

Radiotext plus

Digitizing the analogue radio for the iPod generation

Westdeutscher Rundfunk

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Radio is an old fashioned medium



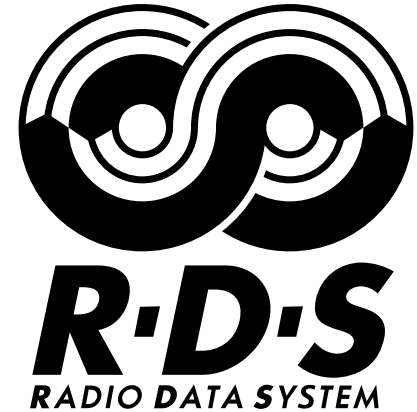


Wouldn't it be nice if an old fellow would look more attractive?



Hold out, folks – we may have hopes...

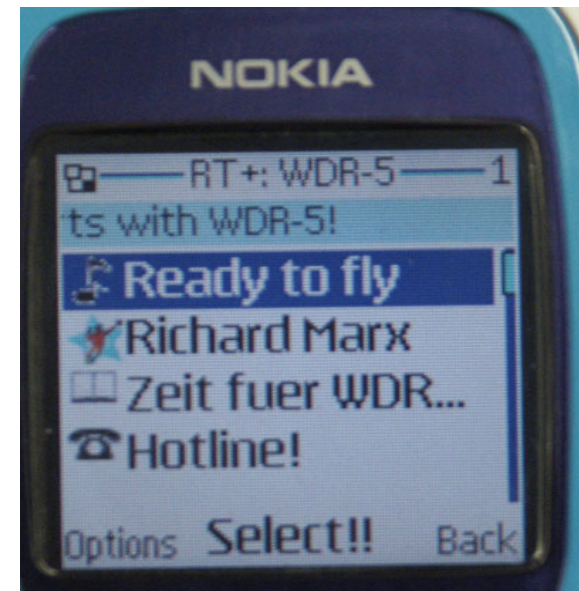
- 1987 First RDS receivers at IFA Berlin**
- 1988 Mass production of receivers**
- 1989 EON development**
- 1997 Starting TMC services**
- 2002 „No car radio without RDS can be sold“ (Blaupunkt)**
- 2005 Radiotext plus starts at WDR**
- 2006 Mass production of mobile phones with FM-RDS**



This is the current version of Radiotext:

Zeit für WDR 2 ***** Ready to fly von Richard Marx ***** Die WDR 2 Hotline 01805-678-222 ++++++ Ihre Musik ++++++ Richard Marx, Ready to fly *****
Mehr Infos unter wdr2.de ++++++

This is Radiotext plus



RDS / Radiotext plus

- RTplus has been developed jointly by the
 - Westdeutscher Rundfunk WDR
 - Nokia
 - Institut für Rundfunktechnik IRT
- The Application Identification (AID) assigned for RTplus is 4BD7 (hex)

RDS Forum 2005
R05/036_1

Radiotext plus (RTplus)

Specification (Version 1.0)

1. Foreword

RTplus has been developed jointly by the Westdeutscher Rundfunk WDR, Nokia and the Institut für Rundfunktechnik IRT. WDR is a broadcaster, Nokia is manufacturer for mobile phones and IRT is a research institute.
The RTplus specification was edited by IRT and Nokia and is maintained by IRT. If a company applies this specification in its devices, it is obliged to indicate this to IRT (contact richter@irt.de), so it can be informed about the latest status of the specification. The application of the specification is free of charge.

2. Introduction

RTplus is designed to let the listener (or user) take additional benefit from the RDS radiotext service, by enabling receivers to offer him direct access to specific elements of Radiotext messages (e.g. to the title of the currently broadcasted song, to news, to telephone numbers (e.g. for voting), to web addresses for browsing Web content offered by the radio programme provider etc.). These RTplus information elements carried in the RDS radiotext (RT) messages, are identified by its location within the RT messages and by the class code of its content type. So a receiver is able to store the different RTplus information elements and the listener may then select and request a specific content type from the storage at an instant in time that fits to the listeners needs. The advantage of this method is that the listener is no longer forced to watch a lot of information passing by, to pick out the desired one, he rather gets the opportunity to select specifically his favourite information to be shown on a static display. Moreover RTplus gives a chance to provide selected RT message elements to car drivers on a static display without risk of distracting the attention of the driver. Further on RTplus is well suited for mobile phones with built-in FM receivers: telephone numbers may be routed directly from the RDS RT to the dialer. Last but not least RTplus will be used for radio broadcasting via DVB-S (see 5.2). It may be adopted by DRM and DAB, too.

