

**Draft**

# **Audience Measurement Requirements for Mobile Broadcasting**

**Version 2.2**

**October 30<sup>th</sup>, 2008**

This document is solely for information and has no binding status for any party, not even the **bmcoforum** members.

**Draft**

**Note:**

This document is provided for information purposes only. Unless permitted by law, the document or any part of it may not be reproduced, published, adapted or distributed, in any form and by any means without prior written consent of bmcoforum.

This document is provided on an “as is” basis. **bmcoforum** does not represent or warrant that the information provided in the document is accurate, complete, current or suitable for a specific use. **bmcoforum** has not conducted an intellectual property rights review of this document and the information contained herein and makes no representations or warranties regarding third party intellectual property rights or other rights that might be claimed to pertain to the document and the information contained herein. In particular, **bmcoforum** disclaims any responsibility for identifying the existence of or for evaluating the applicability of any copyrights, patents, patent applications, trade secrets or other intellectual property rights, licenses and respective restrictions, the extent to which any license under such rights might or might not be available and takes no position on the validity or scope of any such rights. **bmcoforum** is not liable for and hereby disclaims any damages or losses arising out of or in connection with the use of this document or the information contained herein.

**Draft****Content:**

<b>1</b>	<b>INTRODUCTION .....</b>	<b>4</b>
1.1	SCOPE .....	4
1.2	HOW TO READ THIS DOCUMENT .....	5
1.3	REFERENCES .....	5
<b>2</b>	<b>AUDIENCE MEASUREMENT ECOSYSTEM .....</b>	<b>7</b>
<b>3</b>	<b>AUDIENCE MEASUREMENT SYSTEM OVERVIEW.....</b>	<b>10</b>
3.1	SYSTEM ARCHITECTURE.....	10
3.2	USERS AND PANEL .....	11
3.3	ASSETS AND INSTANCES .....	11
3.4	TRANSMISSION AND CONSUMPTION TIME.....	12
3.5	SERVICES TO BE MEASURED.....	13
3.6	MOBILE DEVICE SPECIFICS .....	14
<b>4</b>	<b>AUDIENCE DATA.....</b>	<b>15</b>
4.1	MEASUREMENT RELEVANT ACTIVITIES .....	15
4.2	GENERAL DATA TO BE RECORDED.....	16
4.3	CONSUMPTION OF LINEAR CONTENT .....	16
4.4	RECORDING OF LINEAR CONTENT .....	16
4.5	DOWNLOAD OF CONTENT.....	16
4.6	PLAYBACK OF NON-LINEAR CONTENT .....	17
4.7	NAVIGATION SERVICES .....	17
4.8	ACCESS SERVICES .....	18
4.9	INTERACTIVE SERVICES .....	18
<b>5</b>	<b>MEASUREMENT PROCEDURE REQUIREMENTS.....</b>	<b>20</b>
5.1	TRANSMISSION OF AUDIENCE DATA .....	20
5.2	STORAGE OF AUDIENCE DATA.....	20
5.3	SIMULTANEOUS RETRIEVING AND CAPTURING.....	20
5.4	INCONSISTENCY CHECK .....	20
5.5	SECURITY AND PRIVACY .....	20
	<b>ANNEX.....</b>	<b>21</b>
A.1	USER ATTRIBUTES LIST .....	21
A.2	ASSET ATTRIBUTES LIST .....	21
A.2	INSTANCE ATTRIBUTES LIST.....	22
	<b>AUTHORS .....</b>	<b>23</b>

**Draft**

## 1 Introduction

### 1.1 Scope

The "Broadcast Mobile Convergence Forum" (**bmcoforum**) is an international organisation targeting to shape an open market environment for mobile broadcast services. This ranges from support of the various bearer technologies and application architectures to regulatory, business and services issues.

The "Content Formats and Services" Work Item (WI7) targets to enable new content and services formats under different business models.

As commercial free-to-air models base on advertising audience measurement is essential.

In a stationary TV environment audience measurement is mainly done using a representative user group equipped with measurement devices or tools provided by the agencies gathering the audience data and providing them to the channels.

In a mobile TV environment mobile devices can be used directly for gathering audience measurement data.

At the moment, for the limited variety of devices in the market vendor-specific audience measurement components and systems may be acceptable. But with the variety of devices increasing agreements among the vendors are needed on the measured data and the interfaces to bring them to the server site.

