

# Free/Open tools for hybrid radio with RadioDNS

Libre Software Meeting 2012

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**EBU TECHNICAL**  
MEDIA TECHNOLOGY & INNOVATION

# Summary

- RadioDNS overview
- EBU open source developments
- RadioHack sessions
- Future Work

# New devices more than just audio...

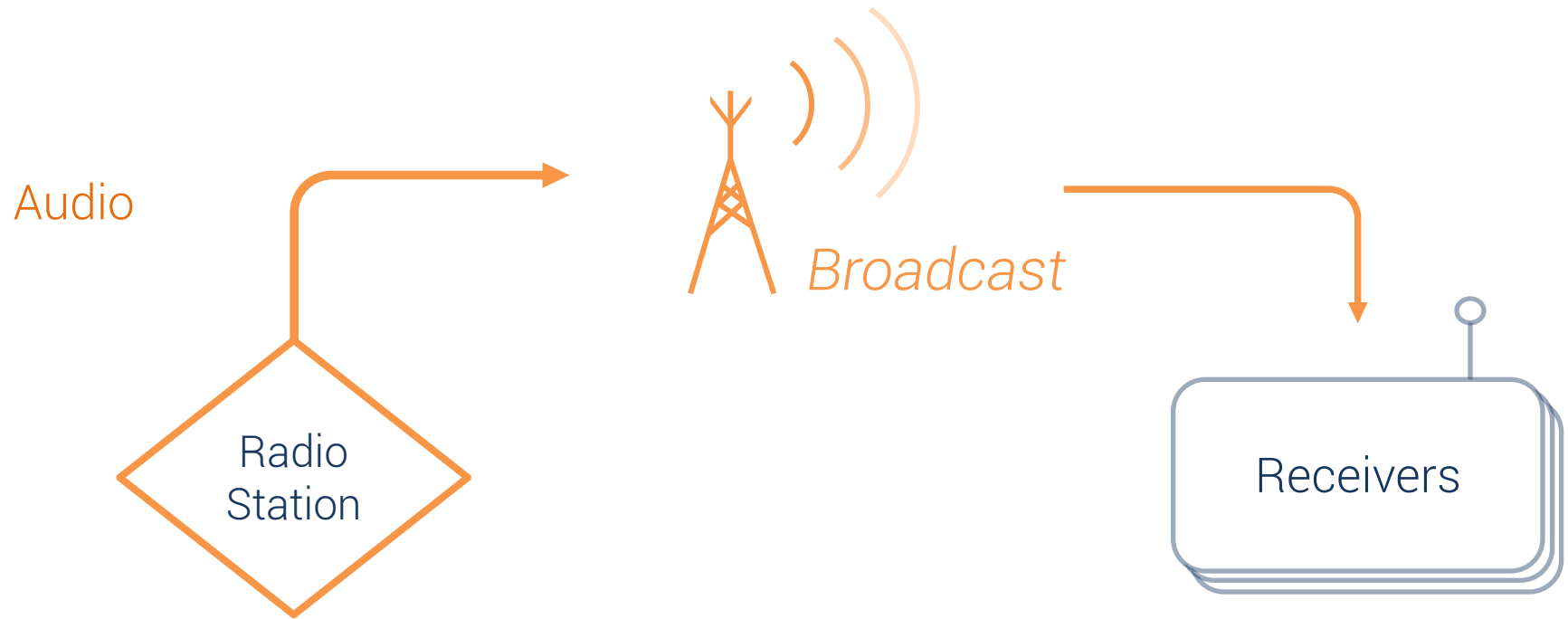
Colour screen

Interactive controls

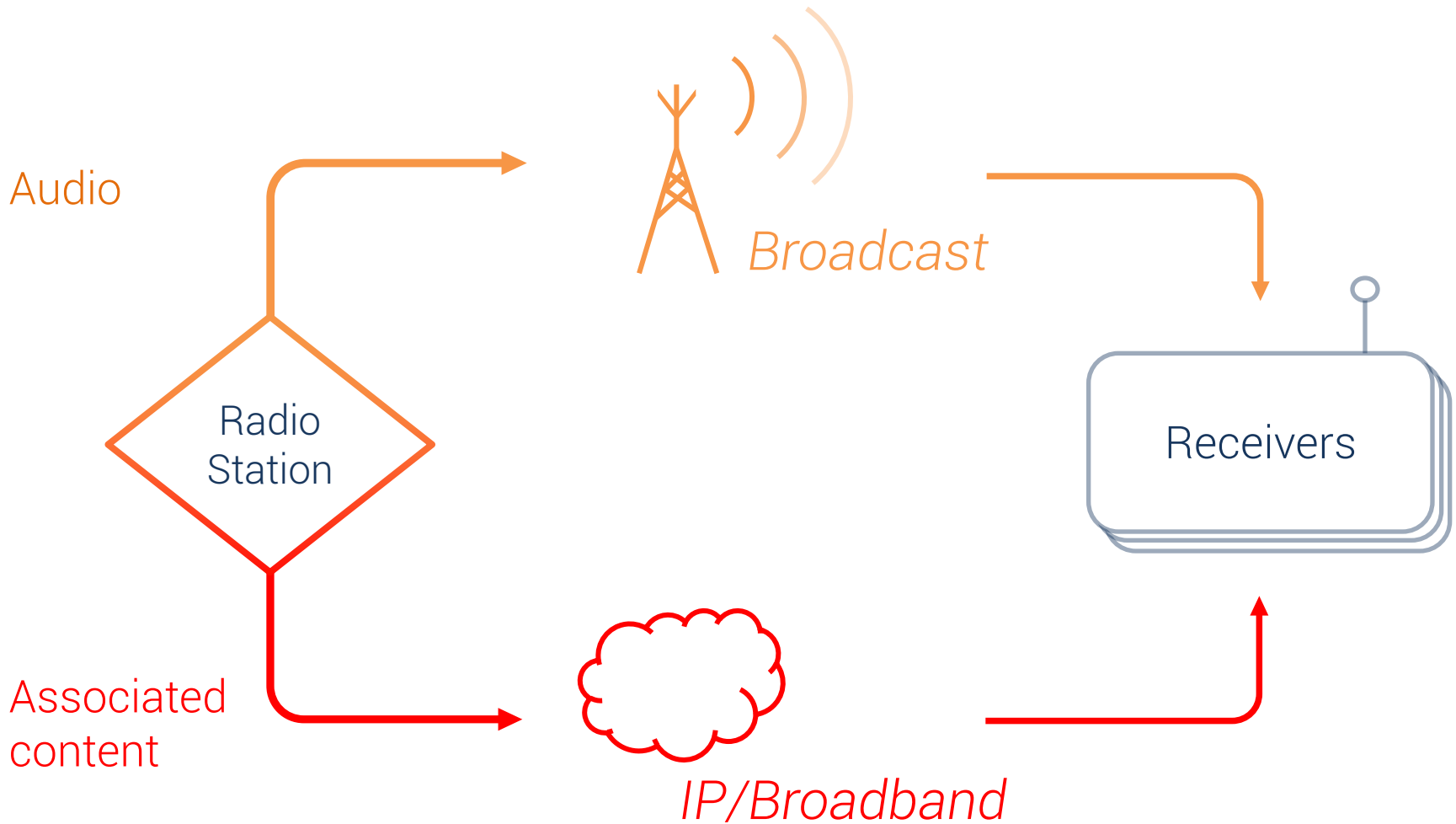
Internet connected



# Hybrid broadcast/broadband approach



# Hybrid broadcast/broadband approach



# Connection to broadband content using broadcast informations

## FM / RDS

Identify the program with metadata :