RTplus is based on RDS RT messages and is completely backwards compatible to the RT. All additional information necessary for implementing the RTplus service is carried in the RDS group 3A and in an appropriate RDS ODA group (see the following figure).

RTplus information elements		
RT Message	RTplus identification	RTplus Tags
RDS group 2 A/B	RDS group 3A	RDS group ODA xA

3. RTplus Tag

When a RT message like "You are listening to „House of the rising sun“ by Eric Burdon" is sent out, the RTplus information elements title and artist are marked by two RTplus tags.

A RTplus Tag consists of three elements

- RT Content Type
- Start Marker pointing to the position (inside the RT message) of the first character of that RTplus information element
- Length Marker indicating the length of that RTplus information element

The content type is taken from a list with 64 entries (see Table 1).

- In 2005, Nokia shipped more than 40 mio. handsets with an integrated music player
- In 2005, Nokia shipped more than 30% of total handset market (~ 800mio) ~ 250 mio. of which ~ 50% have an integrated radio


1997

Nokia produces the Nokia 8110i, the first Nokia mobile phone to have customizable and downloadable musical ringtones.

97


2001

Nokia releases the Nokia 8310; the first Nokia mobile phone to include a built-in FM radio.

01


2002

Nokia releases the Nokia 5510, the first Nokia mobile phone to include built-in MP3 player capability.

02


2005

Nokia announces the **Nokia N91**, the world's first mobile phone music device which allows you to download music wherever you are and to store up to 3000 tracks.

It's got stereo sound, Wi-Fi and a 2 megapixel camera for great pictures. You can use all your favourite music accessories with the Nokia N91. The Nokia N91 supports nearly every digital music formats. (AAC, AAC+, eAAC+, MP3, WMA, WAV, 3G2, 3GP, 3GPP, 3GPP2, MPEG, MP4, M4A, DCF, ODF, ASF and M3U files)



Nokia announces the **Nokia 3250** with a unique twist design which allows you to switch between music, camera and phone modes. You can store up to 750* songs on it (MP3/eAAC+ formats), it's got dedicated music keys and you can share your favourite playlists via Bluetooth, MMS, or email.

*with a 1GB Memory card



Nokia releases the **Nokia N70** – the first in its new Nseries range with capacity to store up to 180* tracks device with dedicated media key and music functionality. Featuring hot swapslot for easy MMC card insertion and removal the N70 offers a quality music experience with storage on MMC cards of up to 180* tracks.

*with a 512MB Memory card

05

Make FM Radio understood by machines !

- **What if a Radio station would broadcast:**
 - **Currently you are listening to the artist Richard Marx with the title „Ready to fly“**
 - **Our hotline number is “0180 5678 222”**
- **and the radios would understand this data**
- **and the listener could**
 - **see what he/she is listening (Artist, Title,...)**
 - **get additional information (News, events, ...)**
 - **interact immediately (just hitting a button)**

- **Service must add value to the station**
 - **Customer loyalty and customer retention**
 - **Reduce hotline cost**
 - **Interactivity ...**
- **Our studies show strong interest in radio program associated data like**
 - **Music related info**
 - **Title, Artist information, ...**
 - **Telephone numbers to call the hotline, the DJ, the studio, ...**
 - **Program related info**
 - **“Long” station name, Now, Next, Staff , ...**

