IMDA — making sense of Internet Radio

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Today's Internet Radio breaks down geographic boundaries and lowers the entry barrier to audio broadcasting. We now have access to a huge and growing number of radio stations – wherever we are and whatever the time zone. However, there are very few mechanisms in place that can aid us to identify audio broadcasts of our choosing or our favourite radio stations, DJs, music, discussion topics or even podcasts. Unlike traditional FM radio, connected radios should exploit the Internet and provide features based on information about the content, the content providers and the listeners.

This article looks at the benefits of having a metadata standard for Internet Radio, and introduces the IMDA (Internet Media Device Alliance) which develops Internet Radio standards and promotes the advantages of Internet Radio and connected audio devices. A recently started IMDA activity, the Automotive Working Group, is also introduced.

The Internet Media Devices Alliance (IMDA) has already successfully released a baseline certification standard for standalone Internet Radio players. It defines the audio codecs, streaming protocol and playlist formats so that you can listen to stereo audio, faithfully reproduced on products with either stereo or mono speaker setups.

IMDA Profile 1, as it is known, has been welcomed by Internet Radio device manufacturers and broadcasters alike, as it means

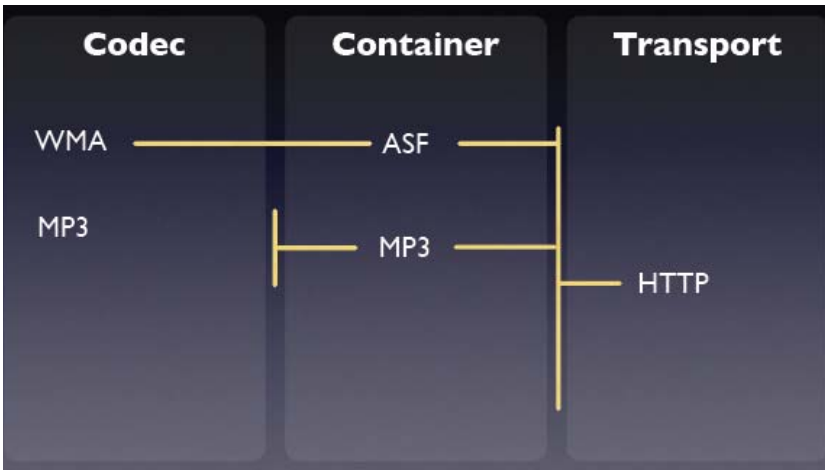

Figure 1
Live Audio: IMDA Profile 1

that manufacturers can get their products to market quicker and with less risk. For broadcasters it means they can support less audio codecs and hence reduce costs, yet still maximize their target audience reach. For the end user, Internet radios just simply work – whichever station you select and in whatever country you are located. *Fig. 1* shows the codecs, containers and preferred transport method as described by IMDA Profile 1.

Today, Internet Radio isn't only about standalone Internet Radio players. It's also about:

- hybrid radios for FM, digital terrestrial and IP reception;
- "Apps" for smartphones and Internet tablets;
- widgets for desktop PCs, laptops and netbooks;
- multi-room music systems;
- ... and, lately, even connected TVs, BluRay players and cars.

In order to cope with this growing number of entry points to broadcast services – the IMDA has devoted time to standardize broadcasters' metadata in the form of the ***Service Identification XML specification***.

This new initiative will greatly improve services through helping to coordinate and control the data presented by manufacturers or content aggregators.

Solving the problem

Part 1 – standardized Service Identification

A typical media organization, or broadcaster, usually has one or more Internet Radio services. These are mainly live services. They are also likely to have some on-demand programme streams and a few podcasts. On top of this, they have logos, brand names, messages, advertising, etc. that they want the listener to see or hear, and maybe even respond to. Up until now, how this data is represented, found and played back by the consumer device has been decided by the radio station aggregator or the end-product manufacturer.

Descriptions of shows / programmes and stations / brands are usually investigated and updated by the Internet Radio aggregators. This is an expensive process that can make the aggregator focus on the bare minimum. All this can lead to inconsistency and possibly to messages that are not coordinated or represented as the broadcaster would like. So it is extremely important that the media organization provides as much information, data, logos etc., ideally in a standardized manner – so that the end device represents the data well.

