV Edition's plug-in approach not only ensures a smooth HbbTV-compliant upgrade path but also provides advantages over other existing HbbTV solutions including:

- **NetFront Browser is specifically optimized for embedded environments and features a remarkably small RAM/ROM footprint and low CPU power consumption.**
- **NetFront technologies are market proven, with over 900 million deployments worldwide.**
- **NetFront Browser DTV Profile HbbTV Edition dramatically accelerates time-to-market.**
- **NetFront Browser DTV Profile HbbTV Edition has already been commercially deployed.**
- **Professional support is available from highly experienced engineering teams in Europe, U.S., China and Japan.**
- **NetFront Browser DTV Profile HbbTV Edition can be integrated with other ACCESS solutions for the connected digital TV market including NetFront™ Living Connect (a DLNA-certified software solution) and NetFront™ Widgets.**



NetFront Browser keeps pace with various TV-related standards

What Comes Next?

HbbTV has seen rapid adoption by digital TV and set-top box manufacturers, middleware companies, entertainment portal vendors, and PayTV operators, and HbbTV is expected to see dramatic growth in 2011. The rapid evolution of the connected TV means that TVs are transforming from one-way, dumb terminals into highly interactive information platforms that will significantly expand and enhance the TV viewing experience.

HbbTV stands poised to help generate new business opportunities and growth potentials for those companies that closely follow the pulse of the digital TV industry. As a leading global provider of digital TV software solutions, ACCESS is well positioned to deliver high-performance, user-centric, standards-compliant HbbTV and connected TV solutions to its customers and to helping them meet the challenges and opportunities presented by this rapidly evolving market.



Integration of ACCESS™ DTV solutions



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ACCESS CO., LTD.

Hirata Bldg, 2-8-16 Sarugaku-cho, Chiyoda-ku,
Tokyo 101-0064 Japan
PHONE +81-3-5259-3511 FAX +81-3-5259-3544
E-mail: adinfo@access.co.jp

ACCESS CO., LTD. Taiwan Office

4F-A2 No.58 Zhouzi St., Neihu District, Taipei City,
11493, Taiwan, R.O.C.
PHONE +886-2-8797-5118
FAX +886-2-8797-5115

ACCESS Systems Europe Holdings B.V.

Zekeringstraat 17, 1014 BM AMSTERDAM, the Netherlands
PHONE +31-20-570-8961
FAX +31-20-570-8989

ACCESS Systems Germany GmbH

Essener Strasse 5 TZU-IV D-46047 Oberhausen, Germany
PHONE +49-208-8290-6464
FAX +49-208-8290-6465

ACCESS SEOUL CO., LTD.

402, DMC High-tech Industry Center, 1580, Sangam-Dong,
Mapo-Gu, Seoul, 121-835, Korea
PHONE +82-2-3153-5200
FAX +82-2-3153-5210

ACCESS Systems Americas, Inc.

1188 East Arques Avenue, Sunnyvale CA 94085 U.S.A.
PHONE +1-408-400-3000
FAX +1-408-400-1500

ACCESS (Beijing) CO., LTD.

Floor 3, China Data Kingdom Mansion
No.1 North Wangjing Road, Chaoyang District, Beijing 100102, China
PHONE +86-10-64396000
FAX +86-10-64396001

ACCESS Systems France SARL

Parc Club du Millenaire - Batiment 24, 1025
Rue Henri Becquerel BP 59 F-34935 Montpellier Cedex 9, France
Tel: +33-4-9952-4300
Fax: +33-4-9952-4399