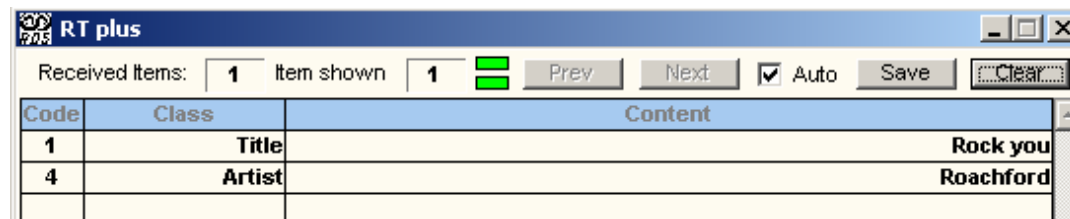
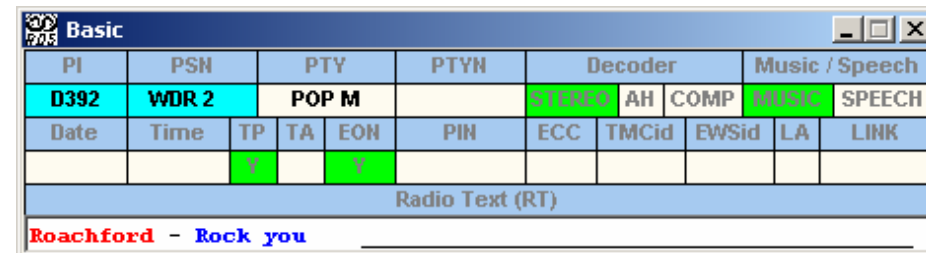
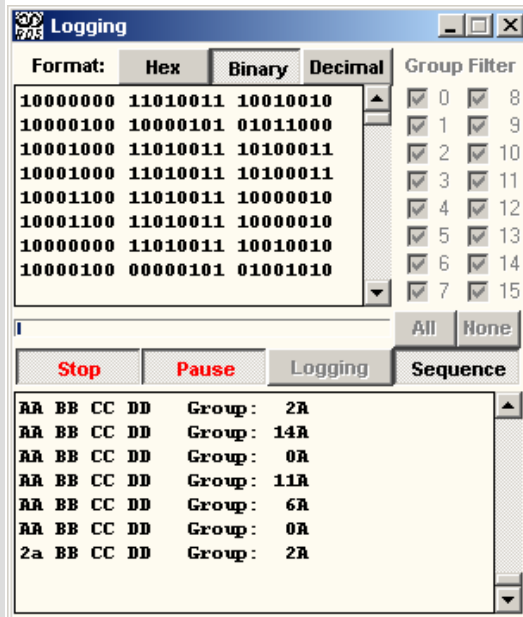
- **Service generation shall not add cost to radio station (CAPEX, OPEX)**
 - **Service data must be automatically generated by any modern radio station software**
 - **No (or not many) interactions needed**
-
- **Main usage of RT+ is sending Metadata associated to the analogue content. This data is already available in radio production systems**

- **Service definition shall not add cost to the FM-RDS receiver (radio)**
 - **No special HW shall be necessary**
-
- **RT+ reception is “just” software in addition to RDS**
 - **The more display you have, the better**
 - **The more memory you have, the better**

- **Service must be 100% backwards compatible with existing FM radio (car) population**
 - **Existing FM RDS service shall not become deteriorated**
-
- **RT+ is based on RDS RT messages and is completely backwards compatible to the RT. All additional information necessary for implementing the RT+ service is carried in the RDS group 3A and in an appropriate RDS ODA group**
 - **FM radio with Radiotext feature will benefit even if they are not able to „understand“ RT+ because of better Radiotext service offering from radio stations using RT+**

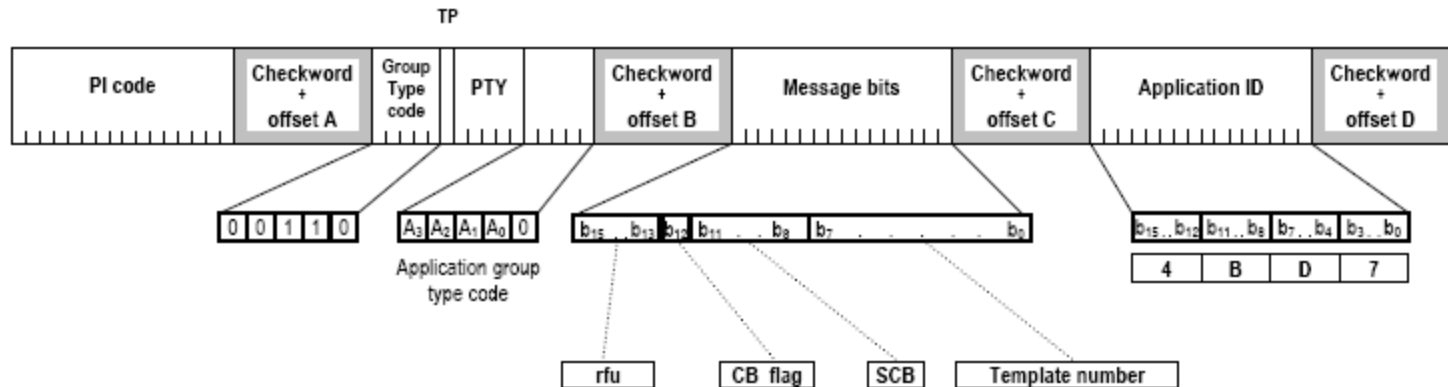
wdr2 on 12.12.2005

- Logging by Joop Beunders
 - made with a Catena Test Car



- **RTplus is based on RDS RT messages**
- **All additional information necessary for implementing the RTplus service is carried in the RDS group 3A and in an**
- **appropriate RDS ODA group xA**

RT+ information elements		
RT Message	RT+ identification	RT+ tags
RDS group 2A/B	RDS group 3A	RDS ODA group xA

**rfu**

Reserved for future use, and not affecting any of the functions of the other bits.