Fig. 2 shows how the data flows from the media organization via the aggregator (which may also be the OEM device manufacturer) to the Internet Radio "device". Such a device is either a physical Internet radio based on hardware, or a software-based application. The aggregator is a third-party

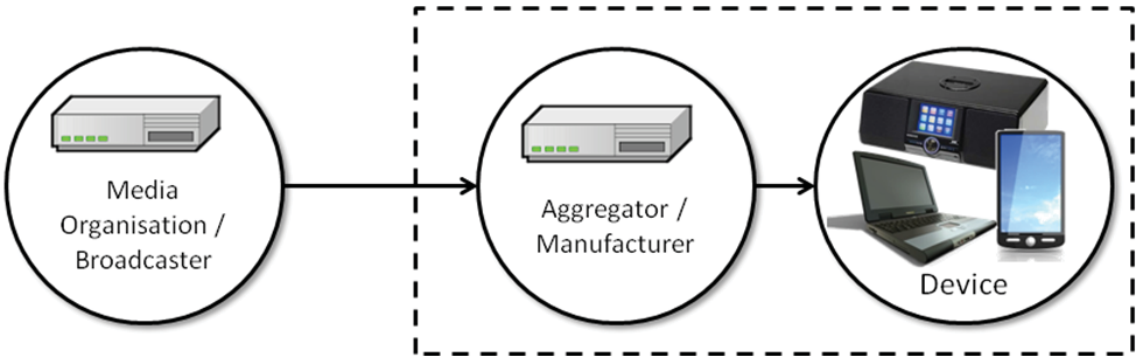

Figure 2
Data flow from broadcaster to device via the aggregator / manufacturer

organization that connects an Internet Radio "device" to streamed music, radio services and podcasts through an Internet Radio portal.

The IMDA – a worldwide coalition of device manufacturers, broadcasters and aggregators – is seeking to make Internet Radio station metadata more accurate and accessible for all listeners around the globe. Among many other benefits, standardization will simplify searching for detailed information and eliminate the need for extensive scrolling through long listings. High-profile European public broadcasters – including the BBC, major German broadcasters and Radio Netherlands – are among early adopters of the latest IMDA Service Identification specification.

The IMDA Service Identification initiative strives to alleviate the current issues by providing a framework for a shared understanding between aggregators and media organizations of which data is required and in what format. This means that re-purposing is easier and cuts down on publishing the data in different formats. The data describes the organizations themselves, its brands and its brand transport methods. This is not just a technical exercise but also editorial, as it describes how to categorize and how to evaluate appropriateness for the audience using the device.

The Service Identification includes terms of use for the metadata (with any exceptions to use, identified by the broadcaster). This provides a practical legal framework for the broadcaster to clearly define how and where his metadata can be used and this provides the aggregators / manufacturers with confidence in using this information.

Part 2 – Central Discovery Service

Providing the standardized and harmonized metadata is the important first step. Still, the most current information will only reach the consumer if the aggregators and device makers are aware of the availability of the latest information. Until now, this has been a tedious and expensive task that requires lots of communication and active search by the aggregators.

To make this process more streamlined and cost-efficient, the IMDA has developed the Central Discovery Service (CDS), a tool that can be used by broadcasters to automatically send out "push notifications" to all subscribed aggregators and device makers. The service is free to broadcasters and makes sure that the station information is always up-to-date. Aggregators can sign up for a small annual fee and hence save time and money searching for the most current metadata. The consumer benefits from relevant and current data that enhances the Internet Radio experience.

Internet Radio in the car – not just another "App"

Radio in the car has an 80-year heritage and in today's world, it's the premium location to listen to radio. Through the popularity of smartphone usage in the car, consumers now have easy access to the Internet on the road and listening to Internet Radio is one of the most popular applications. Also, almost every car OEM is already working on a deeper integration of IP services in the car with major safety concerns in mind.

In this dynamic environment, taking the best knowledge from 80 years of in-car radio and applying it to the new environment of multiple distribution routes including IP, radio has to compete with other

Abbreviations

ASF	(Microsoft) Advanced Streaming Format	**IMDA**	Internet Media Device Alliance http://www.imdalliance.org/
CDS	Central Discovery Service		
DJ	Disc Jockey	**OEM**	Original Equipment Manufacturer
EPG	Electronic Programme Guide	**SI**	Service Identification
FM	Frequency Modulation	**WMA**	(Microsoft) Windows Media Audio
HTTP	HyperText Transfer Protocol	**XML**	eXtensible Markup Language

applications such as personal music services for the consumers' attention – in order to "not become just another app". Also, questions such as *how to enable service following between different ways of radio distribution, what are the common media player requirements and ultimately, how much bandwidth will be available when this becomes a mass market phenomenon*, will need to be addressed.

For individual broadcasters, this is a big challenge that only a few might be able to tackle themselves. The majority of broadcasters will need a unique voice in order to get heard and be able to influence the process. But also car OEMs and Tier 1 suppliers will need to learn about the broadcasters' requirements and concerns. And for sure, all players in the ecosystem would benefit from international standards for Internet Radio delivery to the car, just like in broadcast.

