# Set-top box survey 2011

Some regulators and industry players seem determined that the future of the set-top box may be limited, to be replaced by other devices or The Cloud. *Euromedia* spoke to major manufacturers and their supply partners to find out about current offerings and future prospects.

**Euromedia: What markets do your STBs address, and are hybrids part of the range?**

**AirTies:** Satellite STB, IPTV STB and Hybrid STB. All STBs are high-end hybrid devices with the option of integrated wireless for the home networking market and easy installation.

**Amino:** IPTV and Hybrid STBs.

**ANT:** Our Galio Platform has been deployed in cable, satellite, IPTV, DTT and hybrid markets by a range of different device manufacturers.

**Broadcom:** We support all platforms.

**EchoStar:** Complete range of connected devices from entry level 'zappers' through to fully functioning 'media gateways'. EchoStar Technologies designs and distributes cable, satellite, DTT, IPTV and hybrid set-top boxes (STB) and digital video recorders (DVR) to digital TV operators and directly into retail markets under the EchoStar and Slingbox brands.

**Entone:** Pure-IPTV set-top boxes as well as hybrid devices supporting IP plus cable, DTT or satellite.

**Humax:** All platforms.

**IP Vision:** DTT hybrid STB; ITPV STB.

**Motorola:** We supply an extensive range of STBs for both the cable and IPTV markets: All-Digital QAM Set-tops (ASTC: DCX series, DCT series and DCH series; DVB: HMT series; Analogue/Digital QAM Set-tops (DCT series and DCH series); Hybrid QAM-IP Set-tops (QIP series); IP Set-tops (including hybrid models) (VIP series).

**Netgem:** Our hybrid STB product range comprises three different product categories: Internet TV adaptors – Offers no PVR functionality and a single tuner option; Hybrid STB and Media Centre. Includes PVR and blends broadcast (Cable, Terrestrial and satellite in Q4) with broadband (IPTV, OTT) content; Media Servers Provides advanced networking functionality; this includes serving content from the PVR, Internet or broadcast world to another room. It offers multiple tuners, a high capacity Hard Disk Drive and home network connectivity. Hybrid satellite is planned for Q4'11.

**Oregan:** We cater for two segments of the STB market: Telco / Pay-TV CPE, typically subsidised by the service operator; Retail Digital Media Streaming STBs. In terms of form factors, today's focus tends to be on IPTV set-top boxes, followed by Hybrid DTT + IP and, finally, Hybrid Satellite + IP.

**Pace:** Full range, based on operator requirement.

**TechniSat:** Full range except the pure IPTV boxes.

**TVonics:** We offer a range of STB and PVRs for the DTT and Hybrid market space.

***Euromedia*: What about PVR capabilities and storage capacity?**

**AirTies:** Yes; Up to 1TB.

**Amino:** Yes, 250GB as standard.

**ANT:** The Galio Platform has full PVR functionality (including conflict manager functionality). Storage is entirely dependent on the device manufacturer.

**Broadcom:** We support PVR functionality.

**EchoStar:** Up to 1 TB, which is establishing itself as the new base spec level for DVR.

**Entone:** Our standard DVR is 320GB with options for 1TB.

**Humax:** We offer PVR options for most of our platforms and the hard drive size can range from 160GB to 1TB on the new HD products. The new average will be 500GB as it is on the HDR-FOX T2 – a Freeview HD PVR.

**IP Vision:** 320GB (user upgradeable via USB).

**Motorola:** We offer the capability of expanding a DVR's recording capacity beyond the capabilities of the set-top's internal hard drive.

**Netgem:** Our products ship with 160GB/320GB internal storage, this can be extended to 520GB and 1TB should the customer wish.