CB flag

The CB flag gives the information if there is a template available for the ongoing programme.

The template may already be present in the receiver (downloaded previously) or can be downloaded currently if the user wants it. The identification of the desired template is accomplished by sending back from the receiver terminal to the web server the PI code (and if possibly also the extended country code), the Server Control Bits and the template number. If the CB flag is set to "0", no special radio skin (template) is available and Server Control Bits and Template number bits are reserved for future use. If the CB flag is set to "1", a special radio skin (template) is available for the ongoing transmission.

Server Control Bits (SCB)

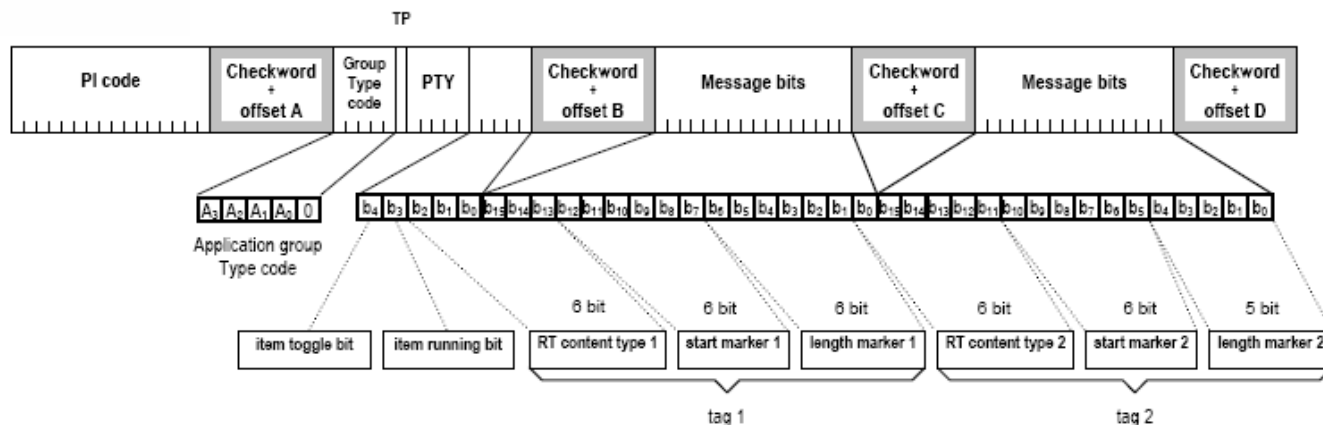
It may occur, that the same PI code is used repeatedly within a national area (e.g. for local programme stations far away from each other). In these cases the Server Control Bits are used to distinguish between programmes using the same PI code.

Note:

The Server Control Bits are allocated by the operator of the web server.

Template number

The Template number gives the number of a specific template out of a choice of templates provided by the broadcaster. Up to 256 templates per programme service can be addressed.

**Item toggle bit**

This bit shall be toggled when a new Item5 starts

Item running bit

This bit shall be set to 1 if an Item is running. Otherwise it shall be set to 0.

Note:

The Item toggle bit and the Item running bit will be set or reset independently from the tag information sent out currently. In the receiver these two bits may be used to group all Content Types of the category Item sent for one item and store them in memory (subsequently for several items) or, when storing and presenting information for only one Item, to delete all information belonging to the elapsed Item before starting to gather information for the new one. Even though not intended by this specification, these bits may be used for recording purposes.

Type 1 and 2

describe the two (2) possible RT+ information element (tag)

RT Content Type

This 6 bit value specifies the tags by assigning to them a Content Type according to the Class codes.

If only one RT+ information element (tag) is used, then the Content Type in the second tag shall be set to "Dummy". If no RT+ information element is existing the Content Type in both tags shall be set to "Dummy". In both cases, the bits in the start and length markers are then undefined

Start marker

This 6 bit value indicates the position of the first character of the RT+ information element within the Radiotext. (Start marker 0: means the first character in the RT)

Length marker

This 6 bit (or 5 bit for length marker in tag 2) value gives the additional length (number of characters following the first character at the start position) of the RT+ information element.