On the other hand, when considering the multiplatform digital world, audience research needs to have a solution able to provide coherent data for all types of TV consumption being it stationary, IPTV or mobile. To be future-proof the solution has to encompass broadcast and streaming as well as on-demand consumption of audio-visual content.

**bmcoforum** has taken the initiative to specify functional requirements for mobile broadcast audience measurement.

Analysing in a first step other projects in this field the European IST project ARENA ("Audience measurement Research Extended to New convergent media Applications and services") has been identified as a good basis for the work [REF-1] to [REF-3].

The ARENA project aimed to devise a methodology for advanced audience measurement to be applied across digital delivery platforms and a variety of methods of consumption of audio-visual content. The delivery platforms considered and under test in ARENA are stationary TV, IPTV and mobile TV.

ARENA focuses on content being consumed both linearly (the traditional way of consuming audio-visual content, such as via a traditional TV broadcast) and non-linearly. In the latter case two methods of consumption, time-shifted and on-demand can be distinguished. The non-linear element is given by the ability to pause, rewind or fast-forward the content.

As the new media have introduced new types of content, thus ARENA defines what types of content should be measured when consumed by the user. ARENA measures the consumption of traditional audio-visual content, interactive appli-

**Draft**

cations, Electronic Programming Guide and other navigation tools, as well as more traditional Access Services.

**bmcoforum** has analysed the ARENA functional requirements and evaluated them under the aspect of relevance for the mobile broadcasting environment.

Although the ARENA functional requirements have served as a good basis, this document describes the **bmcoforum** specific view on audience measurement for mobile broadcasting. Some issues as the audience measurement ecosystem and a system overview have been added.

In this process external knowledge from several audience measurements agencies has been included.

As **bmcoforum** follows a technology neutral approach the functional requirements should be applicable to all bearer technologies.

Actual commercial mobile broadcast implementations may include both TV services and radio services. So, **bmcoforum** does not limit here content in scope to linear broadcast TV but includes any type of linear broadcast, analogue and digital as well as radio and TV.

In a next step these audience measurement requirements will further considered by **bmcoforum**' "Interoperability" Work Item (WI2) for technical implementation approaches.

Furthermore, **bmcoforum** plans a special workshop including all necessary stakeholders from **bmcoforum** membership and outside (research agencies) to further discuss ecosystem issues, the functional requirements as well as the way towards a standardised technical solution.

## 1.2 How to read this document

The following sections discuss issues of the audience measurement ecosystem, give a system overview and describe resulting audience measurement requirements for mobile broadcasting.

The functional requirements are classified into those who should be implemented urgently (named hereafter as the "Initial **bmcoforum** profile") and those who should or might be implemented at a later stage (name hereafter as "Extended **bmcoforum** profile").

The profile for initial implementation takes into account linear mobile TV and time-shift consumption and usage of Electronic Service Guide only.

**bmcoforum** recognises that more sophisticated requirements as interactivity and recording might be useful for the market players, but for getting aligned implementations soon limiting the set of requirements seems to be adequate.

## 1.3 References

- [REF-1] ARENA Project, Deliverable D2: Annex 1, Business Requirements, WP2\_BR\_BBC\_01, 06/12/2006
- [REF-2] ARENA Project, Deliverable D2: Annex 2, Functional Requirements, WP2\_FR\_BBC, 06/12/2006

**Draft**

[REF-3] ARENA project, Deliverable D2, Analysis of audience research requirements and platform technical scenarios, and some proposed solutions

**Draft**

## 2 Audience Measurement Ecosystem

In principle, in a stationary TV environment audience measurement is mainly done by an "Audience Research Agency" (ARA) which

- Selects a representative user group (panel -  $P_{ARA}$ )
- Equip this panel with measurement devices or tools
- Gathers the audience measurement data from the panel and
- Provides audience reports to the interested parties (mainly broadcasters and advertising agencies).

For this purposes the ARA uses the following information:

- User data
- Programme information of each channel provided by the broadcasters
- Prizing information from marketers
- Audience measurement data.

Fig. 1 illustrates this principle stationary audience measurement ecosystem.