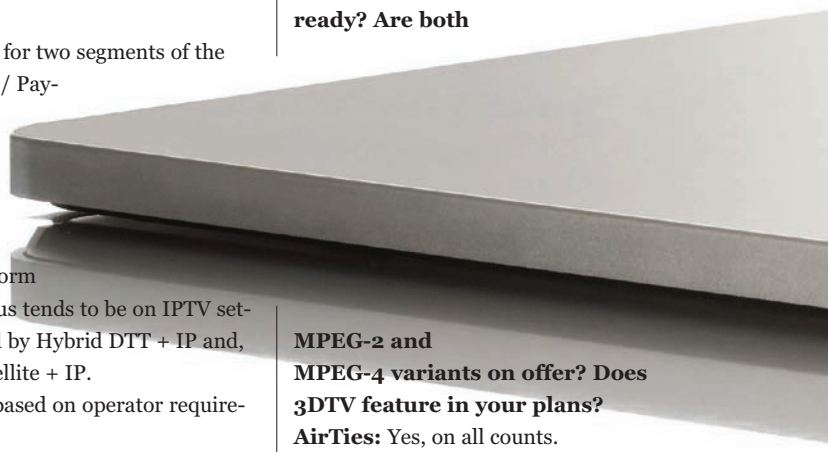
**Oregan:** PVR is offered on a variety of options: PVR ready option with an external USB HDD; PVR with built-in HDD ranging from 160 GB to 1 TB.

**Pace:** A range of storage capacities, according to customer requirements. The current size of our largest capacity PVR is 500GB.

**TechniSat:** With DVR-ready function means to combine with an external HDD as well as embedded HDD up to 1 TB.

**TVonics:** Range of PVRs including the DTR-HV250, which is a Standard Definition (SD) 250GB Freeview + recorder. In addition, the DTR-HD500 and DTR-Z500HD are High Definition (HD) 500GB Freeview+ recorders.

***Euromedia*: With HD content more widely available, are all STBs HD-ready? Are both MPEG-2 and MPEG-4 variants on offer? Does 3DTV feature in your plans?**



**AirTies:** Yes, on all counts.

**Amino:** All STBs are now HD ready, either MPEG-2 or MPEG-4. Side-by-side 3D TV modes are supported over HDMI1.3a (not HDMI 1.4).

**ANT:** All STB projects we're currently involved in are HD-ready. We offer both MPEG-2 and MPEG-4 variants. To-date we have seen no customer demand for 3DTV functionality.

**Broadcom:** Both MPEG-2 and MPEG-4. Our latest connected home platforms have full resolution 3DTV support (SVC and MVC).

**EchoStar:** Vast majority HD, some SD in South America. MPEG-2/MPEG-4 supported. 3DTV is somewhat 'pass through' for STB manufacturers, but yes, it features in our plans.

**Entone:** All products support HDTV and are compatible with MPEG-2 and MPEG-4. Our products also support 3DTV with a software update.

**Humax:** Most of our new developments are MPEG-4, although some are still SD and not HD. All of these products are backward compatible to MPEG-2. Our HD MPEG-4 products

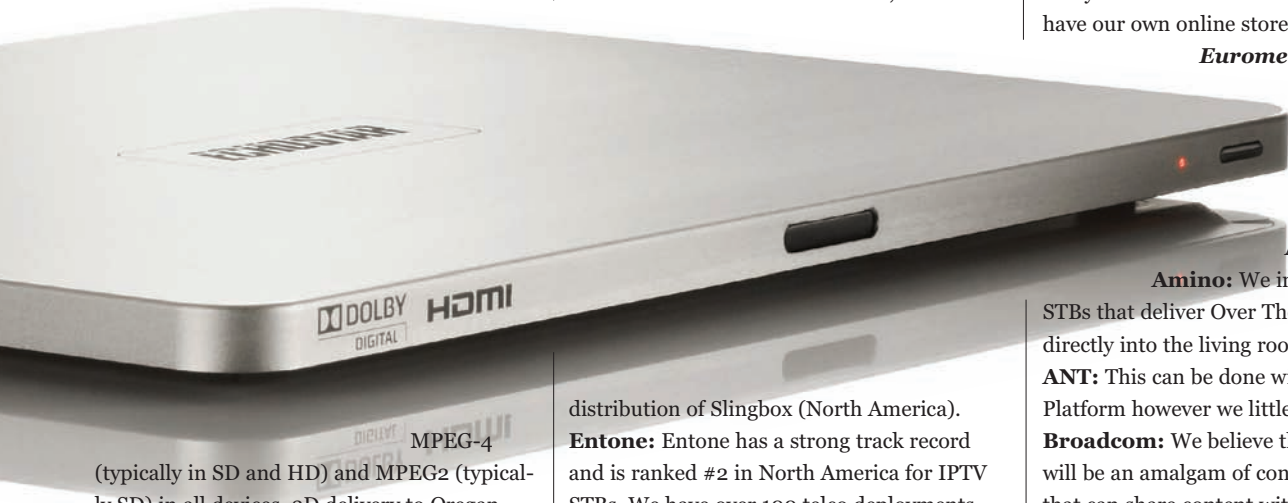
will all support the pass through of 3DTV signalling.

