



WorldDMB GA 2007-10-04

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Fraunhofer IIS  
Broadcast Applications

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**Fraunhofer** Institut  
Integrierte Schaltungen

## Feature Overview



- Hierarchically categorized text information  
→ **“Teletext for Digital Radio”**
- Push & store service for any digital radio platform  
→ Immediately available for **interactive use**
- Provides:
  - **flexible menu structure**
  - **detailed text information** (headline, body text)
  - **list type messages** (automatically updating: sports results, stock market, etc.)
  - **ticker messages** (categorized information)
  - **bookmarking** (favourites feature)

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## Feature Overview



- Specifically designed for digital broadcast services:  
**low bitrate requirement**
- Re-use of **existing data sources** for broadcasters (RSS, XML),  
Internationally applicable (Unicode/UTF-8)
- Optimized for **inexpensive consumer receivers** (low decoder and user interface requirements)
- Extensible **hinting information** for advanced receivers:  
**back channel, speech hinting, geo-tagging, etc.**

# Why Journaline?

Now playing: Starlight by Moony

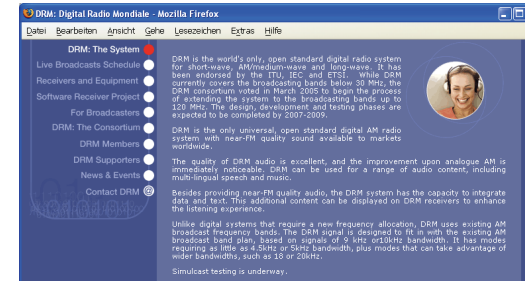
## DAB Dynamic Labels, DRM TextMessages

- ✓ Simple to generate
- ✓ Low transmission bandwidth
- ✓ Simple to decode
- ⚡ Pre-defined presentation timing
- ⚡ Content strictly programme related
- ⚡ No user interaction (no direct access)

→ Available in every radio

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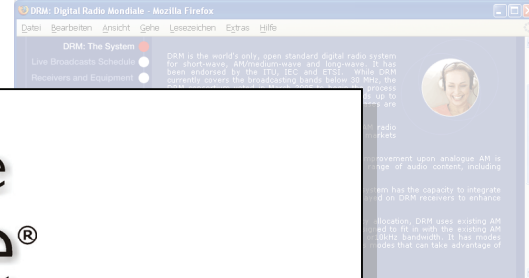
→ Available in every radio

## MOT Broadcast Website (DAB/DRM)

- ✓ Versatile content
- ✓ Immediate availability (cached data)
- ✓ User Interaction (direct info access!)
- ⚡ Special data preparation
- ⚡ High transmission bandwidth
- ⚡ Heavy decoding / user interface

→ Available mainly on PC like receivers

# Why Journaline?



Now playing

DAB Dynam

- ✓ Simple
- ✓ Low tra
- ✓ Si
- ✗ Pre de
- ✗ Conten
- ✗ No use
- Available



- ✓ Simple to generate (XML, RSS)
- ✓ Low transmission bandwidth
- ✓ Simple to decode
- ✓ Versatile content
- ✓ Immediate availability (cached data)
- ✓ Personalization (favourites)
- Interactive Information Service



DAB/DRM)

- ty (cached data)
- o access!)
- tion
- bandwidth
- er interface
- like receivers

# Journaline®

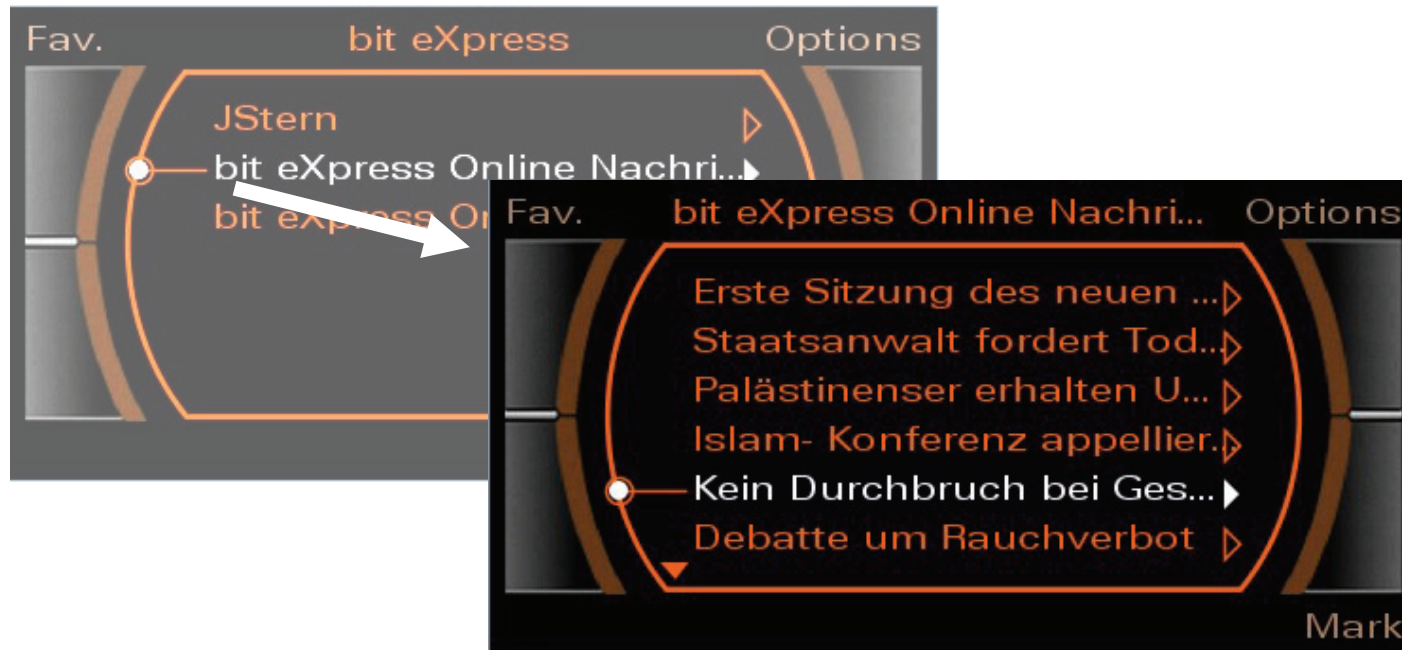
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Source: Fraunhofer IIS (Audi MMI)

