



DAB+

THE FUTURE OF BROADCAST RADIO

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Topics

1

The DAB system

2

Analogue vs. Digital Topologies

3

Emergency Warning System

4

Global status – countries and receivers

5

Final Words

The audio market is changing

- + New (digital) services have emerged
- + Competition is being transformed
- + Consumer preferences are shifting

Essential to have a strategy for
broadcast radio



DAB+ - the digital backbone for broadcast radio



- Digital Audio Broadcasting
 - digital terrestrial radio
 - Band III
- DAB+ ~ many services on a single frequency
 - simulcast
 - new services



1. Benefits of DAB+

DAB digital radio - the benefits

- More choice for listeners
- More opportunities for broadcasters
- Consistently good sound quality without interference
- Radios which are easy to use with presentation that keeps radio alive

DAB core

- Designed for rugged mobile reception
- Uses band III (174 to 240 MHz) spectrum
 - Wide bandwidth of 1.536 MHz prevents flat fading
- Delivers up to 1.8 Mbps in a single channel
 - Typically configured for 1.2 Mbps
- Permits up to 64 services in a single channel
 - Typically around 20 radio services and additional multimedia content are provided

Radio services

- DAB has user friendly benefits
 - Select service by name or logo
 - Consistent audio quality
 - Extra information e.g. text services
 - Service following means no need to retune when moving about
 - Multimedia applications to enhance the audio are available
 - SlideShow images
 - Extended service and programme information (SPI)
 - Traffic and travel information

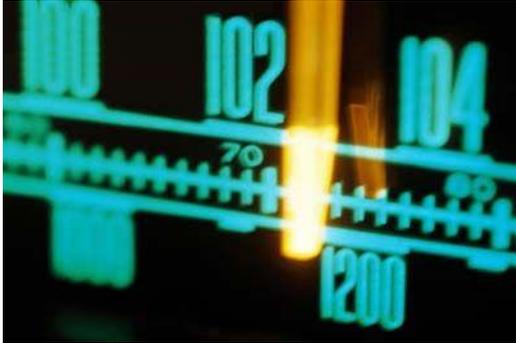
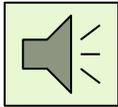
DAB+ audio

- HE-AACv2 audio
- Low and consistent audio delay for all services
- Clean “point-of-failure” characteristic at edge of coverage
- Fully reconfigurable
 - Services can use any bitrate between 24 and 192 kbps providing broadcaster choice
 - Example: UK pop stations using 32 kbps for niche genres
 - Example: Swiss classical music stations using 88 kbps for live concerts
 - Services can vary the capacity they use to allow “pop-up” services to be introduced for special events