**IP Vision:** Our boxes are HD Ready for IP-content. The PVR is DVB T-2 and offers MPEG 2 and MPEG 4 and supports 3D.

**Motorola:** The majority of Motorola's set-top boxes are HD-ready supporting both MPEG-2 and MPEG-4. We have developed an innovative software enhancement for our commercially-available set-top products to bring value-add 3D processing to the home.

**Netgem:** Netgem products are HD ready; offer Full HD EICTA specification and all are MPEG4/AVC compliant. 3DTV is included in the roadmap for Q4/2011.

**Oregan:** We believe that the full transition to MPEG-4-based media encoding and transmission, at least in the IP domain, has occurred, in order to meet the network bandwidth constraints and allow for streaming of higher definition content. All of our customers today require support for 1080p HD and both




MPEG-4 (typically in SD and HD) and MPEG2 (typically SD) in all devices. 3D delivery to Oregan-powered STBs is planned for mid-2012 by a telco operator, which we cannot name, unfortunately.

**Pace:** Majority HD ready, but this depends on the needs of the customer for each STB design. Both MPEG-2 and MPEG-4 variants are available. Pace already offers 3DTV functionality and has more plans for it in the future.

**TechniSat:** Yes – but we still offer SDTV boxes – HDTV boxes supporting MPEG2 and MPEG 4. Next STio chip generation supports 3D.

**TVonics:** We offer support for HD as standard, although we do sell a low cost SD product. We support both MPEG2 and MPEG4. Our HD products, which are the DTR-HD500 and the DTR-Z500HD both support 3DTV broadcasts by the BBC and iPlayer.

***Euromedia*: In terms of customers, which regions do the companies identify as the strongest in terms of sales and for which product? Who are the major customers?**

**AirTies:** We currently focus on Central and Western Europe, as well as Middle East. Our top four customers for IPTV/OTT are Etisalat, Huawei, TTNet and Waoo.

**Amino:** We sell IPTV products principally to North and South America, Europe and Russia with a range of tier two/tier three network operator and hospitality customers.

**ANT:** Humax UK (Freesat), Germany (HbbTV); Sagem (France Telecom/Orange); Samsung (France Telecom/Orange, YouSee Denmark); Coship (HbbTV Germany); Cisco (USA); ADB (Telecom Italia); Pirelli (Telecom Italia); Amino (Various); Thomson (Technicolor, France Telecom); HwaCom (Chunghwa Telecom).

**EchoStar:** Europe**:** Cable – Unitymedia; Satellite/hybrid – Freesat (retail distribution), Cyfrowy Polsat, Telefónica (South America); DTT – Freeview; IP – retail distribution of Slingbox. Americas**:** Satellite/hybrid - DISH Network (USA), Bell TV (Canada), DISH Mexico; IP – retail distribution of Slingbox (North America).

**Entone:** Entone has a strong track record and is ranked #2 in North America for IPTV STBs. We have over 100 telco deployments alone in North America, with a significant presence in Europe.

**Humax:** Our strongest markets are the US, Japan and Europe. HD and HD PVR Satellite and Cable will make up a significant part of the volume in these markets.

**Motorola:** IPTV set-top customers include: Americas: AT&T, Bell Canada, Telus, TBay Tel, Surewest, Hawaiian Telecom, SDN Communications, Hotwire, Farmer's Telephone Co.; EMEA: Deutsche Telekom, KPN, Telia Sonera, ComHem, Du, Lyse, Maxisat, Portugal Telecom, Sonaecom, TDC, Telefonica, T-Online, Vimpelcom; Asia Pacific: SingTel, KDDI.

**Netgem:** Our background is in the IPTV space, where it has provided more than 2.5m decoders to the French market through its partnership with operator SFR. B2B customers now include incumbent Australian telco Telstra, a number of European operators - Monaco Telecom, Elisa, Melita and Telecom Slovenia. In the B2C space customers include Toshiba, and Virgin Mobile France.

**Oregan:** Our strongest regions in terms of sales are LATAM and Europe, both with Telefonica. In the coming months, we are planning to announce further engagements across Europe and Asia.