2007-10-04 zink Journaline-Slides

# Journaline®



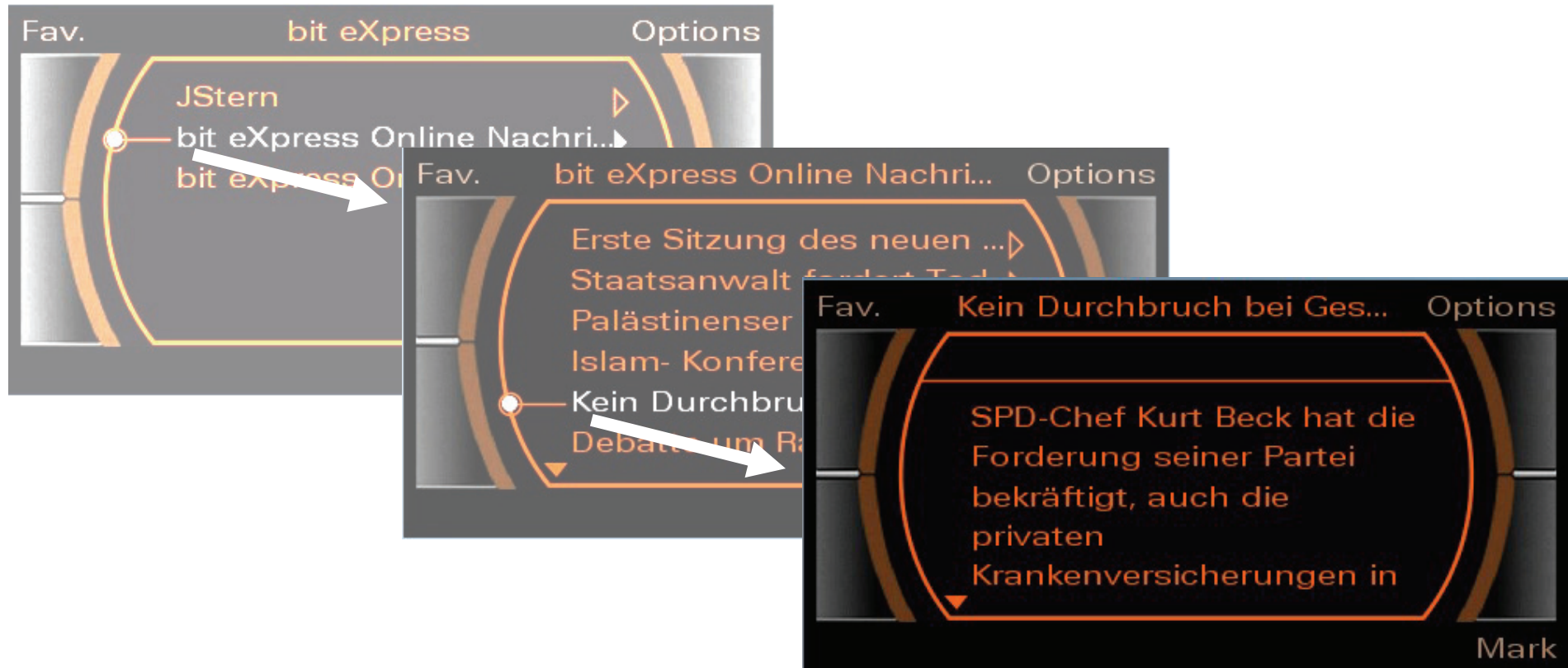
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2007-10-04 zink Journaline-Slides