RT+ is

no Visual Radio

no DVB-H solution

but it is

part of our traditional core business

at once available for a huge audience



Improving the most successful mobile audio service

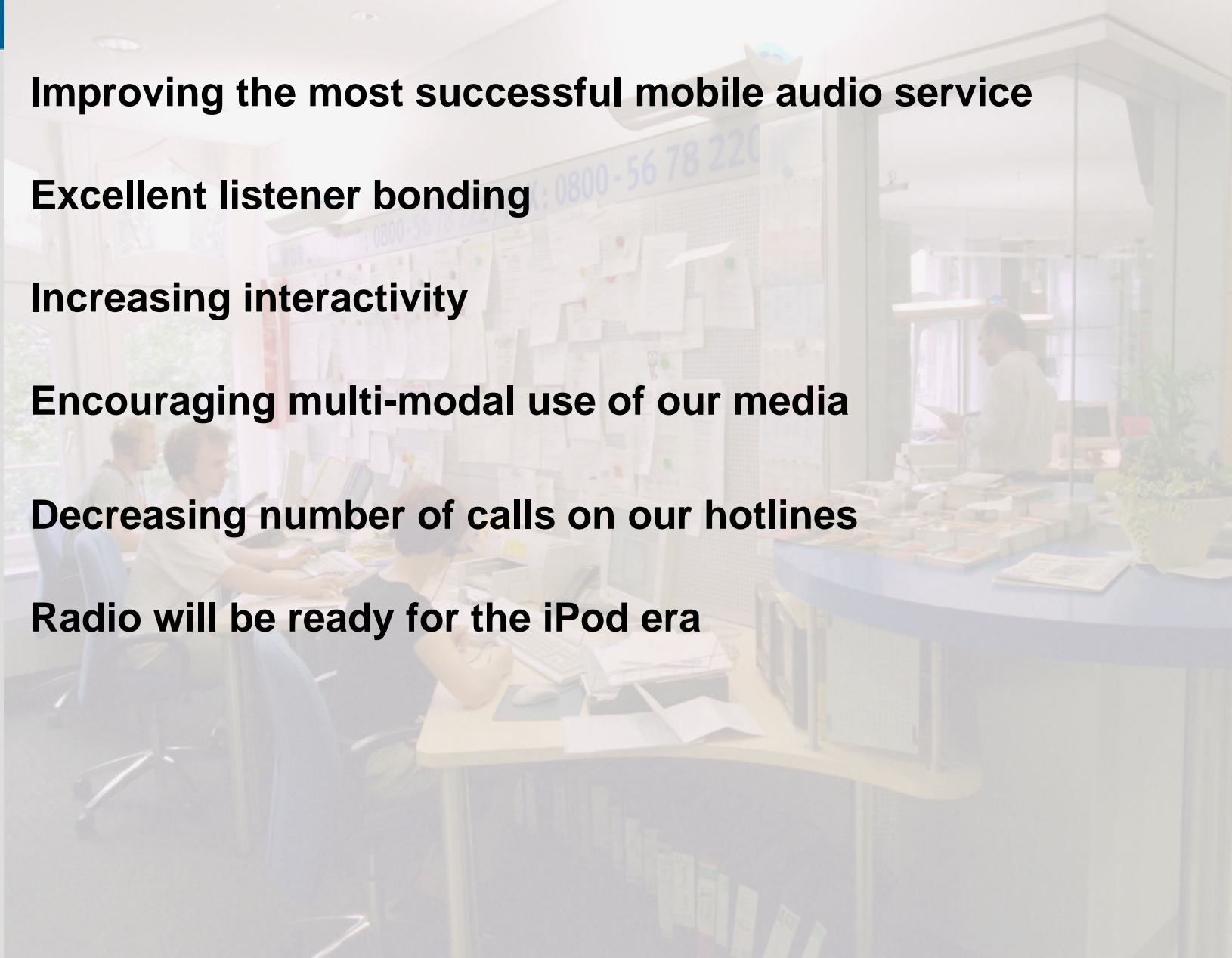
Excellent listener bonding

Increasing interactivity

Encouraging multi-modal use of our media

Decreasing number of calls on our hotlines

Radio will be ready for the iPod era



Highest legitimacy value

**RT+ provides a universal alert function
for severe disruption and catastrophe**

**If special containers are addressed
your radio will instantly and automatically
tune to the related programme**

**That leaves no doubts about the right
to broadcast data service**

Very easy: Service is created by most sequential control of transmission systems (We use existing data)

