



Radio and Audio Streaming - the forgotten cousin?

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Celtic CONNECTIONS | 2009



So what is Celtic Music Radio?

- Celtic Connections -1994
- Growth of Traditional/ Celtic music market
- Entrepreneurship
- Applied Music alumni/student involvement/ employability/ network,
- International platform,



Initial idea for radio station in 2005

- First Broadcast 2006... 2007, SIPC 2007,
- 2008 fulltime
- Student, Alumni, Volunteers, Musicians, Community of Interest
- Music, Journalism, IT, Broadcast, exposure to technology, bringing these different sectors together
- Cultural and creative industries

Radio has changed!



Radio has changed!



Community Radio

- What is Community Radio?
 - The “3rd tier”
 - Low power, limited range broadcast transmission
 - Well-defined “community of interest”
 - And of course internet streaming
- Unlike some, our community is a cultural one, rather than a geographical one
 - So low power and geographical restrictions cause us problems
- On internet, well over 50% of our listeners across the Atlantic

Studio facilities

- We have a well-provisioned studio, located within the University
- Broadcast desk and furniture acquired from a FM local radio station
- Digital playout system – “Myriad” – acts as music library, and facilitates live, “voice-tracked” and automated broadcasts
- Equipment from BBC Scotland
- Adequate kit to manufacture programmes – but how do we get it to our listeners?

The broadcast transmitter

- FM is easy - Just needs:
 - A high building
 - An off the shelf compact transmitter
 - A small antenna

 - Ubiquitous receivers
 - Stereo
 - RDS
 - Simple, common, well-understood technology
 - Relatively short range

But OFCOM said “Medium wave!”

- Transmitter is BIG
- Antenna is BIG
- Height above sea level not important, but needs good grounding. Proximity to water is good.
- Transmitters are expensive, and not “off-the-shelf”
- Limited expertise – a very specialised field
- Long-distance coverage?

- So where can we find a large, cheap, secure, unoccupied site near the city centre?







The SS Shieldhall

now a pleasure cruiser on the Solent!





How do we get a signal down there?

- “Studio-Transmitter link”, or STL
- BT costs prohibitive
- We have line-of-sight to a University building about one mile away
- Point-to-point wireless?
 - Linksys WRT-54GL
 - DD-WRT
 - Directional antennae
 - Total cost ~£150
 - Mention OSSTL

Interference

- BUT.... The “far end” is directly under a radio transmitter!
- Lots of RF interference.
- Screen everything.
- Ferrites

Internet streaming

- Allows us to deliver service over a wider area
- Higher quality, stereo
- Metadata
- Definitive usage stats!
- More expensive and more complex licensing
- Essential for “community-of-interest” broadcasters
- Relevance to tier-2?

The Streaming Solution

- Simple low-tech, low budget solution, but surprisingly effective
- Icecast internet streaming, using edcast to encode
- Some multiband compression before transmission
- External service provider (the Community Media Association) runs icecast server
 - So local bandwidth requirements are minimal
- Initially, local kit was completely “from the junk pile”
 - Latterly, replaced with more powerful processors and better sound cards

Useful tools

- Edcast – encoder for Windows - <http://www.oddsock.org/tools/edcast/>
- Icecast – streaming server - <http://www.icecast.org/>
- Sound Solution – Multiband Compression plugin for Winamp - <http://www.soundsolution.it/forum/>
- Rotter – station logger - <http://www.aelius.com/njh/>
- Special mention – OSSTL – Open Source Studio-Transmitter Link – **VOTE FOR IT at <http://www.newschallenge.org/> !!!**

Listen to us!

- Listen to our stream by clicking the “Listen Live” button on www.celticmusicradio.net
- Or on the “wireless” around Glasgow
- Or use an internet radio
- Or....

Other delivery methods

- Multicast?
- Freewire?
- IPv6?
- Stream bandwidth?
- Other encodings?

Outside broadcasts

- Use exactly the same streaming technology to
 - Deliver stream to end users
 - Provide studio-transmitter link
 - Bring in outside broadcasts
 - SIPC from RSAMD
 - Plenty bandwidth, excellent quality, reliable
 - Celtic Connections from Glasgow concert hall and other venues – including the “back room” of a pub!
 - ADSL – problems with contention
 - Even delivered useable stream from public wifi in local library!
- Barix – <http://www.barix.com>

Where next?

- Technical consolidation
- Improvements to streaming
 - Higher bandwidth?
 - Different encoding?
 - Multicast?



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Questions?

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