**Pace:** Pace has a global footprint and works with leading pay-TV operators in every major market including Canal+, Comcast, MultiChoice and DirecTV. Key markets include Western Europe, USA, Australia, India and LatAm, with a variety of custom products sold in each.

**TechniSat:** We sell to retailers and distributors as well as to operators of cable or satellite television. Our Home-markets are Germany, Austria, Switzerland, Poland and France. Apart from France we are market leader in these countries. Other important and successful markets for STBs especially are Eastern Europe, Benelux and Scandinavia.

**TVonics:** TVonics operates exclusively within the UK retail market. Our primary customers today include John Lewis and Comet plus we have our own online store.

***Euromedia*: Are PC-to-TV set-top boxes part of your product thinking? Is there a launch date?**

**AirTies:** Q4 2010

**Amino:** We include a range of STBs that deliver Over The Top content directly into the living room.

**ANT:** This can be done with ANT Galio Platform however we little customer demand.

**Broadcom:** We believe the connected home will be an amalgam of connectivity devices that can share content with each other. With our common core architecture, device manufacturers can quickly and easily build connected devices that support the next generation of connectivity.

**EchoStar:** Very much part of our thinking; launching a new range of such devices at IBC2011. We combine such solutions with broadcast and IP services in hybrid products but also have standalone 'pure' IP products, which use the Internet to access content-centric services.

**Entone:** Consumers want to experience the power and selection of the Internet on the TV, but without the complexity of a PC. We are working to bring more Internet features and interactive capabilities to the TV, for example our integration with VUDU for Internet streaming of first-run HD movies. We're also adding integration with PCs for personal media sharing to present photos, videos and music through the TV.

**Humax:** No, but we see the STB becoming closer to a PC product in terms of speed and processing power.

**IP Vision:** Our set-top boxes are fully functioning media centres with the ability to stream content from PC to TV or export from STB to an external storage device via USB or across the network.

**Motorola:** DLNA is being incorporated into some of our products to support communication between devices – for instance, Motorola's Android smart devices allow consumers to stream video to their TV and PSP. With the rise of connected TV, and the installed base of set-tops providing cable, satellite, IPTV and hybrid DTT type services, the opportunity is not just in turning the PC into a media management device but in making the installed base of set-tops smarter and/or the connection to content easier.

**Netgem:** The Home network is one of Netgem's core activities moving forward; this covers a multi-screen strategy to include web tablets, PCs and smartphones. Some functionality has already been deployed to connect a PC or Mobile Phone with the Media Centre STB – for example an iPhone remote control app. Our Media Centre and Media Server products already enable users to watch multimedia content stored on PC on the TV.

**Oregan:** Our STBs are able to stream home network content from PCs and other networked devices with storage capacity, in compliance with widely adopted interoperability guidelines by Digital Living Network Alliance. For consumers this means that they are able to easily set up their systems and display content from multiple sources, including photos, video and music - on TV.

**Pace:** We see traditional STBs becoming more intelligent and gain increased functionality, enabling them to connect a range of devices in the home. This includes CE devices such as tablets, smartphones and computers.

**TechniSat:** We support DLNA to connect all devices in house; a special PC server is today not part of our roadmap.

**TVonics:** TVonics understands that there is a clear and important link between the PC and TV set-top-box markets, with the ultimate question being: which device will win in the living room? For TVonics, the TV and the set-top-box will always remain dominant; however there is a clear need for set-top-boxes to offer more in terms of content sharing. TVonics is exploring features which will allow consumers to record and export broadcast TV via a USB which can then be played at the consumers' convenience both in terms of time and device used.

***Euromedia*: Can STBs really become the centre of the connected consumer's home, or do they risk losing out to games consoles or connected TVs? How must they develop to maintain their importance?**

**AirTies:** By having a more open standard software and being connected to the outside world to enable downloading of new applications and services as the OTT world evolves.

**Amino:** STBs have a fast development cycle and open platforms that allow easy in-field upgrades. TVs have a long product lifecycle and applications require custom porting to the platform. A fully integrated broadcast/on line experience is much harder to deliver on a TV. Content on games machines is important but is by default a secondary function of the product.

**ANT:** STBs must embrace connectivity in a hybrid world. The range of (on-demand) services is fast evolving. STBs, TVs and Game Consoles have different product life cycles and different business models which drives different priorities.