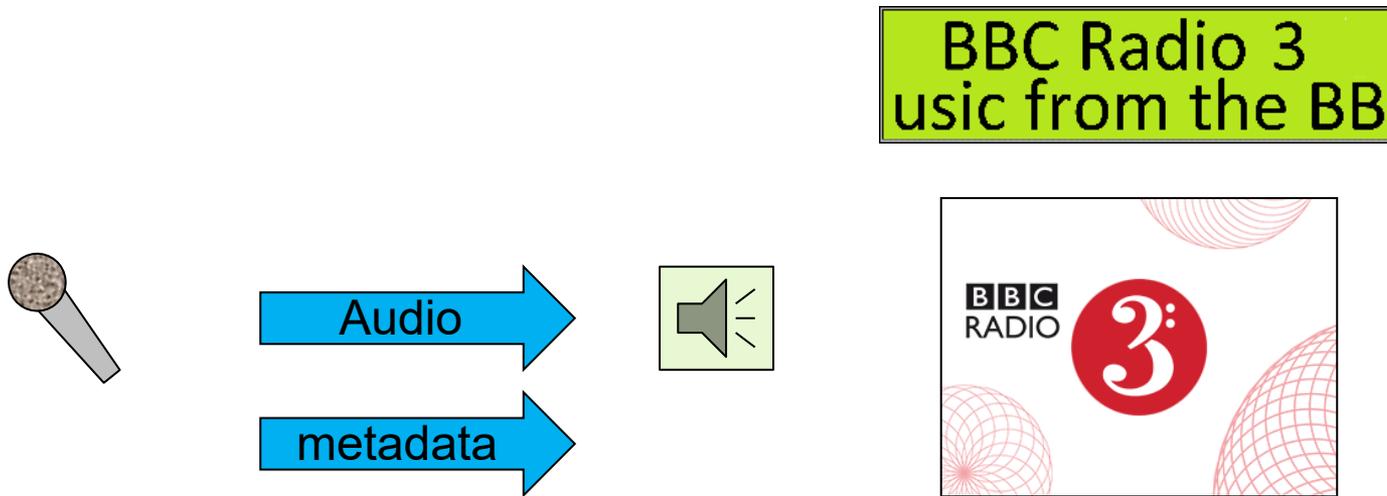


2. Analogue vs. Digital topologies

AM and FM : audio only

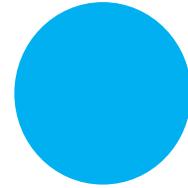
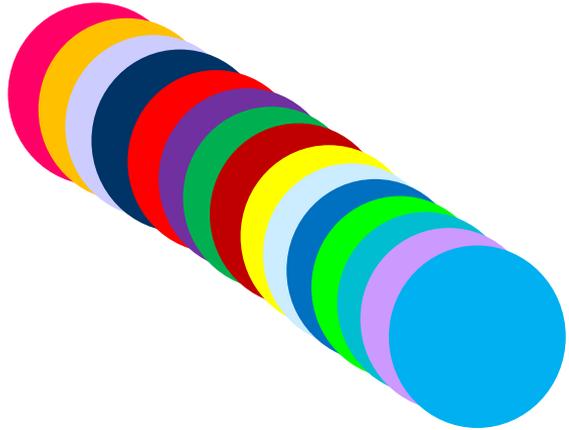


DAB+ : enhanced metadata, visual applications



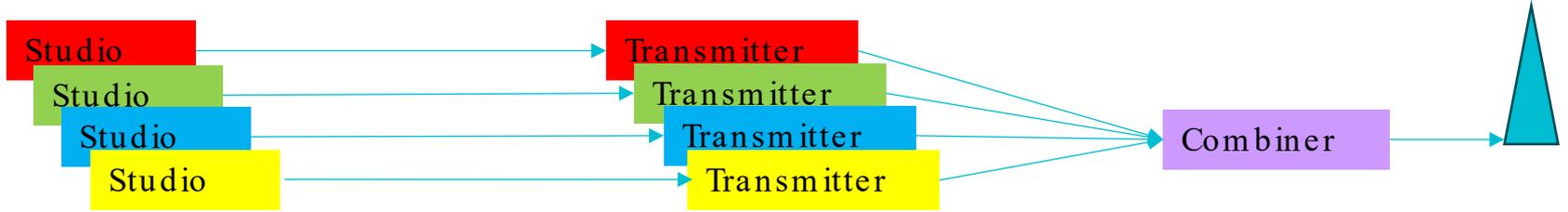
Multiplexing

- Analogue – AM or FM
 - 1 radio station = 1 frequency
 - 15 to 25 radio stations = 15 to 25 frequencies
- Digital – DAB+
 - 15 to 25 radio stations = 1 frequency