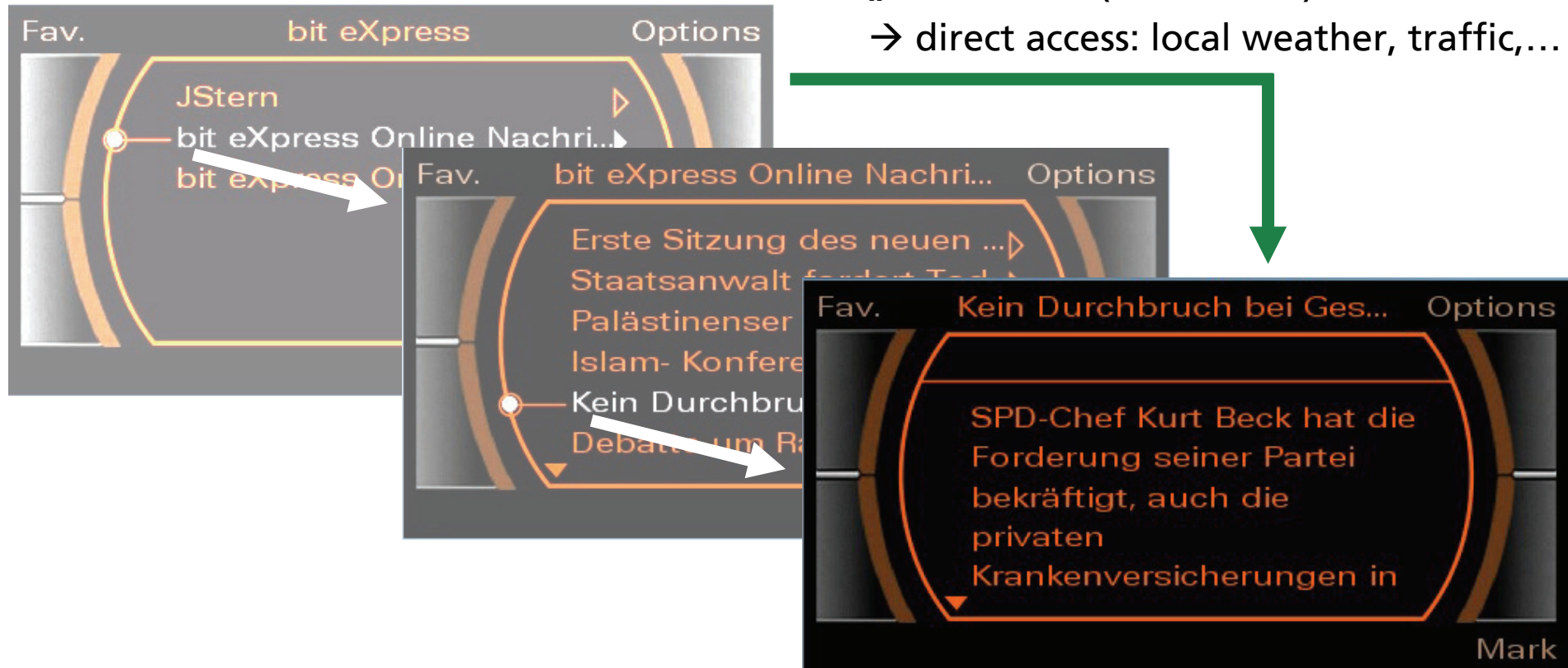
8



# Journaline®



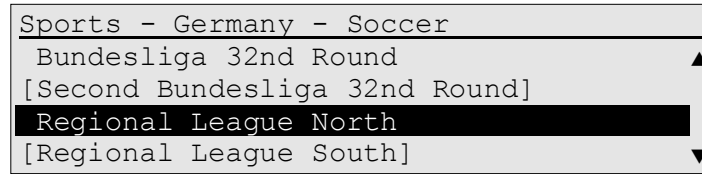
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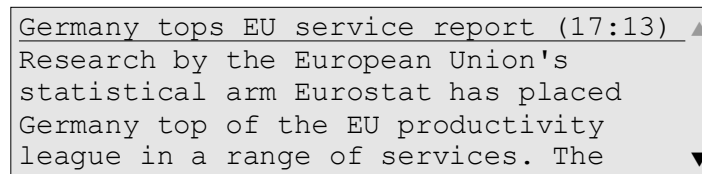
# Journaline – Object Types

■ **Menus**



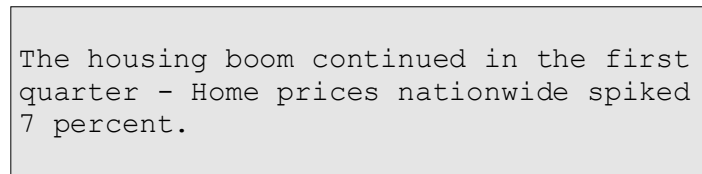
Indication for not-yet-cached links;  
Automatic updates

■ **Plain Text Messages**



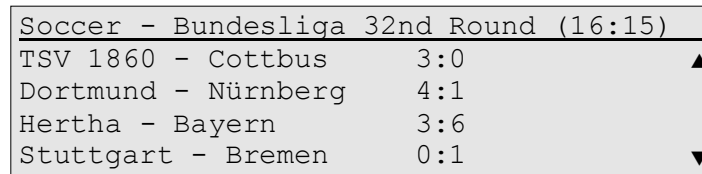
Optional update signalling to user

■ **Title-Only Messages (newsticker)**



Automatic updates, no user interaction –  
,TextMessages by topic'

■ **List Messages**



Automatic updates while keeping scroll position –  
,Sports results view'

## Journaline – Extended Functionality (1)

Can be inserted into any Information Object.  
Processing is optional for decoders.



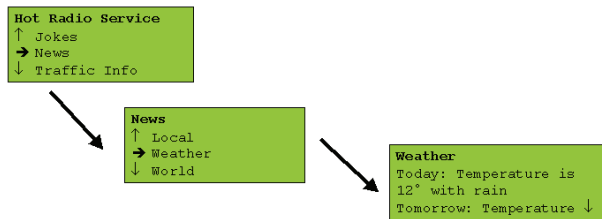
- **Basic text formatting:**  
new line, preferred word break,  
highlighted section, keyword marking,  
introductory/detailed section delimiter, etc.
- **“Hot Button” and interactivity support:**  
links to other Journaline objects, DAB/DMB/Drm  
services, web pages, telephone numbers, etc.

## Journaline – Extended Functionality (2)



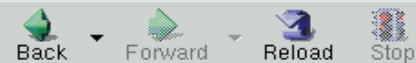
- **Geo-Tagging:**  
links Information Objects to location(s) and/or regions
  - **Speech support:**  
default/section language, IPA speech phoneme description for difficult or unusual words/names, speech breaks, text handling rules, etc.
- Any Extended Information can be inserted without affecting existing receivers
- Easily extensible in future as needed

# Journaline – Content



- Supports all international characters (UTF-8 encoding)
- Content can easily be extracted from existing feeds by automatic conversion: RSS, web pages, XML files, ...
- Content rendering on receiver side can flexibly be adjusted to target platform