**Broadcom:** Our home networking portfolio addresses the wide variety of applications, regions, environments and topologies for full home coverage and to allow the streaming of multiple HD and 3DTV video streams.

**EchoStar:** The rate of technical change in a STB or DVR exceeds that of a TV and can it be expected that customers will replace their highly priced TV sets at the same rate as a STB or DVR to get better features? OTT services are – at this stage – starting to sit alongside Pay TV services and therefore adding to the way that we access entertainment, however, these services remain complimentary to traditional broadcast services. The key is ensuring that the technology can deliver the right mix.

**Entone:** There is a need for standardisation and ubiquity that neither game consoles nor TVs provide. The STB is the most optimised platform, in terms of capital and support costs that operators are willing to bear in order to maintain relevance in the managed home.

**Humax:** The STB is fast becoming a connected home product, offering access to the Internet plus wireless routing and content sharing around the home. Most other devices do not allow the same level of TV functionality including the recording of content, live pause and rewind, so the STB is well placed to hold the key role of the main connected device.

**IP Vision:** We believe that the development of multi-stream capable gateway' units supporting multiple screens through the home over IP will be an important development over the next three-to-five years.

**Irdeto:** Set top box manufacturers must focus on creating an engaging and seamless user experience by providing interactive services that pull information from various content sources, including social networks. In doing so, operators will be able to deliver a personalised viewing experience based on an understanding of

## Pace takes Moto STB crown

Pace in 2010 became the world's No. 1 seller of set-top boxes in terms of unit shipments on an annual basis, surpassing Motorola, IHS Screen Digest research indicates. Pace's STB shipments grew by 21.1% in 2010 to 20.7m units, up from 17.1m in 2009. Motorola's shipments rose only 4.2% to 19m units, up from 18.2m in 2009.

"Pace's strong unit shipment growth in 2010 mostly was driven by huge growth in cable shipments to both North and South America," IHS said. "Pace has been voraciously taking market share from US incumbents with high-volume deals such as selling boxes to Comcast. The company also fostered new big-volume customers like Net Servicios in Brazil."

But despite Pace's strong shipment growth, Motorola held on to the lead in STB revenue. Motorola's STB revenue amounted to $2.4 billion in 2010, down 9.5% from $2.7 billion in 2009. Pace's revenue rose to $1.9 billion, up 8.1% from $1.7 billion in 2009. "The US STB makers command higher ASPs for their STBs than their European rivals because they tend to have more established relationships with the high-volume, advanced cable operators in the Unites States. Both Cisco and Motorola benefit from high ASPs associated with Internet Protocol Television (IPTV) boxes, an area that they dominate," IHS said.

consumer content preferences.

**Motorola:** Although alternative content management and delivery systems are appearing on the market, the STB will remain an important part of the connected home as service providers take advantage of its footprint and its technological capabilities. STBs are also increasingly evolving to deliver enhancements such as wireless capabilities that eliminate cables in the home, sleeker models that are less obtrusive, and smaller models that take up less room.

We're not going to see the traditional set-top box disappear from homes any time soon.

**Netgem:** The connected STB must offer the following key factors: the capability to offer a unique user experience (for example seamlessly integrating broadcast/broadband content), an innovation roadmap (such as a multi screen strategy), and the capacity to add in new services to meet customer demand (mixing Over the Top with pay-TV content).

**Oregan:** In retail environment, the connected TV and connected gaming console offerings are becoming increasingly attractive to consumers. However, in the subsidised Pay-TV market where the device is given away as part of the subscription package, the dynamic is different. In this case, the operator is motivated to keep the content and applications offering fresh and takes responsibility for maintenance of the CPE.

**Pace:** We believe that consumers want an ever-expanding range of services and content to be delivered via a managed service, via a managed device, rather than via multiple devices and services that they need to manage, connect and trouble shoot themselves. Where CE devices such as games consoles are attempting to consolidate their position, pay-TV providers are making their offerings stickier and more extensive with managed services, with the set-top box or media gateway remaining the delivery vehicle for this.

**TechniSat:** Of course there are devices such as IDTVs which can replace a STB. But consumers still will use STBs, which cannot be easily replaced. IP functionality and Home Networking for such STBs are very important features to secure competitiveness.