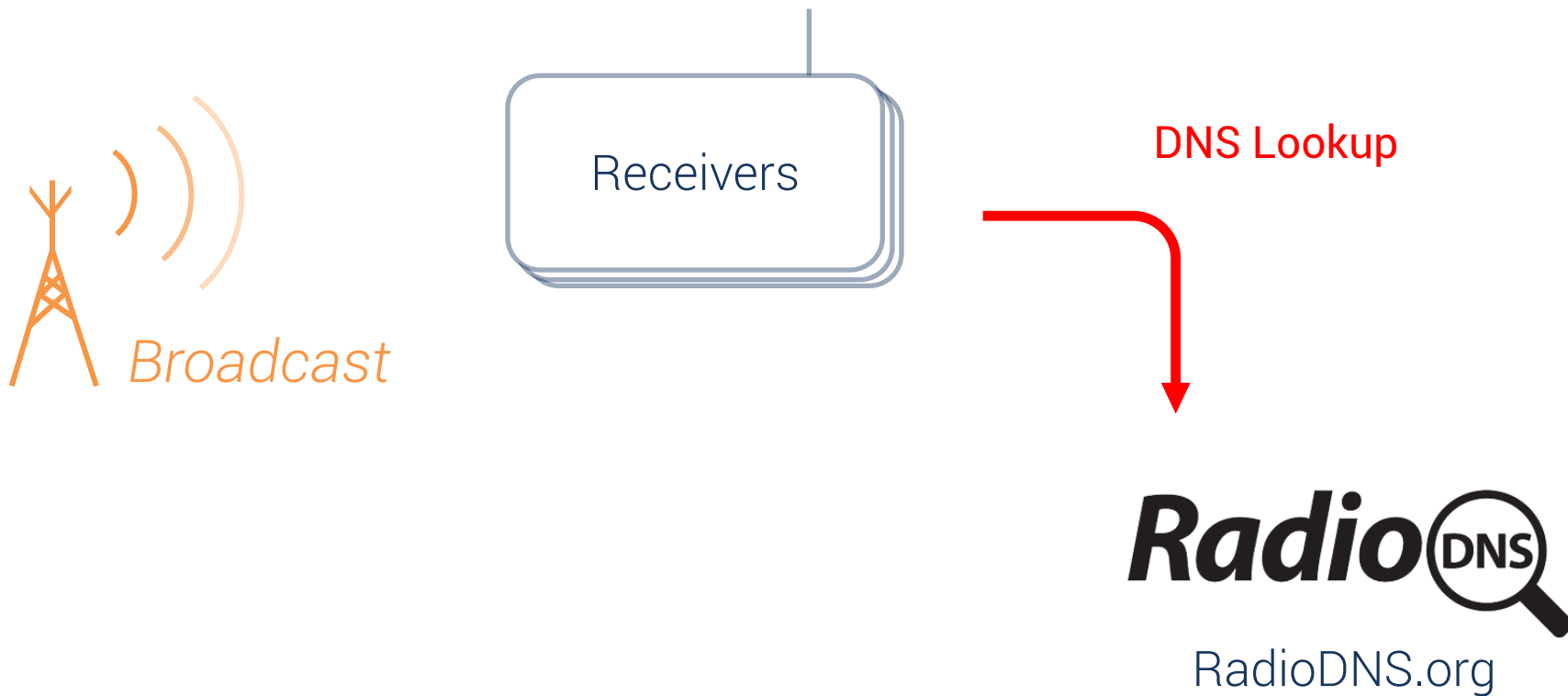
Frequency

Program ID

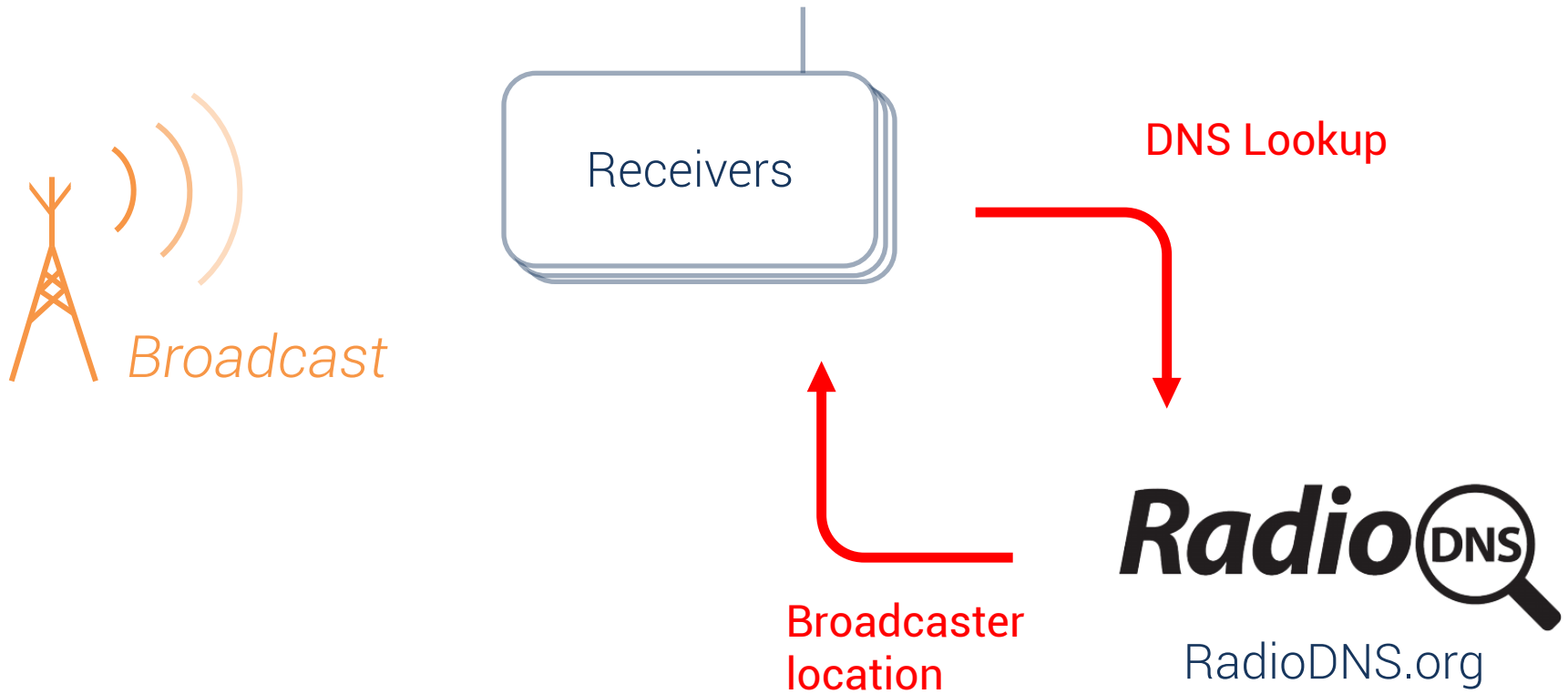
Extended Country Code



# Connection to broadband content using broadcast informations

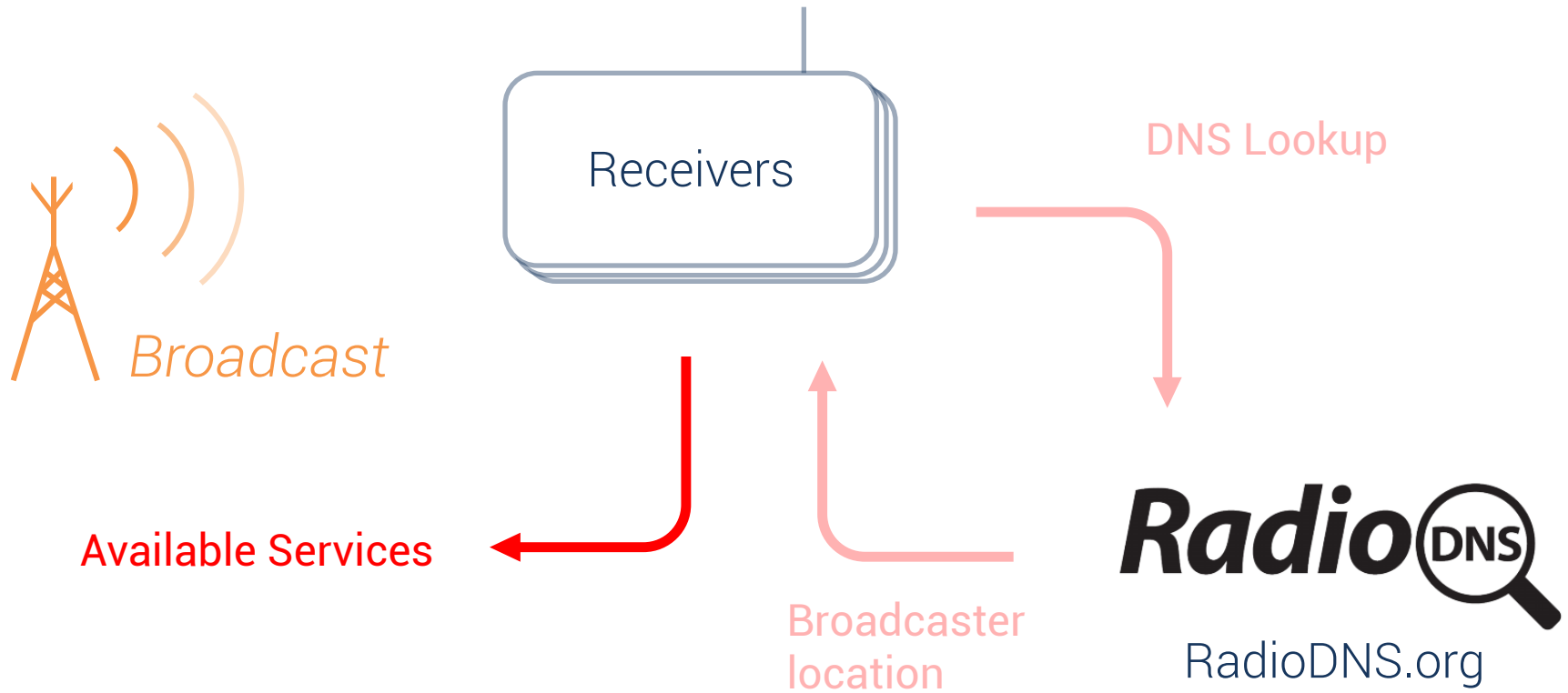


# Connection to broadband content using broadcast informations





# Connection to broadband content using broadcast informations



# Radio Hack

Tomorrow, 09:20-11:20, UniMail S030

Hands on RadioDNS  
Technical overview & tutorial

—  
broadcaster  
location



RadioDNS.org

**Radio** 

Slide Show

**Radio** 

Electronic Program Guide  
& Service Following

**Radio** 

Tagging

Open to other services...

# Focus on RadioVIS

- Visuals ( $\neq$  TV !)
  - Branding
  - Associated program information (CD covers, news stills, etc)
  - Non associated program information (Traffic webcams, etc)
- Visuals are clickable (to related website)

# Focus on RadioVIS: Visuals examples

## Branding



# Focus on RadioVIS: Visuals examples

## Associated program information



**EBU RADIO** tech.ebu.ch



**LADY GAGA**  
FOREST FACE

Now playing  
**Lady GaGa**  
**Poker Face**

**Until 9am : Breakfast Show** 24.03.2011  
Next: 8:30 -> World News 21:53