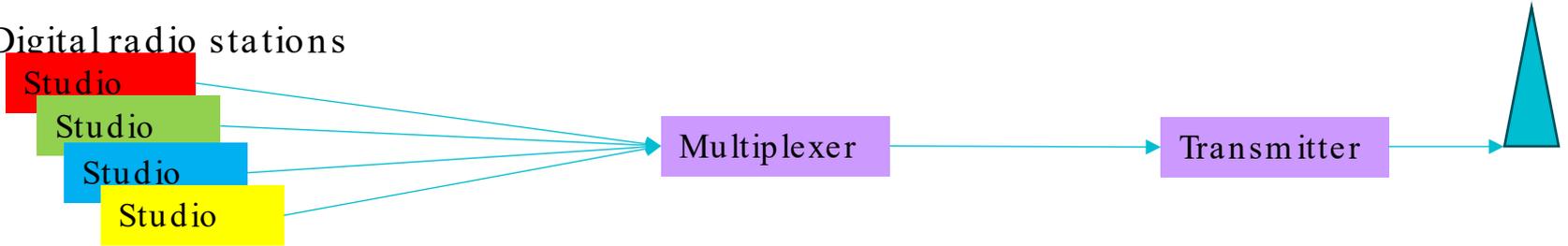


System design

- Analogue radio stations



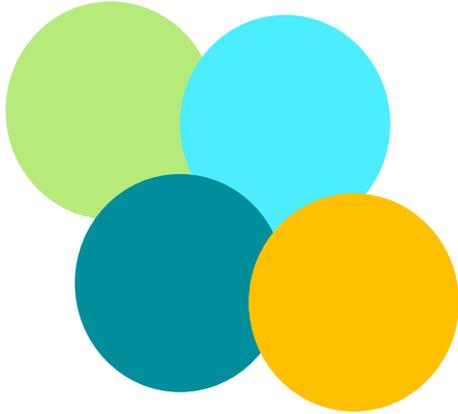
- Digital radio stations



Coverage

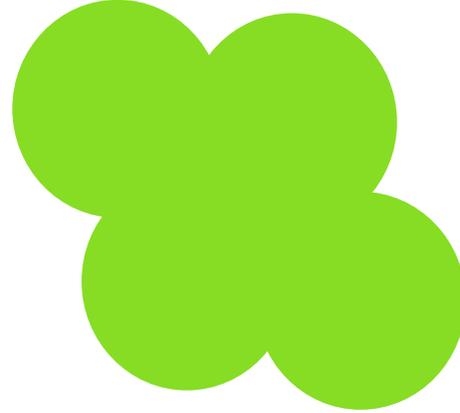
- Analogue – AM or FM

- More coverage requires more frequencies and more transmitters



- Digital – DAB+

- More coverage requires more transmitters only (Single Frequency Network)



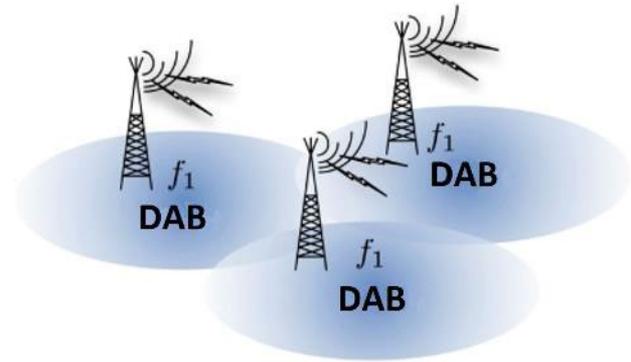
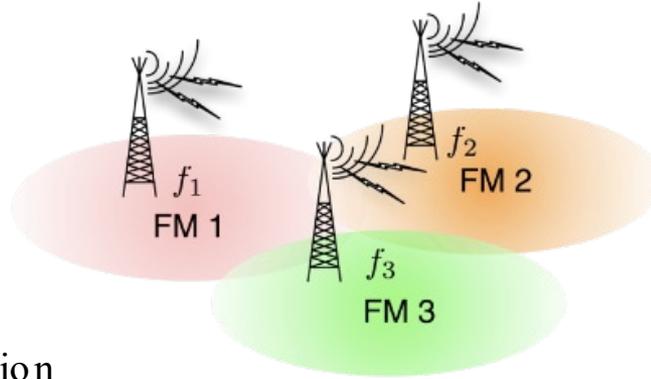
Single Frequency Networks

Benefits:

- Network gain
- Coverage extension
- Spectrum efficient hole filling

But:

- No localisation of content



DAB Planning

- ITU-R Rec BS.1660 provides planning parameters for DAB
- EBU Tech 3391 is a comprehensive guide to planning DAB and is available here:
<https://tech.ebu.ch/files/live/sites/tech/files/shared/tech/tech3391.pdf>
- WorldDAB held a seminar in March 2024. Details and presentations are available:
<https://www.worlddab.org/dab/dab-plus-network-planning>



3. Emergency Warning System - ASA



radio

ASA

Automatic
Safety Alert

Automaticité

Zone d'alerte précise

la sécurité automatique :
un supplément du DA



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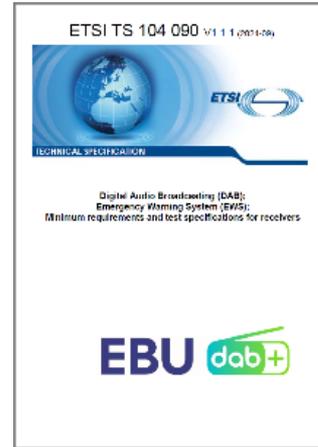
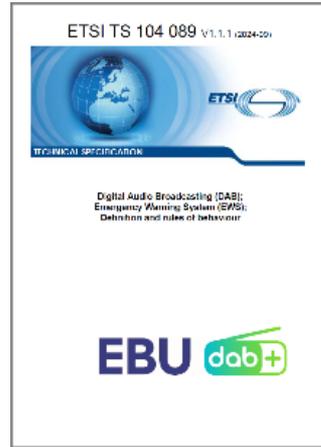
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ASA

KENWOOD

Emergency Warning System

- A new Emergency Warning System for DAB has been created recently
- New standards document the system description, signalling and receiver behaviours to support a receiver testing compliance scheme



DAB EWS: Key features

Alert Messages

- Spoken message for essential information: where, when, what to do
- Cross ensemble signalling to inform receivers when an alert is active
- Location targeting to reach the right people (and not disturb the rest)

Sleep and Wake-up

- Receivers have a low-power sleep mode but monitor a DAB ensemble for alert signalling even when sleeping
- Receivers evaluate alert signalling and wake-up to play the audio, retuning to another ensemble if needed

Receiver testing

- A formal testing specification to ensure that receivers react correctly to the alert signalling
- This technical standard to be the basis for a compliance scheme with a recognisable Mark to be used on product packaging