***Euromedia*: How do you ensure that a subscriber can access the full range of broadcast, premium on-demand, and OTT content? What level of EPG is offered? Does it include recommendation?**

**AirTies:** We can provide all of these features via our strategic relationship with middleware vendors.


**Amino:** Whilst all those listed products will play a large part in the delivery of content in the connected home, STBs have a fast development cycle and open platforms that allow easy in-field upgrades. TVs have a long product lifecycle and applications require custom porting to the platform. A fully integrated broadcast/on line experience is much harder to deliver on a TV.

**ANT:** A converged hybrid device enables the consumer to receive a combination of live broadcast content and on-demand broadband delivered content. Our EPG is able to deliver this in one seamless UI or as a portal or widgets bar depending on our customers' preference.

**Broadcom:** Broadcom is a founding member of the RVU Alliance that developed a remote user interface technology to accelerate the delivery of information and entertainment content to connected devices. This enables a consistent delivery of high quality content from STBs to portable devices like tablets and smart phones. Through its support of the RVU technology, Broadcom enables multichannel television service providers to deliver their high quality content with a consistent user interface to RVU thin client devices throughout the connected home.

**EchoStar:** For retail solutions, our most recently launched product for the Freesat market (HDS-600RS) has a user guide that efficiently combines access to broadcast TV with IP delivered content from connected TV apps such as BBC iPlayer, accessed via the 'red button'. Other solutions in our portfolio - for example web based SlingGuide - provide a more fully integrated approach searching for and aggregating content from multiple sources and serving it to the consumer in a fully aggregated list.

**Entone:** Presently most middleware solutions offer separate search tools for on-demand vs. linear content. New solutions for consolidated search and recommendation will soon be available on Entone products.

**Humax:** The current EPG for broadcast content is separate to that of the portal service, but in our latest developments we can support a cross media search engine. This will allow a full search across all media including Broadcast, Portal and locally stored content, making it quick and easy for the consumer to find what they are looking for.

**IP Vision:** FetchTV Guide is an innovative HD UI that displays content from linear TV, IPTV and connected devices in an easy-to-use, vertical grid. Featuring a Backwards EPG, it displays icons and thumbnail images of content, enabling the viewer to content-snack while browsing. Recommendations are in place for VOD titles and will be expanded in future.

**Irdeto:** A hybrid STB is an ideal device through which subscribers can access the full range of broadcast, premium video on-demand and OTT content on broadcast and broadband networks. In order to provide an enhanced viewing experience, consumers must be able to access this content on a flexible platform that includes interactive services and applications customised for the individual. All of this must be supported by a robust back end solution that has the capability to integrate information from recommendation engines and social networks to offer a tailored offering for the consumer.

**Motorola:** With Motorola's multi-screen service management software suite, Motorola Medios, service providers can deliver the consistent, personalised media experiences their customers desire—any time, any place, any way and on any device.

**Netgem:** Because the number of potential content sources is increasing and diversifying there is more and more demand for an efficient user-friendly interface to simplify navigation. Netgem is unique in the way it brings together all content sources into a single layer on the EPG to present all content in the same way. This is regardless of whether it comes from live broadcast channels, IPTV channels, interactive applications, on demand IPTV, on

demand web-based services, OTT live or home network content. Netgem STBs are also equipped with search engine functionality.


Recommendation is to be provided by third party solutions and partners. Our back-end platform aggregates audience and consumption patterns, our partners match this data with content metadata to provide recommendations to the end-user.

**Oregan:** Oregan's browser powers EPG as an AJAX browser application which is constantly updated with new information and can also be the platform for pushing advertising of content (movies and TV shows) as well as other context- and user-specific services.

**TechniSat:** Mainly driven by the Operator.

**TVonics:** TVonics is committed to bringing products to the market that are based on trusted and stable technologies and we feel there is still some development left to go in relation to OTT services on STBs before we bring it to market.

***Euromedia*: What capabilities should the STB feature to allow a service provider to deliver high-quality experiences beyond just television?**

**AirTies:** Web based services, social networking applications, a flexible software stack to enable upgrading and the hardware must support progressive download or adaptive streaming or QoS will suffer and a high quality user interface tools.

**Amino:** A high performance platform supporting all open Internet standards for content decoding, at full high definition resolution, together with hardware accelerated FLASH content capability. In home connectivity to other client or server devices.