EBU-UER



**EBU Digital Radio Showcase**



**Lotta Bromé**  
Host



**Vittorio Argento**  
Deputy Director of News, Rai

What's in the air?

EBU-UER



**Live from Helsinki**



**Annika Nyberg**  
Incoming Media Director, EBU

EBU-UER



EBU-UER

rtbf 

Hybrid Digital Radio Broadcasting  
**Radio**   
**DAB+**



**Francis Goffin**  
Director General of Radio - RTBF



**Eric ADELBRECHT** 11 oct 2011  
14:11

La jeune generation ecoute moins et consomme la radio autrement

**En direct du Parlement Européen**  
14h - 15h

EBU-UER  **DAB+** **Radio**  Hybrid Digital Radio Broadcasting

# Focus on RadioVIS: Visuals examples

## Non-associated program information

25.03.2011 12:17 **EBU RADIO**  
tech.ebu.ch

direction Genève  direction Lausanne 

A1: Tunnel de Vernier

**TRAFFIC INFO**

24.03.2011 21:50 **EBU RADIO**  
tech.ebu.ch






The 2010 IAAF European Athletics Championships were held in Barcelona from 26 July - 1 August 2010

**EBU Digital Radio Showcase**

Today's weather: Brussels

Max: 19°  
Min: 14°  
Wind: 15 mph



**Temps de Parcours** 11 oct 2011 15:00

Bruxelles - Liège	64 mins	(+11)
Bruxelles - Liège	70 mins	(+14)
