
# ODA – Open Data Applications

The most powerful feature of RDS

# Is ODA very popular ?



- **Yes, for RDS-TMC**
  - Implemented in millions of car-radios and navigational devices
- **and for eRT and RT+**
  - Implemented in several radio receiver models
- **for Emergency Warning Systems**
  - Country specific applications with special receivers

# Create your own RDS feature



- **The Problem:**
  - In IEC 62106, nearly all RDS groups are allocated to specific features: but many more are needed
- **The Solution:**
  - Open Data Applications permit new applications to be designed, registered and implemented in available groups
  - A special receiver would be needed for any specific ODA
- **The Advantage:**
  - The ODA feature permits to use unused RDS data transmission capacity
  - ODAs are backwards compatible

# ODA group availability



- **The available application group type must be looked up in**
  - In the new RDS standard
    - The draft new RDS standard is on the RDS Forum's web site
    - Available for downloading
  - Type A or B groups can be used on data stream 0
  - New type-C only on data streams 1 … 3
    - optimised for transmitting data
    - in bytes ( 2 per block) – 7 bytes altogether per group
- **Which group precisely ?**
  - This is to be signalled in the 3A group for type A or B only
- **This 3A group is called**
  - **Application Identification for Open data – ODA-AID**

# Steps to be taken by Data Provider



- **Data Provider needs new ODA**
- **Data Provider defines new ODA in line with RDS Standard and a registration form - to be found in an Annex - must be completed**
- **Data Provider applies for Application Identification registration to RDS Forum Office or in the USA to the NAB**
- **RDS Forum ODA Registration Office examines proposal**
  - if satisfactory, issues AID number when registration fee payment of EUR 500.- has been received

# Additional steps



- **Data Provider negotiates with FM radio transmission operator for data capacity**
- **Agreement reached about capacity and RDS group type to be used**
- **Service can then go on-air**
  - No modification of the RDS standard required if only special receivers are needed for that ODA

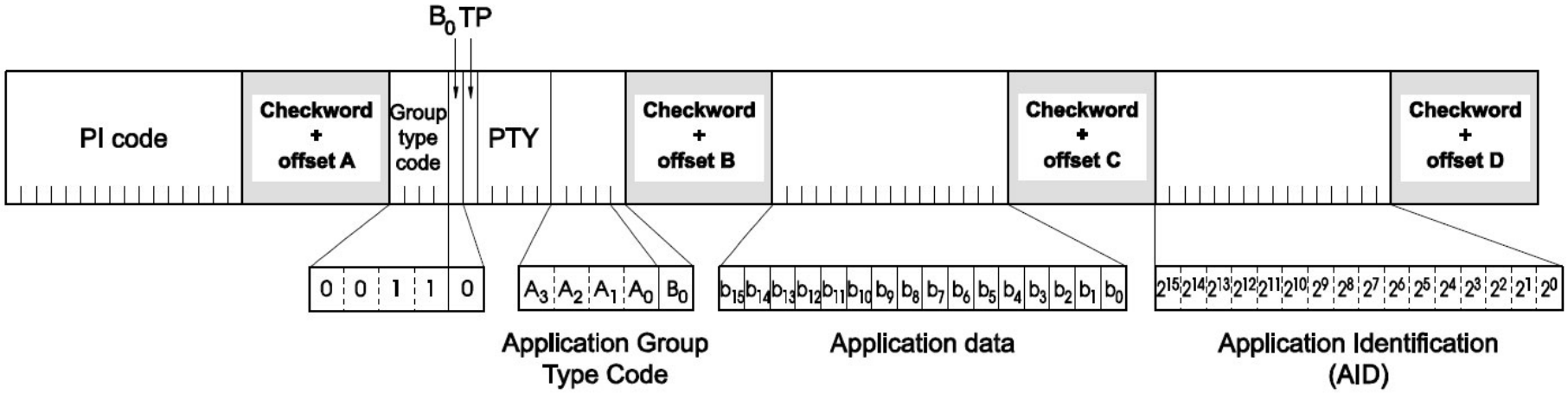
# ODA transmissions are



- **An RDS transmission carrying ODA on stream 0**
  - must multiplex both, type 3A groups and ODA application groups
- **Type 3A group carries AID number in block 4**
- **AID number defines the use of type A or type B groups for any legacy ODA**
- **The ODA itself is carried in groups per sec (commercially) agreed between**
  - Data Provider and Transmission Operator

# Group type 3A format





# The critical choice to be made

- **Type 3A group and ODA application group repetition rates have to be chosen by Data Provider for maximum efficiency**
  - This will then result in a data utilisation contract with the Transmission Operator

# ODA reception requirements



- **ODA capable receivers look for AID in type 3A groups block 4**
  - ODA capable receivers may have one or more ODA software handlers
- **The specific ODA capable receiver**
  - must match transmitted AID with software handler ID and starts appropriate software handler
- **ODA capable receiver starts decoding ODA**

# ODA administration

**RDS Forum Office will the be sole registration authority**

**Except for the USA where it is the NAB**

- **RDS Forum & NAB maintain the Open Data Applications Directory**
- **Group 3A and Application group repetition rate**
  - These timings are to be published for each application

# ODA register



- **ODA register has a capacity for 64,000 registrations**
- **Data applications can be added or withdrawn from transmissions easily**
- **Unused applications are not cancelled**
  - Reason: Enough capacity to register a very large number in comparison to real needs
- **The ODA register is published on the RDS Forum web site**
  - It contains also the US registrations
    - Coordinated with NAB