Three key innovations

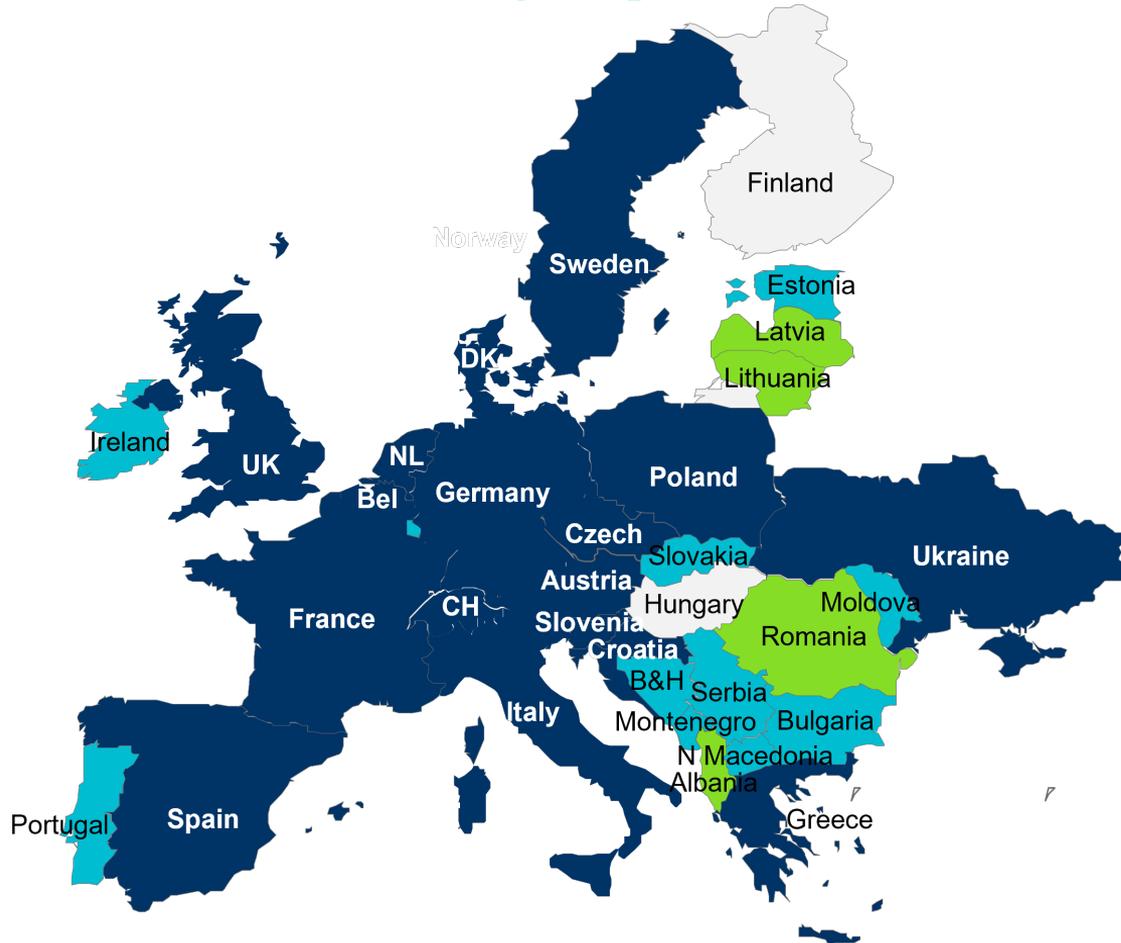
- A novel location coding system
 - Alert areas and DAB ensemble coverage areas will rarely align
 - Globally applicable with a resolution of c.1 km²
 - Lightweight with high coding efficiency
- New signalling specifically tailored to alerting
 - Identification of participating ensembles
 - Identification of incidents, the alert stage, its importance, its location
- Receiver synchronisation
 - to minimise audio loss at the start of an alert
 - to maximise battery life