Example: see following two pages →

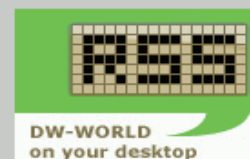


### Calls for Rumsfeld to quit over POW abuse

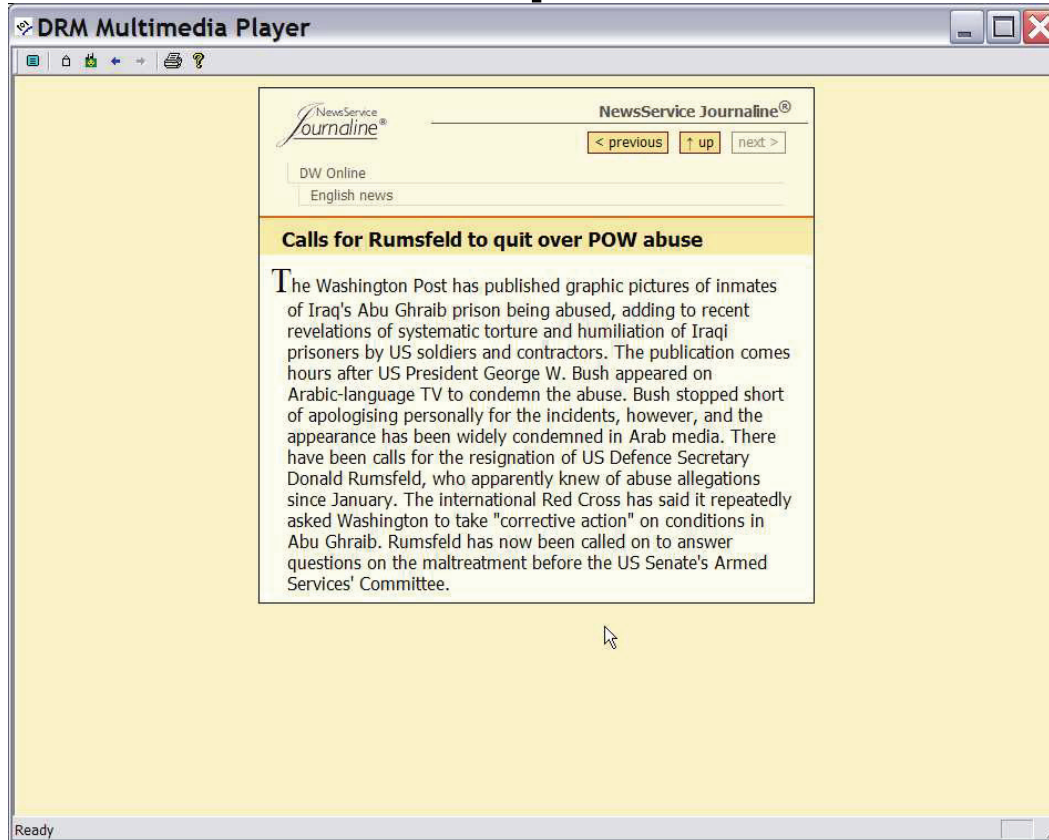
The Washington Post has published graphic pictures of inmates of Iraq's Abu Ghraib prison being abused, adding to recent revelations of systematic torture and humiliation of Iraqi prisoners by US soldiers and contractors. The publication comes hours after US President George W. Bush appeared on Arabic-language TV to condemn the abuse. Bush stopped short of apologising personally for the incidents, however, and the appearance has been widely condemned in Arab media. There have been calls for the resignation of US Defence Secretary Donald Rumsfeld, who apparently knew of abuse allegations since January. The international Red Cross has said it repeatedly asked Washington to take "corrective action" on conditions in Abu Ghraib. Rumsfeld has now been called on to answer questions on the maltreatment before the US Senate's Armed Services' Committee.

### US Iraq forces fight their way into Najaf

Amidst reports of fierce gunfire and mortar shelling, US forces in Iraq claim to have captured the governor's office in Najaf, the Shi'ite holy city controlled by militias loyal to radical cleric Muqtada al-Sadr. The attack comes after the US civilian administrator for Iraq, Paul Bremer, appointed a new governor of Najaf in an attempt to undermine al-Sadr's influence in the city. Occupation forces have been unable to enter Najaf for several weeks, with al-Sadr threatening a bloodbath if they approach the city's holy Shi'ite sites. On Wednesday, US-led forces began their biggest ever nationwide operations against al-Sadr's militia, killing at least 10 Iraqis overnight.



## Content – Example DW online



**Call for Rumsfeld to quit over POW abuse**  
 The Washington Post has published graphic pictures of inmates of Iraq's Abu Ghraib prison being abused, adding to recent revelations of systematic torture and humiliation of Iraqi

Rendering examples:

- PC based receiver  
(XML/XSLT re-transformation)
- Embedded Receiver



## Journaline – Receiver Status



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DAB decoder solutions (WinAmp / stand alone) available

