

Case Study

Elecard Codec Works

DVB-H Encoder for Levira Ltd.

Company profile

Levira Ltd was established in 1997 by Estonian state. Levira is the only TV and the largest radio broadcast network operator in Estonia. The company owns 23 towers all over the country. Levira has build up three nationwide analogue TV networks delivering all local TV-channels ETV, Kanal 2 and TV3. Levira has extensive and diverse experience in planning, engineering, monitoring, and maintaining various communication networks. Through TDF Group Levira is a part of European leading Media and Broadcast service provider and network operator providing infrastructure and multimedia services all over the Europe.

Levira's equity for 2007/2008 was 22,4 million USD, sales 14,5 million USD, revenue 4,6 million USD. Levira's crew connects 76 employees.

Business situation

In November 2007 Levira was approached by EMT, a high technology service company operating telecommunications networks in the domestic Estonian market, with the request to provide a solution for a pilot DVB-H project. According to the concluded agreement, Levira needed to design and integrate a turn-key solution followed by technical maintenance, while EMT was supposed to secure content and make terminals available.

The main goals to be achieved in the project were:

1. High quality, robust DVB-H broadcasting solution
2. Compatibility with terminals supporting DVB-H standard, Nokia N77 terminal in particular
3. DVB-H broadcasting should be OMA BCAST compliant
4. Minimum 10 channels to be broadcasted
5. Utilization of the most cost effective solution
6. The pilot project to be launched by June 6th, 2008

For the key component of DVB-H head-end equipment Levira aimed to find a robust, high-quality, reasonably priced DVB-H encoder meeting specified technical requirements.

Technical situation

At that time Levira could use turn-key DVB-H platforms from NSN (Nokia Siemens Network), Thomson, or DVB-H encoder by Rohde & Schwarz. The main challenge with NSN was that only Nokia terminals were supported, while Thomson didn't support Nokia terminals at all. Thomson encoder provided just 4 output streams per

Product info: <http://www.elecard.com/en/products/digital-tv-solutions/software-servers/codecworks.html>

server and SDI input, which made the project schema more complicated. Video quality provided by these two solutions was not acceptable for Levira, and they took Rohde & Schwarz encoder for consideration. The video quality was great, but the product was capable of providing just 1 input and 1 output stream.

Besides, the main criteria for choosing the vendor was vendor's commitment to work in close cooperation with Levira improving their products until the project is launched. Levira was hoping to find a solution that provided flexibility in adding new functionality. Hardware based solutions were very hard to modify or improve. Both platforms and the Rohde & Schwarz encoder were far more expensive than Levira could afford for a pilot. These were basic reasons why Levira considered software solutions for utilization in their project. One of such solutions was Elecard CodecWorks DVB-H Encoder, software server for realtime multimedia compression.

The snapshot of Elecard CodecWorks DVB-H Encoder at the beginning of the project:

- Exclusive picture quality at low bit rates
- Compatibility with terminals supporting DVB-H standard, including Nokia, on the file level with incompatibility on media streaming level
- Software based architecture providing flexibility in system modification, improvement, and new features implementation
- Easily accessible, quick and professional technical support solving all issues as soon as possible
- Competitive price

Solution

Levira decided to integrate the system using head-end equipment from different vendors, for real-time content transcoding in particular they accepted Elecard CodecWorks DVB-H Encoder. However, some modifications and improvements had to be made to the product.

In February 2008 Levira received all the equipment and started platform integration. The initial results in mid March 2008 showed:

1. No video was displayed on mobile devices, but the screen showed a list of channels
2. A number of Nokia specific parameters for broadcasting were found out step-by-step and documented
3. Right encoding parameters to secure stable video streaming were found out experimentally and documented

Elecard and Levira worked together to adjust streaming filters and product settings to meet the new requirements and fix the issues.

Breakthrough in April: the stream produced by Elecard CodecWorks DVB-H Encoder was received on Nokia N77.

On May 6th 2008 Levira and EMT made an official public presentation of DVB-H in Estonia.

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Results

All project goals were successfully met and some expectations were exceeded:

- The first in the world DVB-H broadcasting to Nokia terminals (with the use of non-Nokia head-end equipment)
- Compatibility with Nokia N77 was achieved. The system showed stable broadcast reception with the newest Nokia N96 and with N73 model using Nokia Mobile TV Receiver SU-33W. Since the output stream complies with OMA BCAST specification, all "not-locked" terminals should decode the signal from the DVB-H platform installed by Levira.
- Currently 14 channels are broadcasted, with more channels to be added later
- Total cost of the DVB-H platform combined from various vendors is 10 times less than the turn-key solution by NSN or Thomson (according to Indrek Lepp, Levira Business Development Director <http://www.telemultimedia.ru/art.php?id=295>)
- Close cooperation between the companies resulted in project presentation 1 month earlier than defined by an optimistic scenario

In addition to the main project goals, the following targets were hit:

- Elecard CodecWorks DVB-H Encoder was adjusted to secure a robust, high quality encoding for DVB-H broadcasting
- Logo- and ad-insertion feature provided in the encoder was an added value of using Elecard's product
- Subtitles transcoding support was implemented (dvt or teletext subtitles can be chosen for overlay during transcoding)
- Brilliant video quality was provided by the encoder with easily readable subtitles.

If required, Elecard CodecWorks DVB-H encoder can easily output media of different video and streaming formats, resolution and bitrates simultaneously, thus using all computer power most efficiently. Such approach also allows minimizing risks of investment into the new DVB-H technology.

The pilot project shows excellent results in operation, receiving positive feedback from partners and users. Levira and Elecard gained valuable experience and know-how that will allow them to make prospect DVB-H projects integrations seamless and quick.

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Technical parameters

Frequency:	506 MHZ
Network Type:	SFN
Concellation:	QPSK
Modulation:	64 QAM
Error Correction:	2/3
Guard Interval:	1/16
MPE-FEC:	10 – 40%
DVB-H video:	320 x 240, 15 FPS
Video Bitrate:	300 kbps
Encoding:	H.264 Level 1.2
Audio:	48 kHz @ 56 Kbps AAC

Third party products used in the pilot: UDcast IP Encapsulator, Icareus OMA BCAST ESG Generator, Appear TV ASI to IP Remultiplexer.

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