Based on prior experience in standardizing Internet Radio delivery, the IMDA has set up an ***Automotive Working Group*** to focus on the areas of common high interest across the automotive and IP broadcast ecosystem where the IMDA can provide unique value. By partnering with other organizations, the IMDA is ensuring that the wheel is not re-invented but rather is focusing on the unique challenges and problems that need solving. All members of the ecosystem and broadcasters in particular are encouraged to actively join and contribute to the discussions.

Please contact our offices [claudia.jablonski@imdalliance.org] if you want to learn more and/or contribute.

Karen Parnell is a Chartered Engineer, Member of the IET and a passionate audio professional. Her first experience of audio design was gained through designing an audio ASIC for an Aerospace application, whilst working at British Aerospace. From there she went on to work on prestige in-car audio projects at Xilinx, wireless audio products such as Bluetooth headsets and portable media players at CSR, and audio post-processing software at ARC International. More recently she worked as Director of Product Marketing at Frontier Silicon where she was responsible for the product marketing of connected audio solutions including broadcast audio and wireless-connected audio devices.

Ms Parnell gained an excellent grounding in electronics design at British Aerospace where she spent the first 12 years of her career. She holds a B.Eng. honours degree in Electrical and Electronic Engineering from the University of Hertfordshire (UK) and an MBA from Aston Business School (UK).

Jan Nordmann is Director of Marketing and Business Development in the Audio & Multimedia Division of Fraunhofer USA Digital Media Technologies. He is also a Steering Board member of the Internet Media Device Alliance (IMDA), an organization with the mission to harmonize and promote Internet Radio delivery. His current tasks include strategic marketing and product management for Fraunhofer's MPEG Surround audio codec.

Prior to his work at Fraunhofer USA, Mr Nordmann was in charge of the marketing and public relations group at Fraunhofer IIS in Germany. He has a Masters degree in Applied Media Science from the Technical University Ilmenau, Germany.

Alan Ogilvie uses his background in IP technologies to support and maintain the Internet Radio offerings from BBC Radio. Since 2006 he has championed the take-up of codecs such as HE-AACv2 and, more recently, the delivery of a new SHOUTcast service for the BBC National Radio services.

Aside from managing the BBC's National Radio IP encoding infrastructure, Mr Ogilvie also acts as the BBC's representative in the Internet Media Device Alliance (IMDA). He is the chair of the IMDA's Metadata Working Group which recently published version 2 of the "IMDA Service Identification" specification allowing broadcasters to expose their Internet Radio services in a coherent way that others can understand and rely on.

IMDA's key activities in summary

- **Harmonized metadata**

  The IMDA has defined the "IMDA Service Identification (SI) for broadcasters and aggregators". Using the IMDA SI, broadcasters can update their descriptive metadata themselves. Benefits include comprehensive metadata control for broadcasters, easy access to reliable information for aggregators, and additional programme information for consumers. Examples include station logos, genres, content descriptions and, in the near future, Electronic Programme Guides (EPGs), live text services and image slideshows.

- **Central Discovery Service**

  To simplify the exchange of harmonized metadata, the IMDA has defined a "Central Discovery Service" (CDS). By using the CDS, broadcasters can automatically update changes in their "IMDA Service Identification" and send a single notification to all subscribed aggregators, who can remain up-to-date at all times by downloading the latest information directly from the broadcaster's server.

- **Profiling and certification**

  There is no shortage of choice for consumers when it comes to selecting Internet Radio services, but users can sometimes encounter difficulties in locating and playing their favourite stations on the wide variety of devices now available. Part of the IMDA's remit focuses on encouraging harmonization in the device market through Profile 1 certification, which offers consumers a guarantee that devices can "play Internet Radio". The IMDA is currently working with the receiver industry on Version 2 of the device profile, which will offer an even more exciting Internet Radio experience.

- **Automotive Working Group**

  The recently-started working group focuses on the specific issues of bringing Internet Radio to the car that enables a seamless and safe user experience. The IMDA is collaborating with other organizations in the ecosystem in order to use synergies and combine the best of all worlds – traditional broadcast as well as IP delivery. Broadcasters, operators, aggregators, suppliers and carmakers are encouraged to participate and contribute to the process.

The IMDA will be present at the following events in 2011:

- IFA 2011,Berlin, at the TecWatch forum on 5 September: **http://www1.messe-berlin.de/vip8_1/website/Internet/Internet/www.ifa-berlin/englisch/EVENTS/TecWatch/index.html**
- NAB Radio Show, Chicago, on 15 September: **http://www.radioshowweb.com/default.asp**

For detailed information on the IMDA, please visit our website: **http://www.imdalliance.org**
... or follow us on Twitter: **http://www.twitter.com/IMDA**

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