Already supported by all major

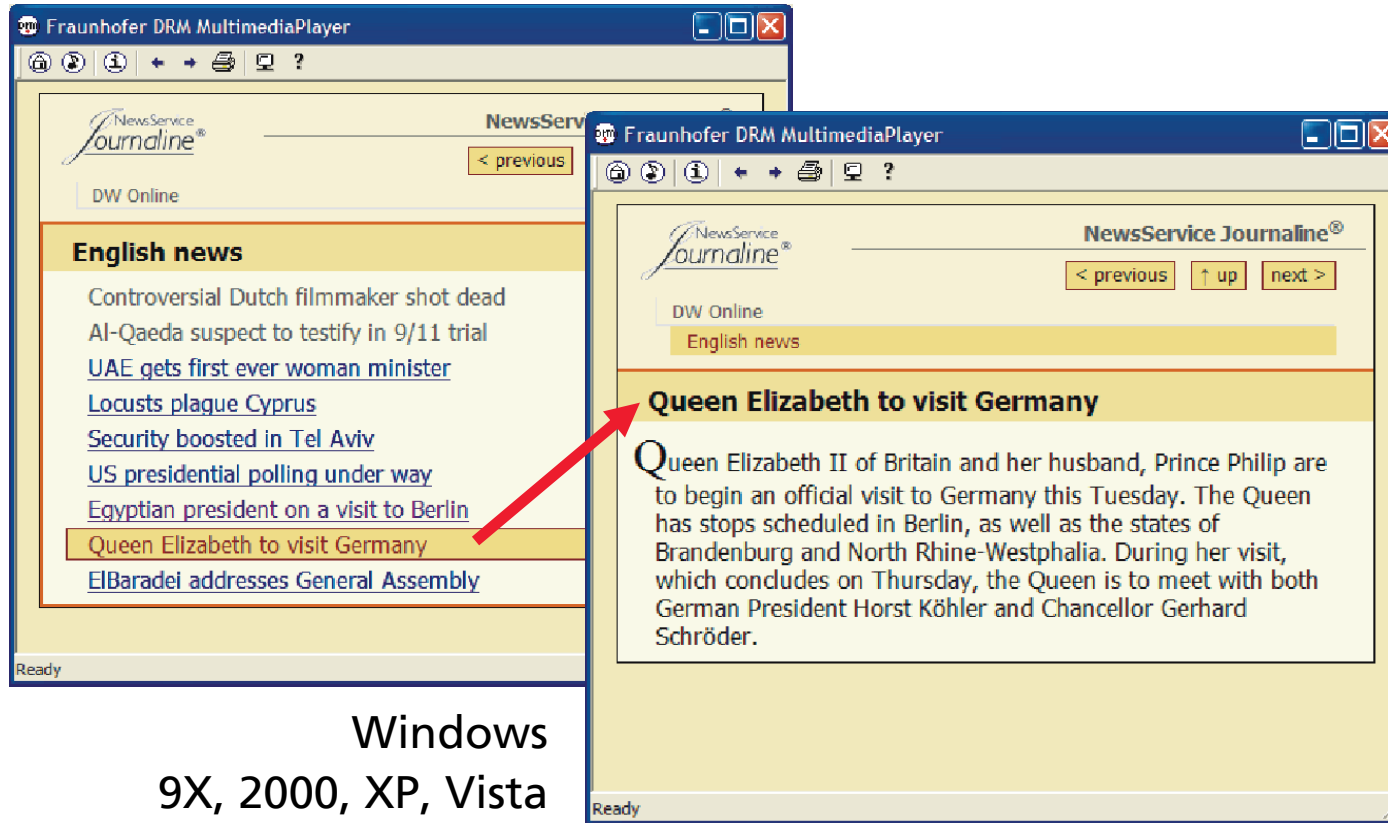
DRM Software Radio Solutions:

- Fraunhofer SW Radio (professional DRM receiver)
- DRM SW Radio (consumer DRM receiver)
- Digital World Traveller (consumer DRM receiver)
- DReaM (open source DRM receiver)
- Diorama (open source DRM receiver)
- Rohde & Schwarz ARGUS (monitoring solution)

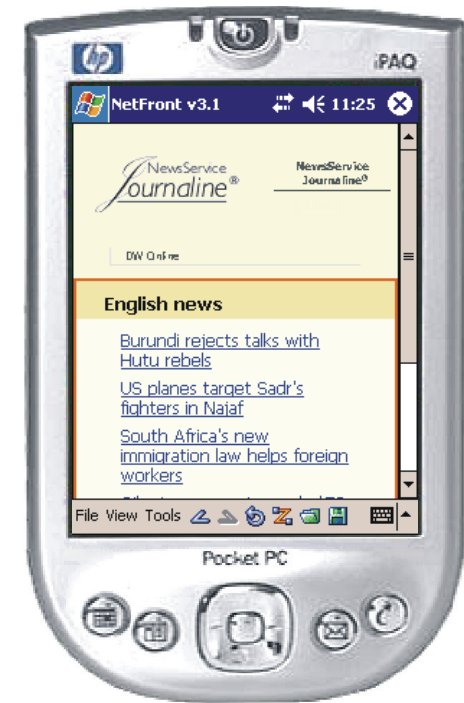
## Journaline – Receiver Status



# Journaline – Receiver Status

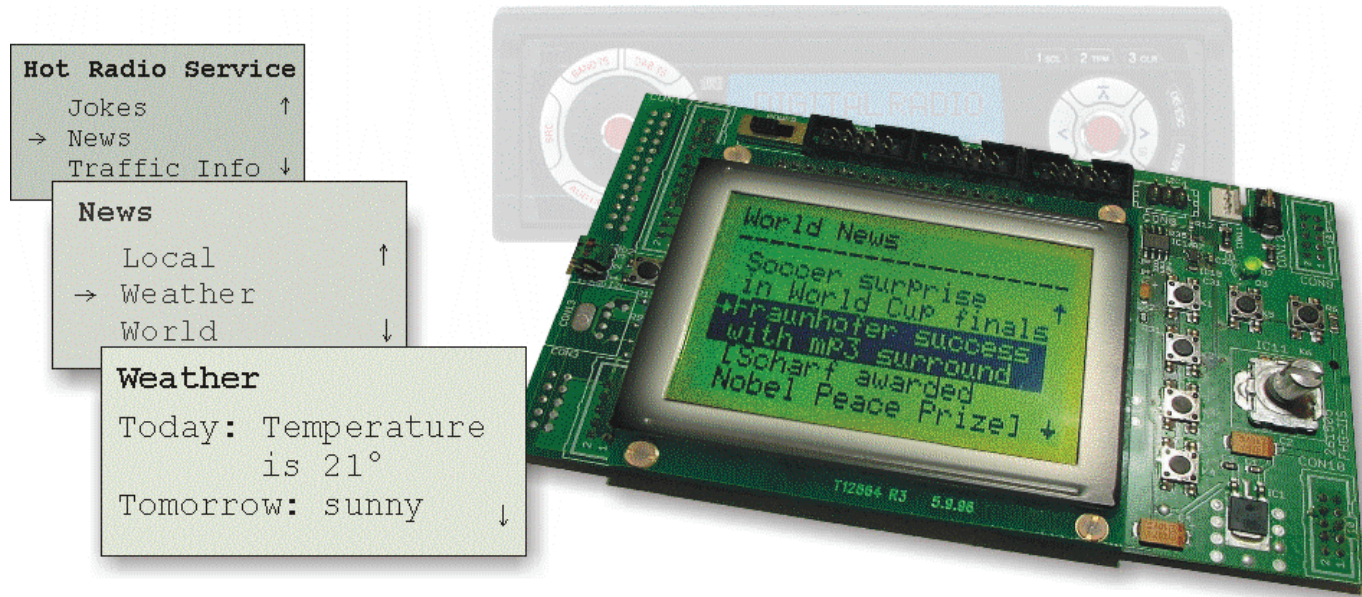


Windows  
9X, 2000, XP, Vista



Windows Mobile

# Journaline – Receiver Status



Embedded Journaline decoder  
for integration in microcontrollers

## Journaline – Broadcast Status



Broadcasts on air:

- Digital Radio Nord
- Bayern Digital Radio
- RTL Group (bce)
- RTL Italy
- Deutsche Welle
- DeutschlandRadio
- bit eXpress
- VTcom
- SWR

- ARD broadcasters, e.g. Bayerischer Rundfunk

Coming soon:

- ROCK ANTENNE

Planning stage:

- Switzerland
- Italy
- UK
- China
- USA, ...