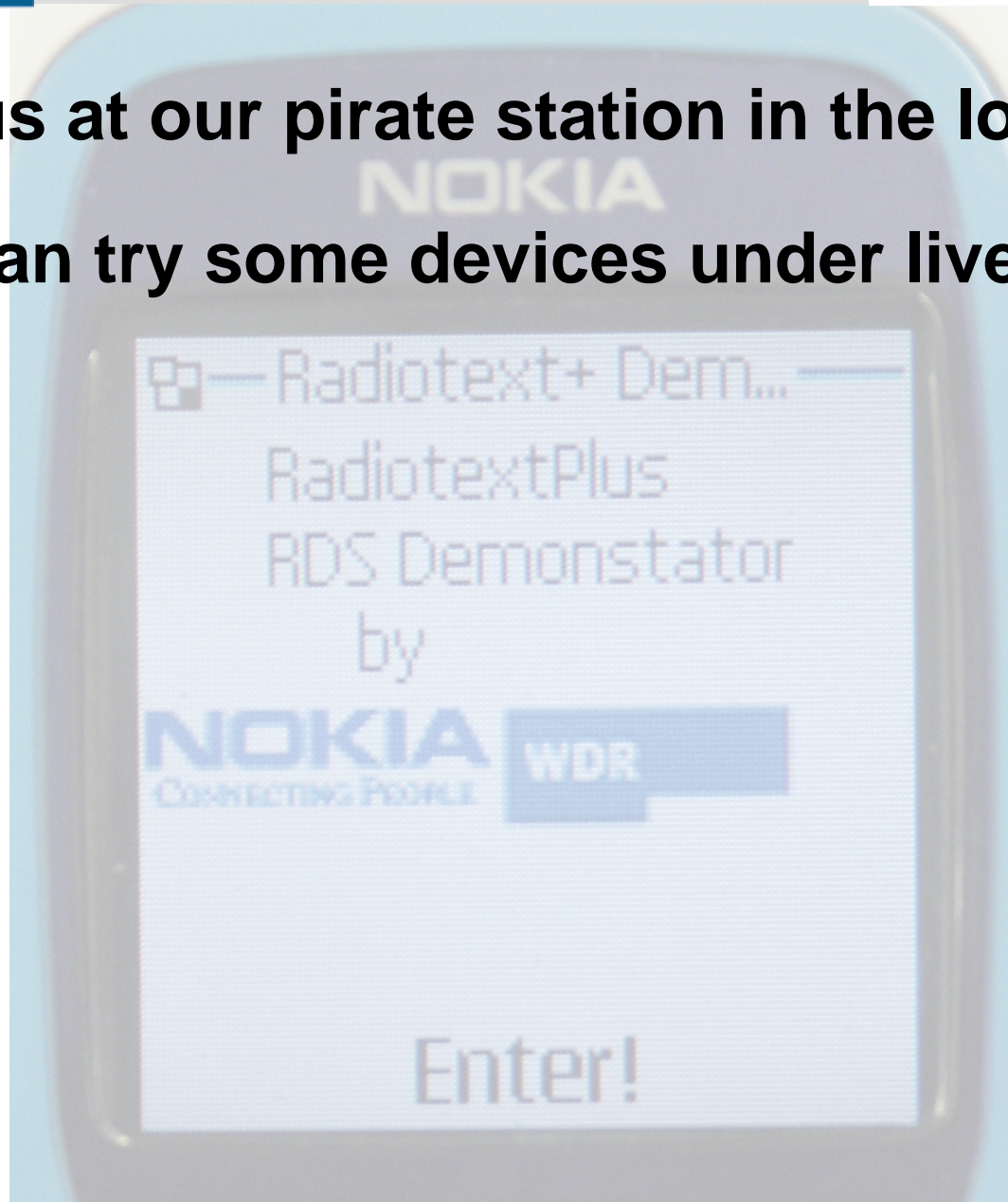
No additional staff needed

Details for Broadcasters available at WDR or IRT

or visit rds.org.uk (RT+ spec vers. 2.0 ready soon)

Join us at our pirate station in the lobby

You can try some devices under live conditions



WDR

Thanks for your attention

NOKIA
Connecting People



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