



CASE STUDY

U.S. Office:

3001 Park Center Dr. Suite# 1414
Alexandria, VA 22302
Phone: 412.708.2219
Fax: 202.449.1132

web: www.zigron.com
e-mail: info@zigron.com

Introduction

On February 3, 2008, Zigron got a contract from WhereverTV LLC to build an overall infrastructure, through which an average Joe can watch whatever he wants from a countless selection of channels and on-demand video streams available on the Internet, right on his TV set. All he needs is a device that takes an Internet connection along with some snacks and popcorns (to keep his taste buds company) and he is ready to enjoy any international channel he wants¹.

The idea may appear vague to many, as it may sound as if more work is needed to be done for this to work out than the reward to be reaped afterwards. But Zigron's talented technology team thought differently. If done properly, this project could serve as a magnificent example of how embedded programming is carried out and that is what inspired us to accept the project and start to make the preliminary plans.

Challenges

Zigron was faced with numerous challenges when it started to gather the initial requirements and carried out the analysis. For one, there was the issue of forming a right team to do the soundest job as per the traditions and standards of Zigron. Then there was the need to carry out a deep-rooted and factual research to decide the best-suited hardware components and software technology for not only the device (that would hook up with a TV set) but also the web interface that would let a device user configure it from the official website of WhereverTV.

Once the topnotch professionals were chosen for the project and the team was formed, the team was faced with the limitations of hardware and software components of the device. The board available for the operation was Neuros OSD that is an open source technology. Initially, this apparatus limited much of the activity because its processing power was much less than the desired computational ability to sustain our system. Additionally, there were many limitations in the media framework and numerous faults were found on the client-side operations (like the device getting stuck in the middle of its operation and the viewer being left with an indefinitely hanged skydiver right in the middle of the TV screen with the only option to restart the device). But rejecting the available components would mean a hike in costs and waking up a sleeping and unpredictable beast of legal obligations; instead, we decided to be resourceful as our highly gifted engineers could afford to be. At Zigron, we decided to rewrite all those portions of the open source code that were not up to our standards and decided to optimize the existing code to the level of perfection and converting the single-threaded commands to multi-threaded ones to accommodate our operations for the present processing power of the device. At the end of the day, with the hard work and dedication of our professionals, the device operated fluently without any hang-up and never lagged behind as our code was thoroughly manageable by the processor.

Through our smart methodology, innovative schemes and passionate sincerity towards the excellence, we overcame all such challenges and now, WhereverTV is a reality; it is out in the market and sales are exceptional. It was also nominated as 30 most innovative companies in

CES Vegas 2009. Below are some of the milestones that we achieved during the course of the project and made WhereverTV as the best choice for IPTV fans around the world.

Accomplishments

Our milestones can be categorized into two classes, as there were two major modules of this project: the TV-hookup device and the web interface. Let us view what we have achieved in this project.

Device

- Viewers are provided with a large number of channels from the WhereverTV database that have allowed free distribution in their copyrights.
- Through the feature of 'Branding', viewers can add pay channels (by fulfilling their subscription requirements). Viewers can always add free channels if they are not yet added in the WhereverTV database.
- Viewers can make their added channel public if there is no copyright violation of that channel. Otherwise, an added channel is private by default.
- Guide management to allow users to select their favorite channels with the option of adding/removing. Considering the large number of channels available, classifications are formed by default (like Movies, Automobiles, Animals etc) to make it easier for the viewer to track any channel.
- Guide management can be done dually: either through the device or through web. Synchronization is provided to keep both interfaces intoned with each other.
- Time zone option to let user select the standard time of his/her location assisted by graphical visualization.
- Provided with Bandwidth Timer for those people who are in habit of watching TV and dozing off in front of it. If the feature is enabled, the viewer fixes up certain time and after that time is elapsed, the viewer is asked whether to continue watching the TV or not. In case of no input, the device will turn off in five minutes to save the bandwidth.
- Option to save login credentials for sites like YouTube to allow automatic sign-in.
- Options like Forward, Rewind and Pause for the on-demand media.
- Option to resume the on-demand media from the point where it was left earlier on. The status of a video watched incompletely will be saved not just for the last site visited, but for all sites added in the device.
- Provides program schedules of the channels included in 'Branding'.
- Can play all popular video formats from portable memory like flash drive.
- Any update in device software is mentioned to the viewer and upon her/his consent, the update takes place through internet. Update through flash drive is also possible.

U.S. Office:

3001 Park Center Dr. Suite# 1414
Alexandria, VA 22302
Phone: 412.708.2219
Fax: 202.449.1132

web: www.zigron.com
e-mail: info@zigron.com

Web Interface

- Built the whole website with content management system for the admin side.
- Provided device activation registration and account registration.
- Provided counterpart of TV Guide Management for the web interface with options including add/delete and channel playing option.
- Provided the device order placement feature with user being able to pay through options like credit card or Paypal.
- Added channel recommendation feature.
- Provided marketing for the partners of branded channels.
- Used Yahoo Web Developer Kit (YWDK) to make WhereverTV accessible on TV sets equipped by default with the compatible components (which removes the need to buy the WhereverTV device separately).
- Enabled WhereverTV to be accessible on Boxee, which is a cross-platform freeware home theater PC.

Tools and Technology

The following software and hardware is used to build WhereverTV (device and web):

Device

- Device GUI developed in: Qt Framework
- Operating System: Linux (Kernel 2.6)
- Processor: Dual Core ARM9/TI DSP(DM320)
- Ethernet: 10/100 Mbps
- SD/CF/MS card slots
- Device/Web Interfacing: gSOAP
- Parsing: XML
- Development: C/C++

Web Interface

- JSF 1.2
- Hibernate 3.1
- XFire Web Services
- YWDK
- JSON
- JavaScript
- XML
- Python

U.S. Office:

3001 Park Center Dr. Suite# 1414
Alexandria, VA 22302
Phone: 412.708.2219
Fax: 202.449.1132

web: www.zigron.com
e-mail: info@zigron.com

Conclusion

WhereverTV is one of the prime examples of the success of Zigron's philosophy and methodology of performing a project that is not only delicate in execution but also lengthy in span. Since a large portion of this project included working in the environment of embedded systems, it was our debut in this realm of technology. But our thorough, well-checked and practical procedures made it possible for us to comprehend any problem before it may occur and provide proper solution to any trouble that may arise when the events unfold with the passage of time. Due to our well-managed routines, we mitigated the 'first-timer' effect and found ourselves with the confidence of completely being capable of handling any situation that arose throughout the project.

WhereverTV was the gateway project for us to enter the field of embedded technology and now, the world is open to us. We can proudly say that Zigron is the core player of today's market not only in the areas of Web 2.0, Enterprise Architecture and Application Modernization solutions, but also possesses a solid ground in the field of embedded systems.

U.S. Office:

3001 Park Center Dr. Suite# 1414
Alexandria, VA 22302
Phone: 412.708.2219
Fax: 202.449.1132

web: www.zigron.com
e-mail: info@zigron.com