## Journaline – Broadcast Status



Encoder / broadcast server infrastructure:

- Fraunhofer DAB/DMB ContentServer
- Fraunhofer DRM ContentServer



In standardization process:

WorldDMB

Mappings for

Digital Radio Mondiale (DRM)

Mobile.Info/TPEG



# mobile.Info - Project Partners

Key Player  
of relevant business:

Automobile industry

Manufacturer of  
- consumer electronics  
- navigation systems  
- sender equipment

Network operators

Technology providers

Info: [www.mobile-info.org](http://www.mobile-info.org)



# mobile.info - Technologies

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Application of technical standards  
as well as newly designed technology

**Coding**

**TPEG** – Transport Protocol Experts Group

**Distribution**

**DAB** – Digital Audio Broadcasting

**Scrambling**

**HECA** – High Efficient Conditional Access



## Journaline – AUDI Personal News

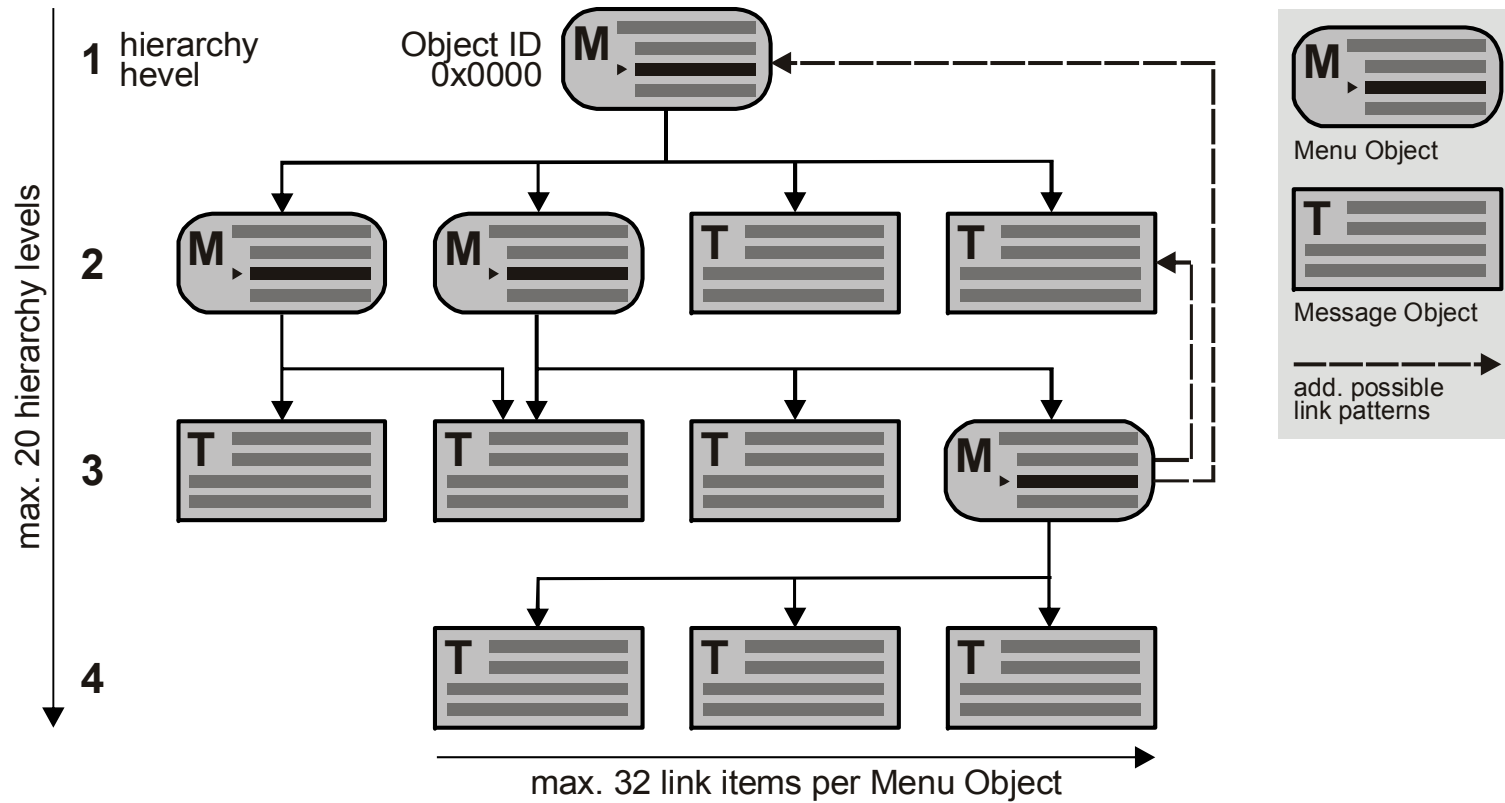


- Availability of text information while driving
- Based on Journaline (standardized, efficient encoding/transport)
- Speech-Playback
- Speech-Commands
- Personalization (automatic information on update)