Bruxelles - Namur	66 mins	(+33)
Bruxelles - Anvers	49 mins	(+32)
Bruxelles - Gand	54 mins	(+23)

 **Mobilinfo**  
[www.rtb.be/mobilinfo](http://www.rtb.be/mobilinfo)

  **Radio**  Hybrid Digital Radio Broadcasting

# Case: EBU digital radio Showcase European Parliament



<http://replay.ebulabs.org/>



# RadioVIS

## Technical specification

Publish/Subscribe messaging pattern

Stomp protocol (Text frames)

### MESSAGE

```
link:http://www.classic21.be  
message-id:I:topic:dab:6e0:6005:6354:0:image1328034066058  
destination:/topic/dab/6e0/6005/6354/0/image  
timestamp:1328034162406  
expires:0  
priority:0  
trigger-time:NOW
```

```
SHOW http://radiovis.classic21.be/1328034066058-onair.jpg
```

# RadioVIS

## Technical specifications

Publish/Subscribe messaging pattern

Stomp protocol (Text frames)

### MESSAGE

**link:**<http://www.classic21.be>

**message-id:**I:topic:dab:6e0:6005:6354:0:image1328034066058

**destination:**/topic/dab/6e0/6005/6354/0/image

**timestamp:**1328034162406

**expires:**0

**priority:**0

**trigger-time:**NOW

**SHOW** <http://radiovis.classic21.be/1328034066058-onair.jpg>

# RadioVIS Implementations

Many open sources projects :