**ANT:** CPU and Memory remain important along with a broadband connection to deliver on-demand value added services.

**Broadcom:** We equip our STB platforms with a high-performance CPU and GPU, 40nm design and transcoding integration to power the next generation connected home and a faster Internet experience on connected devices. We are a leader in leveraging both hardware and software in a single package for turnkey STB, TV and Blu-ray devices.

**EchoStar:** There is no doubt that content delivery is moving beyond the main TV in the living room. As per previous answers, the vast majority consumer devices are now 'connected' and consumers now expect to be 'connected' to their content wherever they are. We call it TV anywhere and have this year brought this functionality to Freesat customers who access the service using and EchoStar DVR.

**Entone:** Entone believes the future TV experience will combine the best of linear TV, DVR, premium content delivered via IP, personal media sharing and management, and mobility.

**Humax:** The STB of the future should be able to deliver a range of video and audio services throughout the home. In addition to the customers preferred broadcast channels, they should be able to receive a range of OTT channels, be able to store recorded content locally and share this content around the home to different rooms and devices. The STB will need multiple tuners, probably transcoding and more sophisticated silicon to offer all of these services at speed.

**IP Vision:** Quality presentation engine supporting an intuitive UI in conjunction with over the top delivery capabilities.

**Irdeto:** The STB must have the functionality and flexibility to allow third parties to add applications on the platform. This will ensure that the consumer has a wider variety of premium content from which to choose and will strengthen consumer loyalty to any subscription platform.

**Motorola:** The STB offers the most flexible platform for extending content experiences to every screen in your house and beyond. Consumers want simplicity and the STB with its variety of networking, storage and control capabilities provide the most cost-effective range of solutions to providers wanting to deliver the content experiences that delight their customers anywhere any time.

**Netgem:** User friendly navigation; Advanced adaptive streaming protocol; HD User Interface with rich metadata (images, overlay information); Speedy interface; Services tailored to the user experience (e.g. No need to use a keyboard); Easy aggregation of OTT services.

**Oregan:** In delivery of a high quality experience to consumers, STBs rely on software that enables a fast and easy to use User Interface and a seamless combination of Broadcast and IP content.

**Pace:** Pay-TV providers are increasingly demanding the ability to deliver content from multiple sources including OTT, broadcast and IPTV services. As well as developing STBs and Gateway devices that deliver this range of content via the TV, Pace is also increasingly looking towards repurposing content and services to be delivered to any device around the home, tailored as needed.

**TechniSat:** Mainly driven by the Operator. We can implement all available technologies inside our products.

**TVonics:** This is a tricky question to answer. Perhaps it can be better understood by asking what services and features consumers want to watch, rather than the capabilities that service providers should allow. Also the definition of a 'high-quality experience' is difficult to pin down as it varies from one provider/consumer to another.

***Euromedia*: What steps have been taken to ensure energy efficiency and device sustainability?**

**AirTies:** We are continuing the use of switchable power supply option for all our devices. All new developments will be silicon based and compliant to COC (Code of Conduct) requirements.

**Amino:** The EU voluntary agreement of complex STB power consumption will ensure STB manufacturers and service providers strive to deliver energy efficient products.

**Broadcom:** Our STB technology features integrated dynamic power management capable of managing and shutting down unused system components in real-time for a reduction in overall power requirements in the home. Even in the lowest power modes, this can continue to remain aware of network events both in the home and from broadband servers, enabling these Broadcom-based devices to quickly respond to network and user inputs. Additionally, deep sleep modes keep only a small amount of power active to significantly minimise passive standby power consumption.

**EchoStar:** We have been actively participating in the defining of environmental standards for STBs in Europe through the 'Voluntary Industry Agreement' to improve the energy consumption of complex set-top boxes within the European Community.

**Entone:** Entone's DeepSleep technology greatly reduces power consumption by over 95% when a device is in standby mode. This amounts to significant savings in energy costs and further reduces carbon emissions.

**Humax:** Humax works within the energy guidelines outlined for STB devices and all future developments will be based on energy efficient silicon, so reducing further the energy footprint of the product. Through improved product development, we can also enable


more proactive software, which will operate the STB efficiently, monitoring consumer usage and dormant periods.

**Oregan:** Devices powered by Oregan Media Browser comply with low-power modes / power saving guidelines from Energy Star.

**Pace:** Pace is known in the industry as a leader in the development of environmental and energy efficiency standards. Pace was heavily involved during the development of the Energy Star code of conduct and played an integral role in advising on the levels and standards that are followed by the industry.