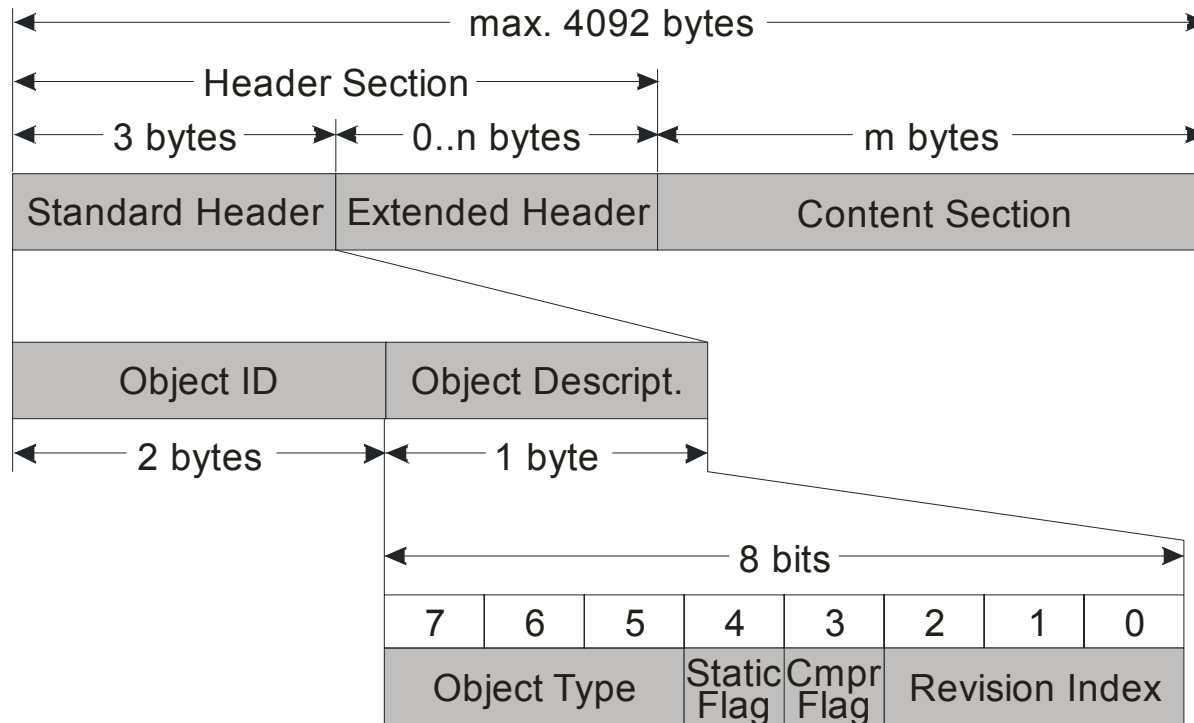
## AUDI Personal News – Live demonstration in AUDI MMI



# Background – Object Menu Hierarchy



## Background – Object Format

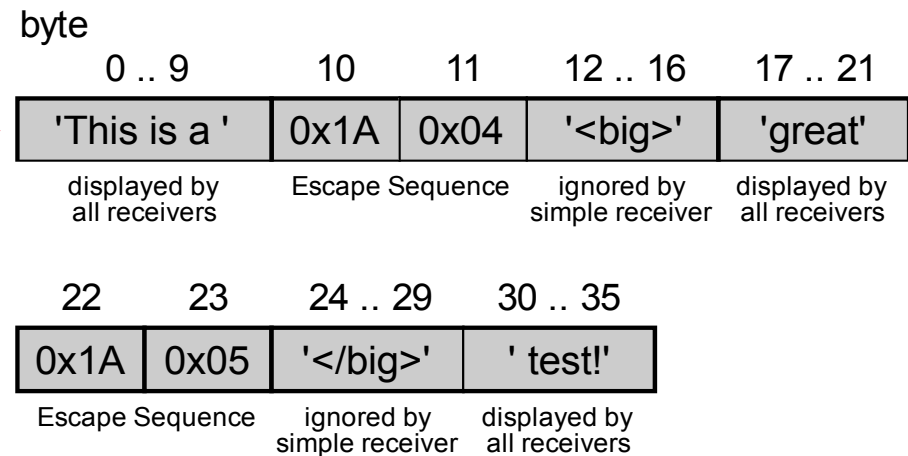


- Each information object is independently broadcast / updated
- Object ID + Revision Index identify content revisions
- Static Flag supports Favourites feature
- Optional compression of Object Content Section
- Object Content Section -> see next slide

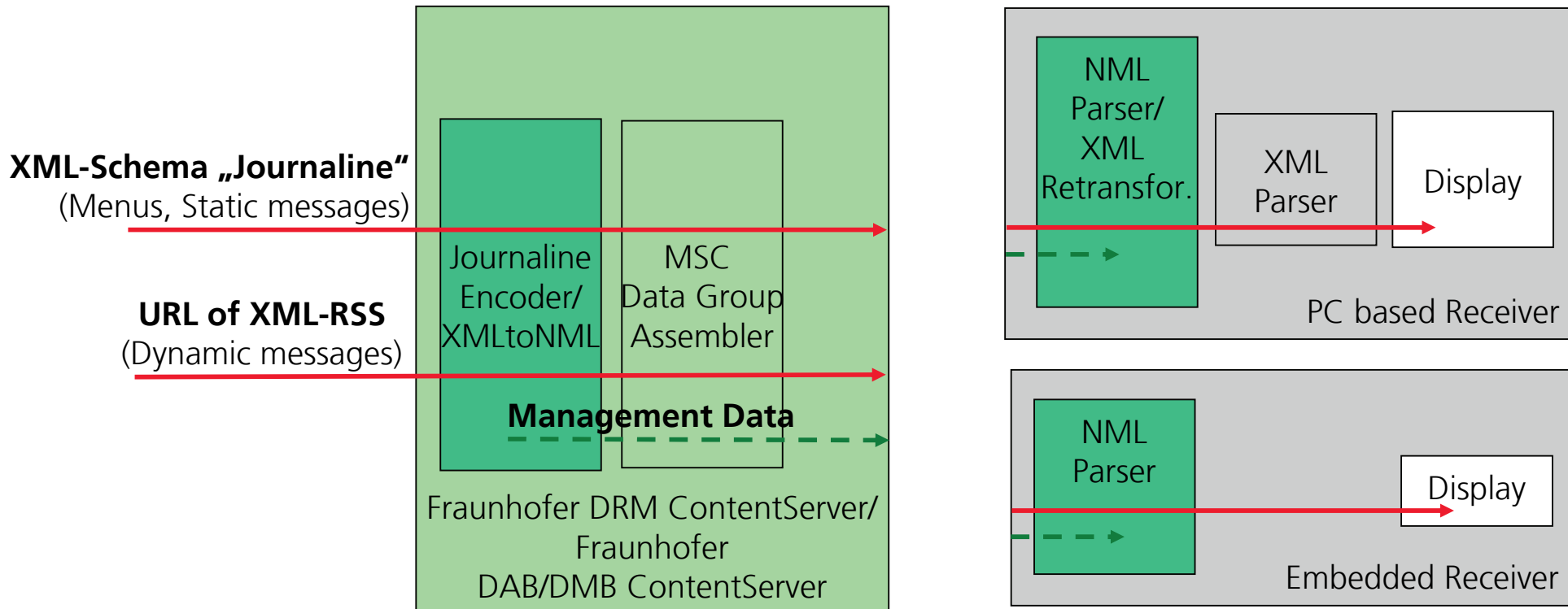
# Background – Object Content Section Format