- **Apache ActiveMQ**  
Handles high traffic load
- **EBU radiovis-server**  
Lightweight and standalone solution
- **Some service providers exist**
- **Check on <http://www.radiodns.org>**

# **EBU OPEN SOURCE DEVELOPMENTS**

# Free/Open Source Tools developed by EBU to speed adoption



## RadioDNS manager

Enable hybrid radio for your FM, DAB or DAB+ station

Based on Open EBU RadioVIS server

Manage RadioDNS, RadioVIS, RadioEPG+Service Following

## Content manager

Visual production from the studio

## Receivers implementations

Chumby, Flash, Android & Ajax VIS players

# Free/Open Source Tools developed by EBU to speed adoption



All tools on [www.ebulabs.org](http://www.ebulabs.org)

## RadioDNS registration







barroco logoff

RSR Couleur 3 +

RadioDNS RadioVIS RadioEPG Service Following RadioReplay (coming soon)

### Channels

New RadioDNS entry Export to zone file Import from zone file

x	Label	RadioDNS entry	DNS Authoritative FQDN	VIS server	EPG server		
<input type="checkbox"/>	37 RSR Couleur 3	*.43d3.4e1.fm.radiodns.org.	rdns.ebulabs.org	radiodns1.ebu.ch:61613	epg.ebulabs.org:80		
<input type="checkbox"/>	86 RSR Couleur3	0.43d3.4041.4e1.dab.radiodns.org.	rdns.ebulabs.org	radiodns1.ebu.ch:61613	epg.ebulabs.org:80		

## Static RadioVIS







barroco logoff

RSR Couleur 3 +

RadioDNS RadioVIS RadioEPG Service Following RadioReplay (coming soon)

Channels

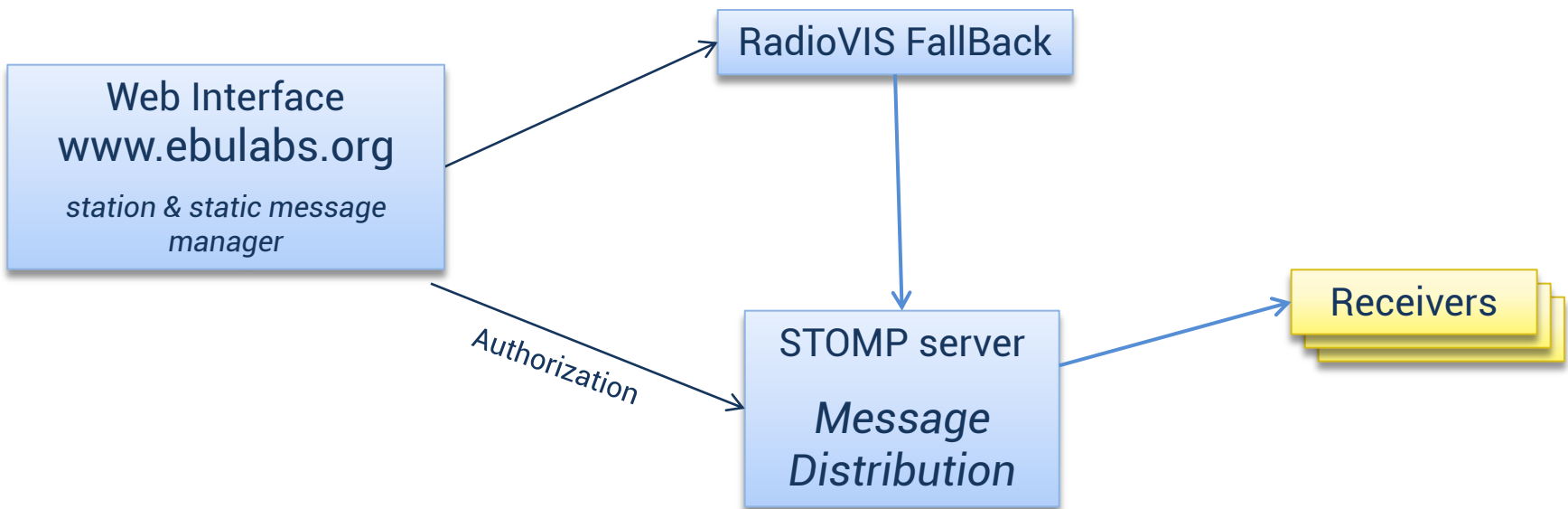
x	label	topic	static visual & txt	history/monitor
<input type="checkbox"/>	RSR Couleur 3	/topic/fm/4e1/43d3/*	I love Couleur 3	 
<input type="checkbox"/>	RSR Couleur3	/topic/dab/4e1/4041/43d3/0	Couleur 3 logo	 