4. Global status and receivers

In Europe, DAB+ is the core digital platform for radio

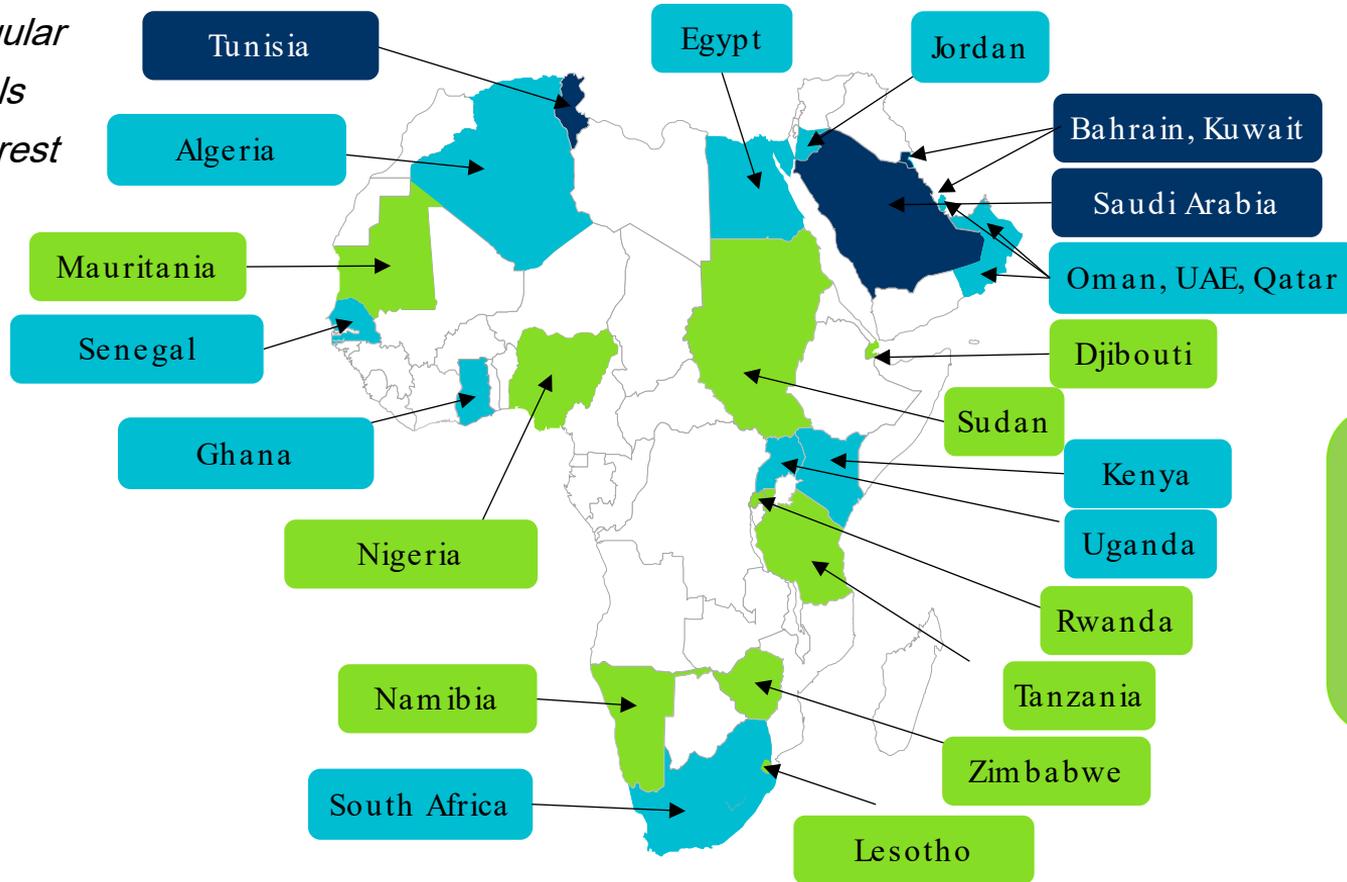
- Regular
- Trials
- Interest





Increased interest in Africa and Middle East

- Regular
- Trials
- Interest



WorldDAB working with ATU, AUB, AFRALTI and regional broadcast bodies

Over 145 million receivers have been sold
consumer & automotive

Cumulative DAB sales:
150 million

DAB+ in cars



Countries with 98% or more achieved:

Italy (100%), Norway (100%), Belgium (99%), Denmark (99%), Netherlands (99%), Portugal (99%), Romania (99%), Spain (99%), Switzerland (99%), United Kingdom (99%), Austria (98%), France (98%), Slovakia (98%)



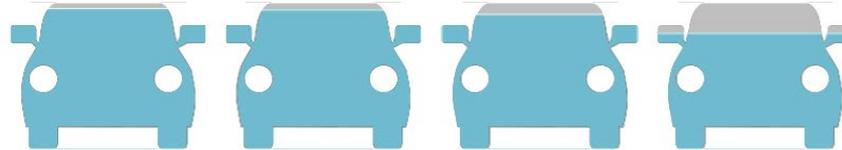
Croatia
97%

Czechia
97%

Hungary
97%

Poland
97%

Slovenia
97%



Sweden
97%

Germany
95%

Greece
92%

Australia
79%



5. WorldDAB - how we can help

WorldDAB: the global industry forum



- + 120 members from nearly 40 countries
- + Offering knowledge, expertise and advice
- + Specialist committees
 - Technical
 - Spectrum and Network implementation
 - Automotive
 - Marketing
- + Events, workshops and networking

Establishing DAB+

Digital Broadcast Radio

Dr. Les Sabel



Marketing DAB+

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Infographic

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DAB+ logo

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Overview of the DAB+ system

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WorldDAB ETI library

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Metadata

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Factsheets

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GfK statistics

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Distribution platforms

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