- UTF-8 text encoding
- NML – XML structured binary ‘NewsService Markup Language’ (0x00—0x0F):  
Title start, Menu Item start, Liste Item start, Message Body start,  
End of section (can be omitted!)

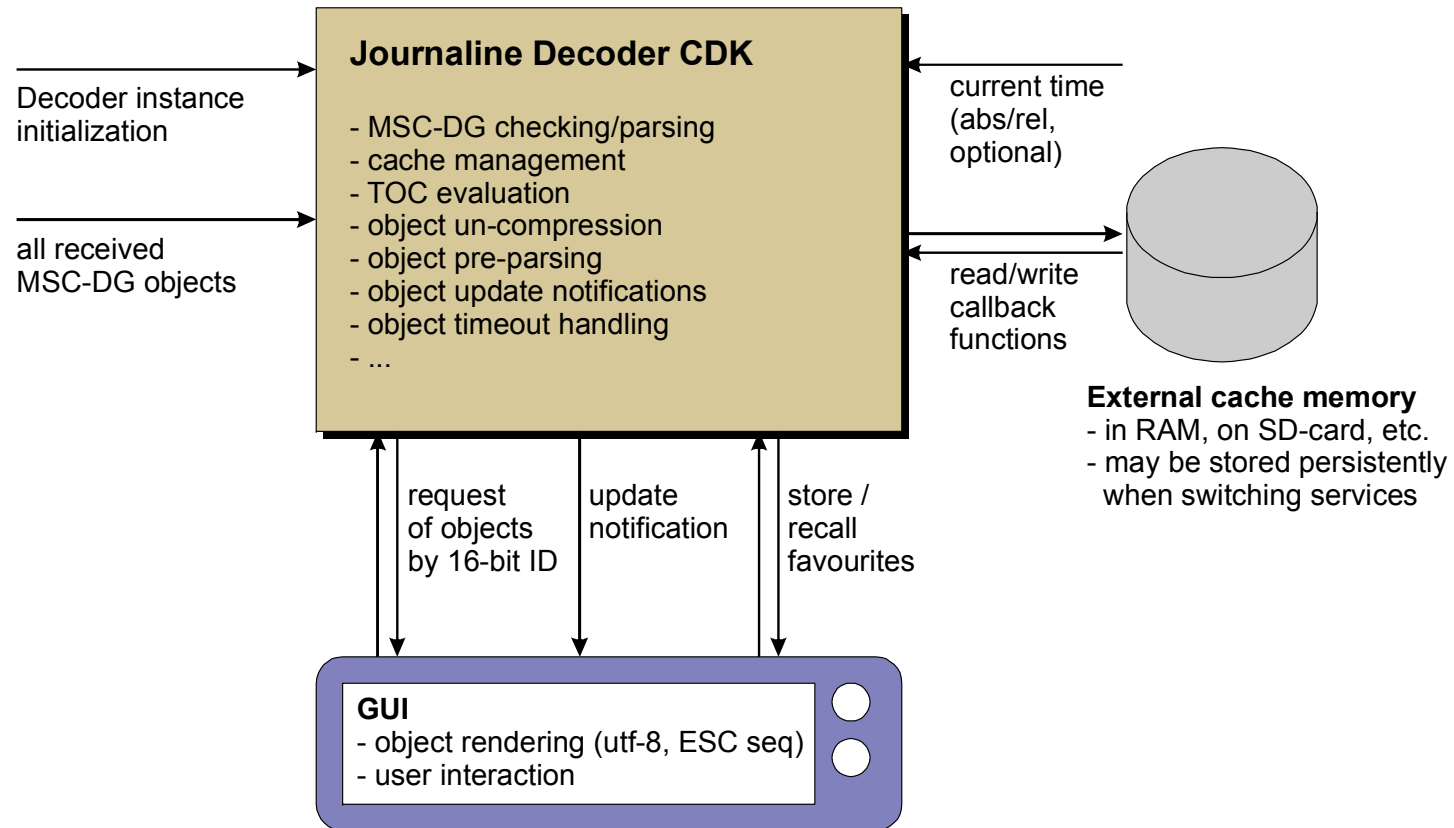
- Escape Sequences (0x10--0x1F)
  - for simple formatting codes:  
preferred line/word break,  
highlight start/stop
  - and future extensions  
**data section start/continuation**  
Extended Code Begin/End



# Background – Journaline Transmission chain



# Background – Fraunhofer Journaline Decoder CDK





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