**TechniSat:** We produce STBs with lowest Power supply and Standby Power supply on the market. It was always a core target of our R&D.

**TVonics:** TVonics' MDR-240 reduced power consumption using only 1.5W in standby and 3.9W in operation. This low power consumption ensures long term operation of the electronic components meaning the MDR-240 should last the lifetime of the television set it converts. We are dedicated to providing our HD consumers with software upgrades whenever possible so their products last longer than they may expect.

***Euromedia*: Any other observations and predictions for the STB market?**

**AirTies:** The focus in the industry for the past year has been on the home gateway giving customers Quality of Service and merging several different connected devices into one simple solution. I predict that the industry will continue developing technology that will allow one device to serve as several connected devices in the home gateway. The next step will be to enable paid for and free content to be shared by using more powerful hybrid products.

**Amino:** The STB market will continue to thrive as service providers demand full control over the delivery of their 'anchor' premium content on the access point device. At the same time, operators will leverage the existing in home connected devices such as smart TVs and game consoles to extend their customer reach. These products are expected to offer many on demand advanced applications moving forward, especially if connected devices are to share a common operating system. High performance STBs would be used as an upgrading device for consumers who do not have other smart devices and remains the most suitable for the operator to synchronise applications development.

**ANT:** STB functionality is fast evolving. Companion device connectivity is becoming increasingly important as is the use of standards such as HbbTV which we've already seen roll out in Germany and trials in other counties including France.

**EchoStar:** The STB is set to continue its evolution into a media home gateway. There is no doubt that the methods for content distribution are evolving and as such the key is to embrace these changes and ensure services such connected apps and services, are available.

**Entone:** STBs are evolving from being simple terminal devices to the hub of the networked home. The key is to enable a seamless user experience – making it simple for users to access a wide variety of professionally produced content and personal media via a consistent UI and a single remote control.

**Entropic:** As service providers look to enable new services, applications, and IP gateway/client architectures, the need for more bandwidth in the home will become increasingly more important. OEMs can leverage the power of the de facto standard in the United States- MoCA- for enabling the delivery of next-generation solutions that integrate the Internet experience with connected TVs over a high-speed, multimedia home network

**Humax:** We believe that the STB market will continue to evolve and move away from simple devices. The main room product will offer multiple content choices and deliver these around the home. It is likely that we will see smaller thin client devices supporting the main room device and also the consumer will expect to be able to view different content on different devices, so the ability to share will be key.

**Irdeto:** STB manufacturers are becoming increasingly competitive and driving down prices of their hardware. They are also improving functionality and STB security. This benefits Pay-TV operators, consumers and content owners alike. We have also noticed that STB manufacturers are increasingly able to provide improved user interfaces and applications on their boxes. This is because the chipsets included in the makeup of the STB are becoming more intelligent and feature built-in functionalities that enable an enhanced consumer offering.

**Netgem:** We believe that there is a strong future for the intelligent set top box as the media centre that aggregates, blends and connects content with OTT and broadcast services to offer a seamless, branded experiences across devices throughout the home.

**Oregan:** 100% of the boxes will soon become hybrid and a large share of CPE will include HTML browser technology. Information snacking, apps and personalisation are also key trends.

**Pace:** Convergence is the future of television. Pay-TV providers are increasingly pursuing a managed service approach to delivering content and services throughout the home, as simple for consumers as turning on a tap. The STB, or an evolved version of that device, will remain at the core of this managed service delivery, with new capabilities being added all the time, both in terms of the content and service sources and types, and the quality of viewing experience, regardless of the device.

**S3 Group:** While STB technology, both in terms of hardware and software is quite mature, the challenge is clear that while it's possible now to produce a simple digital TV STB quite easily, this is no longer sufficient. STBs are expected now to be connected to several communications mechanisms to provide 'over the top' TV services alongside the previously existing ones. If that isn't enough, they're also expected to run interactive applications, record multiple programmes and even deliver content to so-called 'third screen' devices, such as tablets. So despite their relative maturity, the building and testing of hybrid devices is in reality more complex than before.

**TVonics:** In the consumer electronic industry, whilst there is plenty of room for innovation, there is little room for trial and error. Consumers expect products to work and there is therefore a lot to be said for waiting until technology is established, before venturing in.