Gallery



# EBU RadioDNS Manager

## Static Visualisation

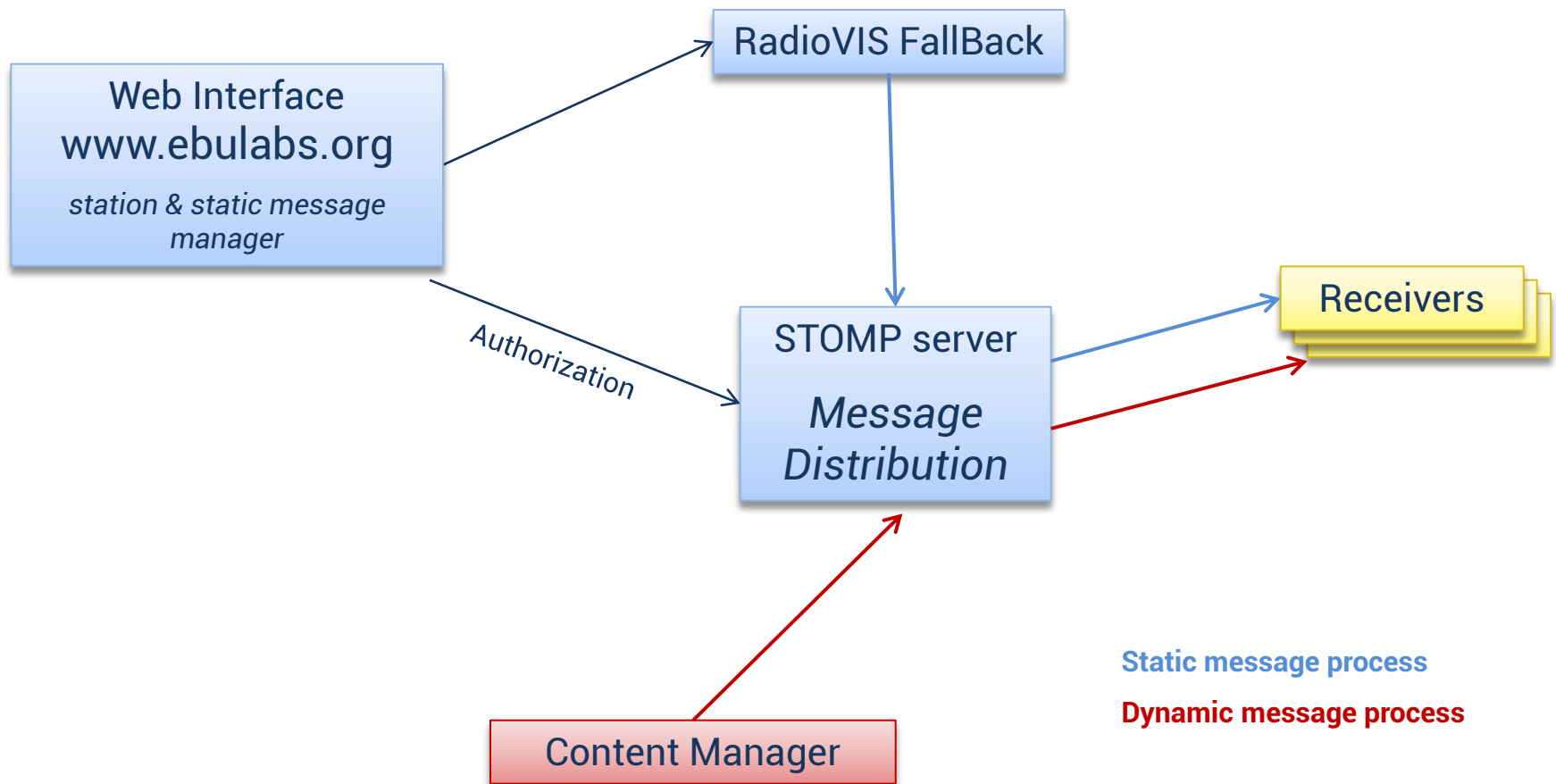


Static message process

Dynamic message process

# EBU RadioDNS Manager

## Dynamic Visualisation



## RadioEPG

RadioDNS RadioVIS RadioEPG Service Following RadioReplay (coming soon)

### Static EPG for EBU Demo

#### Shows

- AfterWork
- Live Session
- Morning Show
- Music Programme
- NEWS
- Nuit
- Rock session
- Summer Afternoon

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
00:00	00:00 - 06:00	21:00 - 06:00	21:00 - 06:00	21:00 - 06:00	21:00 - 06:00	21:00 - 05:00	21:00 - 05:00
01:00	Nuit	Nuit	Nuit	Nuit	Nuit	Top DanceFloor	Top DanceFloor
02:00							
03:00							
04:00							
05:00	=	=	=	=	=	05:00 - 07:00	05:00 - 07:00
06:00	06:00 - 10:00	06:00 - 10:00	06:00 - 10:00	06:00 - 10:00	06:00 - 10:00	Music Programme	Music Programme
07:00	Morning Show	Morning Show	Morning Show	Morning Show	Morning Show	07:00 - 10:00	07:00 - 10:00
08:00						Morning Show	Morning Show
09:00							
10:00	10:00 - 12:00	10:00 - 12:00	10:00 - 12:00	10:00 - 12:00	10:00 - 12:00	10:00 - 12:00	10:00 - 12:00
11:00	Music Programme	Music Programme	Music Programme	Music Programme	Music Programme	Music Programme	Music Programme
12:00	12:00 - NEWS	12:00 - NEWS	12:00 - NEWS	12:00 - NEWS	12:00 - NEWS	12:00 - NEWS	12:00 - NEWS
13:00	13:00 - 17:00	13:00 - 17:00	13:00 - 17:00	13:00 - 17:00	13:00 - 17:00	13:00 - 19:00	13:00 - 17:00
14:00	Summer Afternoon	Summer Afternoon	Summer Afternoon	Summer Afternoon	Summer Afternoon	Afternoon	Live Session
15:00							
16:00							
17:00	17:00 - 20:00	17:00 - 20:00	17:00 - 20:00	17:00 - 20:00	17:00 - 20:00		17:00 - 21:00
18:00	AfterWork	AfterWork	AfterWork	AfterWork	AfterWork		Rock session
19:00						19:00 - 21:00	
20:00	20:00 - NEWS	20:00 - NEWS	20:00 - NEWS	20:00 - NEWS	20:00 - NEWS	Rock session	
21:00	21:00 - 06:00	21:00 - 06:00	21:00 - 06:00	21:00 - 06:00	21:00 - 05:00	21:00 - 05:00	21:00 - 00:00
22:00	Nuit	Nuit	Nuit	Nuit	Top DanceFloor	Top DanceFloor	Nuit
23:00							=