# Legacy RDS and new RDS2

- **Everything we have seen about the ODA concept up to now, we can call ODA1**
- **With RDS2 we have an enhanced ODA This new concept we can call ODA2**
  - Opportunity for an unlimited number of new applications
- **So, what is the difference?**
  - With RDS2 we have up to 4 subcarriers
  - The basic RDS subcarrier is called data stream 0
  - The upper streams are called data stream 1 … 3

# ODA1 vs. ODA2

**No change on data stream 0:**

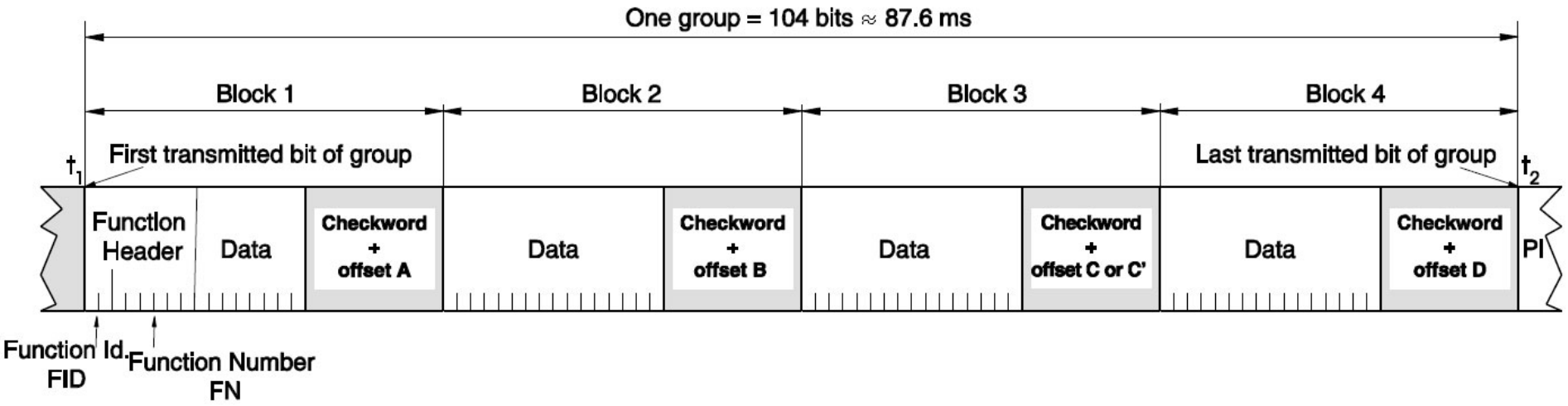
- **The legacy ODA1 concept continues to be used**
  - Group 3A is like a beacon signal and it signals
    - the presence of the particular AID and
    - the application group and type associated with that application and
    - two bytes of additional message data

**On the upper data streams 1 … 3**

- **The new group type structure C is exclusively used**
- **Group types A and B are possible, but must be “tunnelled” within type C on the upper streams**
  - How? These groups are transmitted with PI 0 0x00 in block 1
  - After reception PI = 0x00 is replaced by PI from stream 0

# The type-C group structure for RDS2






- **Note in particular: This new structure is for RDS2 usage only**
  - Can be used only on the upper carriers
  - Uses only one header byte to describe the function
    - The header byte consists of 2 elements: Function id. FID & Function Number FN
  - The other 7 bytes are pure application data
  - There are no longer any repetitive RDS features like PI, PTY, TP as these are all on data stream 0 only and
  - **There is no longer any group number nor is there any A or B version**

# Where ODA2 differs from ODA1 (1/2)



- **The ODA1 concept uses**
  - The 3A group to signal the AID and the application group of that ODA and also 2 byte of additional application data in 3A
  - The application uses a specific type-A or B group signalled in 3A
  - **All this can continue to be used as such only on data-stream 0**
- **ODA2 has the option**
  - to use this concept on the upper data-streams 1 to 3,
  - **but then the 3A and the corresponding application group are to be "tunneled" into the C-type group**.
  - On the upper streams we only use C-type groups
- **(NOTE also: Not all group types are available for ODA,**
  - Those can be used as well on the upper streams, provided they are "tunneled" into C-type groups, e.g. 2A and 15A)

# Where ODA2 differs from ODA1 (2/2)



- **ODAs - on the upper streams - C-type group usage**
  - 4 different methods for connecting AIDs to data channels are used
  - These new methods of “associating" one AID or several AIDs (up to three) with one or several respective ODA channels out of the 64 possible ones on each upper stream (to up to three successive channel numbers) are very well detailed in Part 2 (Section 4.4.3.1) of the new RDS standard IEC 62106-2
- **The upper carriers are normally used jointly with load balancing**
  - How this shall be implemented is more an UECP issue to be explained then in IEC 62106 - Part 8, later in 2017;
- **Instead, the ODAs can also use a specific upper carrier and how this can be done is an UECP issue for Part 8 as well.**

# Conclusions



- **ODA1 and ODA2, both permit plenty of new RDS applications via ODA**
  - no immediate need to modify the RDS standard
- **A new ODA will not disturb**
  - any existing RDS receiver
    - as not designed for new ODA
- **Negotiations are needed between Data Provider and Transmission Operator**
- **Therefore, the ODA concept is**
  - very flexible
  - A low cost approach for putting
    - new data services / new RDS applications on-air for FM radio

- **Thanks for your attention**
  - For questions please contact
  - rdsforum@bluewin.ch