

Product Engineering Services

Digital Home

Enriching the Entertainment Experience



Celstream is a Member of the Digital Living Network Alliance (DLNA), that shares a vision of a wired and wireless interoperable network of Personal Computers (PC), Consumer Electronics (CE) and mobile devices in the home enabling a seamless environment for sharing and growing new digital media and content services.

Several technology developments over the last few years are having a profound impact on the rapid evolution of the Digital Home market. Chief among them are: digital convergence, wireless connectivity, broadband Internet access and product miniaturization. Technology firms are scrambling to enable a connected entertainment experience for home consumers that is simple, unique and works better together.

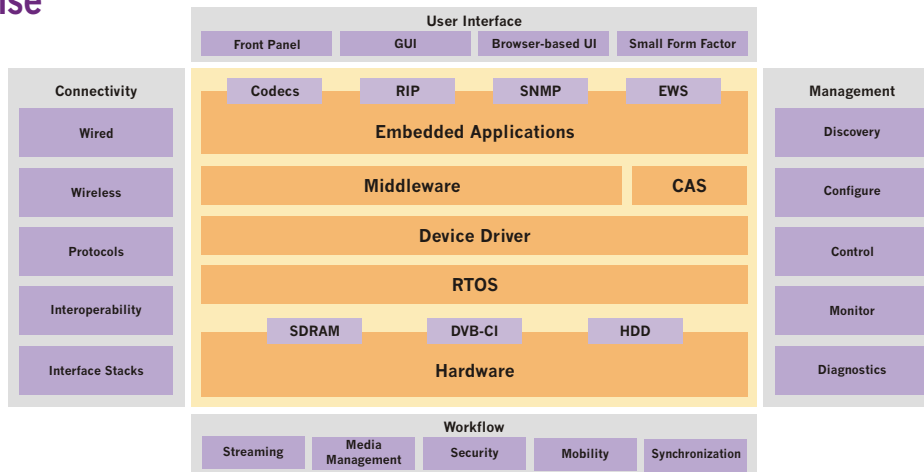
As a player in this industry, your product development challenges are manifold:

- Upgrading functionality constantly to stay ahead of this rapidly evolving market with attractive, easy-to-use, affordable products.
- Providing interoperability across a wide range of devices and protocols.
- Meeting your consumers' desire for mobility and on-demand experience, in the context of content owners' demands for authorized usage.
- Increasing product robustness and quality to reduce the cost of maintenance.

Celstream can help address your challenges. Our engineers have extensive experience in developing products for the Digital Home market. Our range of services can enable you to meet your consumer needs across a range of products:

- Digital TVs, Projection Systems
- DVD Players and Recorders
- Tuners and Decoders
- Digital Media Servers (PVRs, HDD Recorders, NAS)
- Residential Gateways
- Universal Remotes
- Mobile and other SFF devices
- Personal Storage Media
- Digital Media Adapters
- Set-Top Boxes (Satellite, Terrestrial, Cable, IP)
- Home Connectivity (xDSL, IP PBX, DECT)

Areas of Expertise



Appliance

Celstream can help design and develop specific embedded or software components that you need for the appliance. We are familiar with the ST, Conexant® and Broadcom® chipsets and several real-time operating systems such as VxWorks®, Symbian®, J2ME™, Windows® CE, Phar Lap®, OS20, OS40, uCos, Linux® and Nucleus®. Areas where we have strong competencies and can partner with your engineering teams include:

- Displays - Front Panel(LED, LCD), On-screen Display, Small Form Factor GUI
- Digital Multimedia - HD/SD, H.264, WMV, MPEG-2, WMA, AAC, AC3 Dolby Digital and Mp3
- Image Processing - RIP, PDL (PS, PCL, Raster), JPEG
- BSP & Drivers - Ethernet, USB, FireWire, RS232, TVLink, NVRAM Flash and other Device Drivers
- Content Security - DRM, Encryption, CAS, DVB-CI
- Embedded Software Components - RF Modulators, Front-end Tuner and IR (Sony, NEC, RD6 and RC6-extended)

Connectivity & Interoperability

Achieving a connected entertainment experience requires connectivity and interoperability. Enabling device connectivity for integration and interoperability is our forte. Our expertise includes:

- Connectivity - Wired (Ethernet, USB, FireWire), Wireless (WiFi, WLAN, Bluetooth), P2P
- Protocols - UPnP, DLNA
- Service enabling - Embedded Web Servers
- Stacks - DVB-Common Interface, TCP/IP
- Middleware - MediaHighway®, OpenTV®, Windows Media®
- Frameworks - MS DirectShow®, QuickTime®, J2ME™ CDLC
- DLNA - implementing DLNA Stacks on devices like Windows Mobile and Set-Top Boxes

Management

Our engineers have extensive experience in configuration, control, monitoring and diagnostics software for a variety of non-technology savvy end-user situations across a range of industries. This is extremely important when you are trying to build ease-of-use into your products for home use. Celstream's experience encompasses:

- Synchronization of Data and Controls (OMA-DS, Client-Server implementations)
- SNMP Components
- Device Management - Automated Test Equipment, Self Test and TR-069
- Embedded Web Servers
- Remote Diagnostics

Track Record

- Complete design and development of driver software for Customer Premises Equipments (CPEs)
- Extension and customization of driver software for Set-Top Boxes
- System integration and testing of
 - STB
 - DSL modem
 - DVD Player
 - DVD Recorder
 - HDD Recorder
- Complete design and development of software products for next generation USB flash drives
- DRM encapsulation for video-on-demand on mobile device
- Mobile phone as a remote control for device configuration and monitoring

Platforms

Celstream can deliver modular applications that will allow your end-users to have a seamless, real-time experience. You can leverage our expertise in usability to develop easy-to-use, intuitive solutions. Our engineers are experienced across multiple RTOS, DSP, Windows®, Mac OS® and Linux®. Our application platform experience includes delivering for:

- EPG
- Media Management
- Content protection
- Streaming
- Mobility
- Small Form Factor Applications

Portfolio of Services

Celstream can offer you a range of comprehensive product engineering services and support. You can rely on our ability to meet tight delivery schedules with high-quality products. Our extensive experience in compliance testing will help you meet the special requirements of the connected Digital Home market.

New Product Development

- Ideation
- Prototype
- Implementation
- Multi-release

Current Product Engineering

- Enhancements
- Porting
- Migration
- Optimization
- Sustainance

QA/Testing

- Embedded
- Usability
- Certification
- End-to-End Solution

Professional Services

- Consulting
- Customization
- Integration
- Technical Support

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