## Service Following



barroco logoff

EBU Demo +

RadioDNS RadioVIS RadioEPG **Service Following** RadioReplay (coming soon)

### Channels

label	channel	cost	mime/type	offset (msec)	
	dab:4e1.4fff.4003.0	100	DAB	0	⏻
	dab:4e1.4fff.4002.0	100	DAB	0	⏻
ebu demo (dab)	dab:4e1.4fff.4001.0	100	DAB	0	⏻
demo fm (4e1)	fm:4e1.4000.*	100	-	-	⏻

+ New IP Channel

# Content Manager



**ON AIR**

**EBU Digital Radio Showcase**

Today's weather: Brussels

Max: 19°  
Min: 14°  
Wind: 15 mph

**Preview**

Live from European Parliament, Brussels

Antoine Baduel

02:33:39

**Hot Slides**

- aDR
- gen-clockmusic-1
- gen-clockmusic-2
- gen-clockmusic
- gen-head
- gen-withmusic-1
- gen-withmusic-2
- gen-withmusic
- gen
- p-
- p-akerlund
- p-borgnino

**Drop Folder**

Slide webcam-text

Variable WEBCAM\_PIC

**Variables**

Slide webcam-text

WEBCAM_PIC	D:\EYEF\PI1020282 - Copy.JPG
WEBCAM_TEXT	Antoine Baduel
TIME	02:33:04

F5: preview F8: RSS wizard

GENERIC FIXED  
AUTOROTATE NO TWEET  
AUTOROTATE WITH TWEET  
TWEET ONLY  
WEBCAM  
HOST + SECTION HEAD

hsh wea hsh dDR

NEXT

Reload

Open Data Folder Open Config

debug Show Variables

Playout mode Manual Automatic **Automatic**

EBU-UER  
ebulabs.org

# Content Manager

## INPUT

LIVE PRODUCTION or HTTP requests

## OUTPUTS

STOMP, FTP, File formats/Quality

Rendering of slides on-the-fly

XML-based templates

Data aggregator

RSS feeds, pictures, watch folder



**RSR.ch**  
Last news

Tue, 20 Sep 2011 09:57:59 GMT  
"Vol spécial" sort mercredi en salle

Tue, 20 Sep 2011 10:02:06 GMT  
Les chiens dans la police

Tue, 20 Sep 2011 10:40:13 GMT  
Face aux partis: l'Union

(c) RSR - Flux RSS

# Radio Hack



Tomorrow, 09:20-11:20, UniMail S030

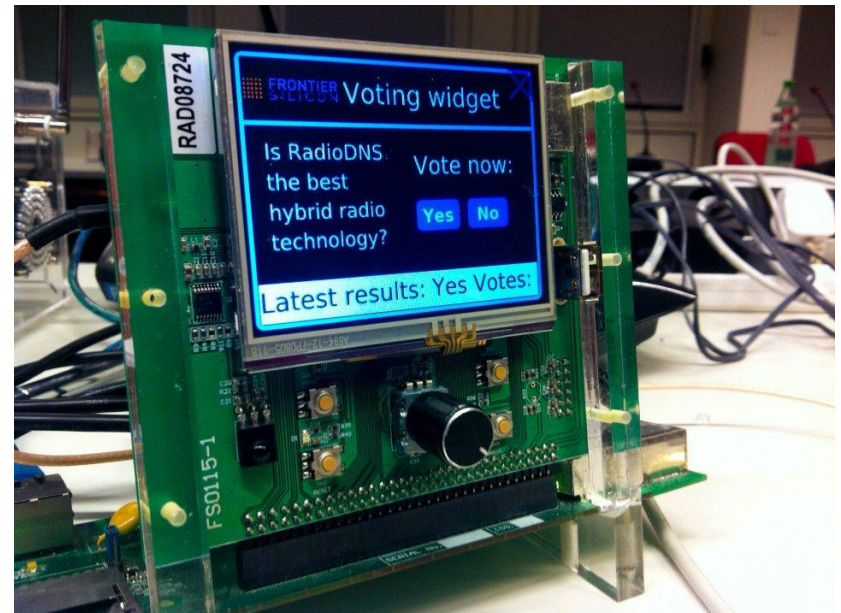
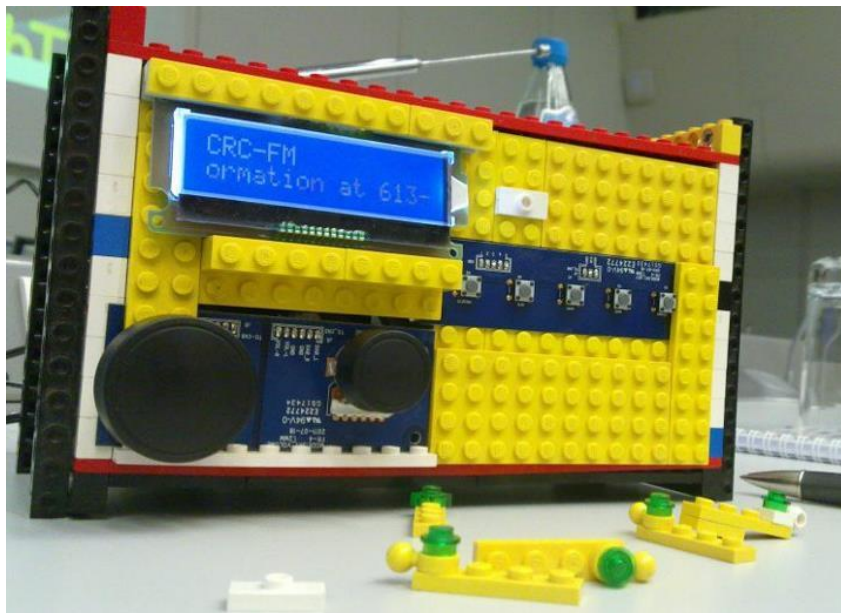
## Hands on RadioDNS

Enable hybrid radio for your FM,  
DAB or DAB+ station

# Radio Hack

First Edition: February 2012

BBC, Global Radio, RTBF, SwissMedia Partners, CRC, MX Lab, Frontier Silicon, Pure and more...



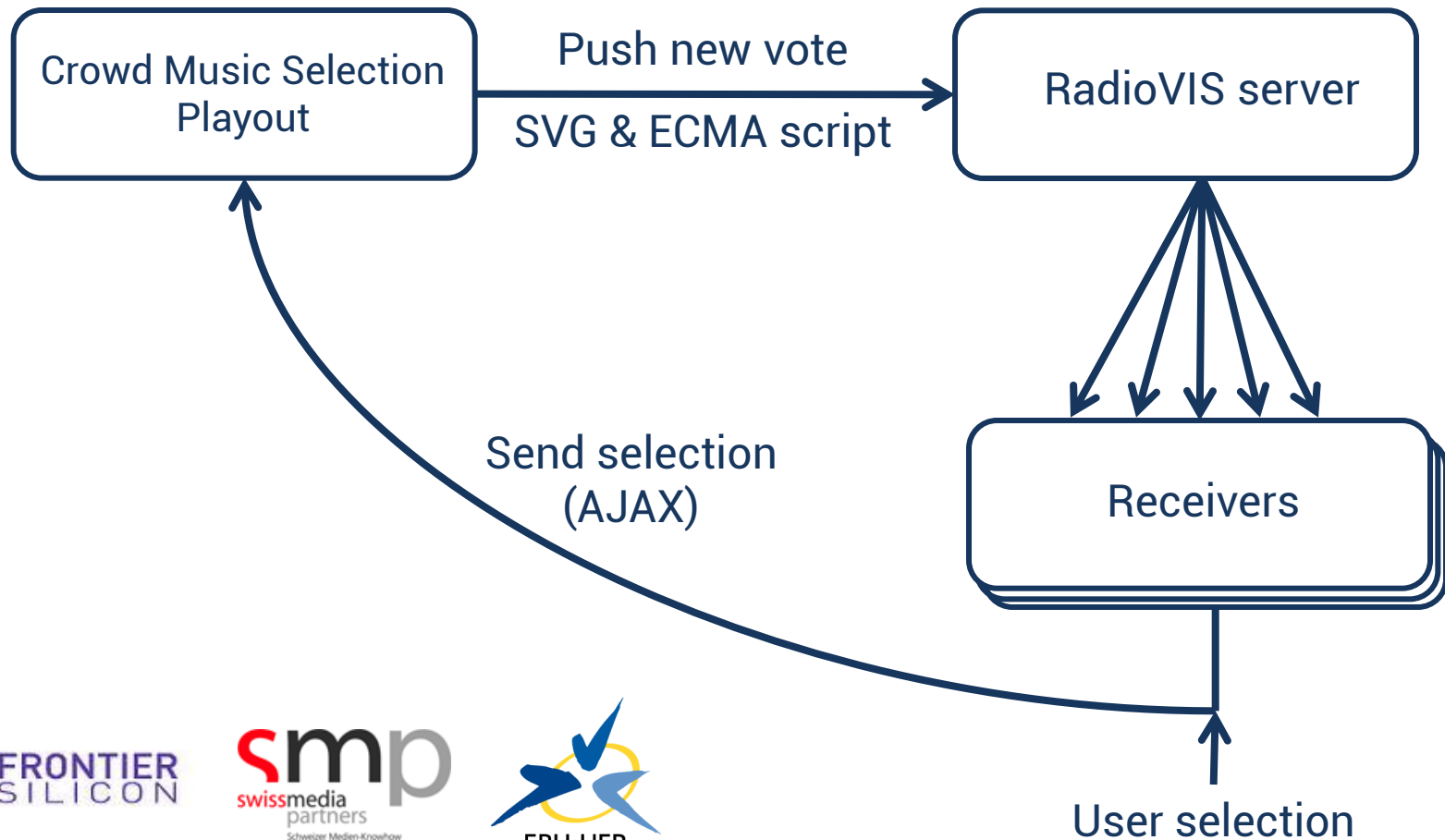


# Radio Hack devs

## Live Feedback

- Frontier Silicon
  - RadioDNS and RadioVIS receiver
  - SVG display
- EBU
  - RadioVIS server
- SwissMedia Partners
  - Crowd Music Selection Playout

# Radio Hack devs Live Feedback



# Radio Hack devs

## Live Feedback

# Next steps

Radio Replay

Content Manager v2.0 release

Open RadioDNS manager

# Radio Hack

Tomorrow, 09:20-11:20, UniMail S030

## Hands on RadioDNS

Enable hybrid radio for your FM,  
DAB or DAB+ station

## Digital Radio Broadcasting

DAB+, Software Defined Radio, CRC MMB tools

Thank you for your attention!

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ebulabs.org