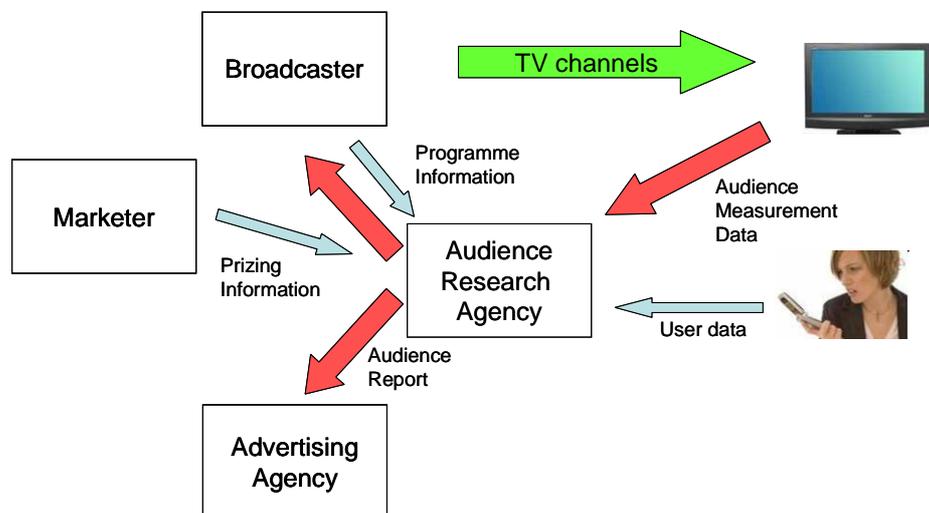


Fig. 1: Principle stationary audience measurement ecosystem

The same model can also work for mobile TV: In this case the ARA has to be sure that mobile phones and other mobile TV enabled devices are equipped with the corresponding device software for measurement and transmission of the audience data<sup>1</sup>. No cooperation with a mobile network operator will be necessary for collecting the audience data. If required, the mobile network operators may get audience reports as well. For the panel selection it might be nec-

<sup>1</sup> This may be challenging for ARA taking into account the high number of different mobile device types in the market

**Draft**

essary but difficult to get information which persons are mobile TV enabled. In any case this model will be the only one for unconnected devices.

Fig. 2 below illustrates this ARA centred mobile TV audience measurement ecosystem<sup>2</sup>.

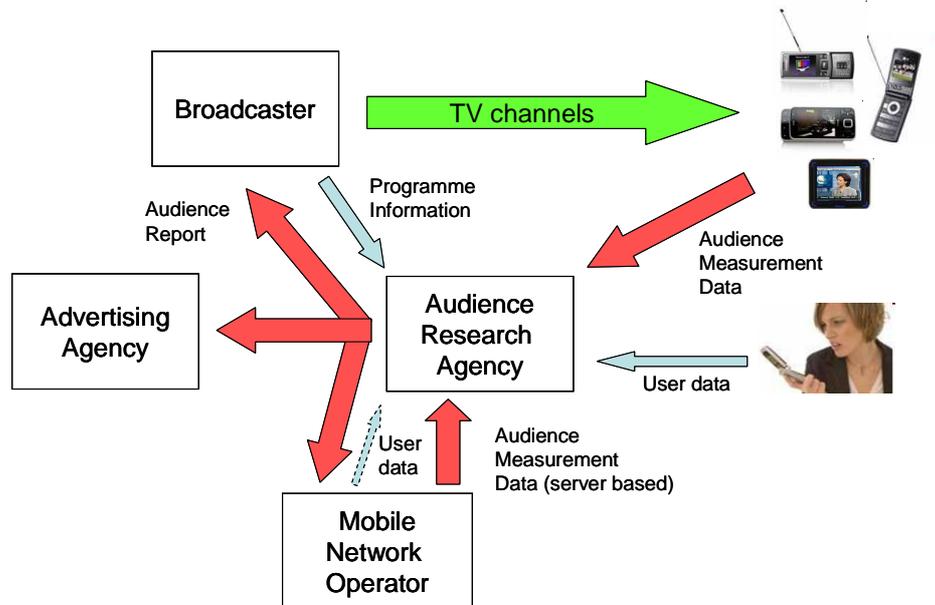


Fig. 2: ARA centred mobile TV audience measurement ecosystem

A Mobile Network Operator (MNO) may be interested in operating the audience measurement by himself for e.g. including more customers or gathering more or other information than requested by ARA for the panel  $P_{ARA}$ . So, the MNO can select its own panel  $P_{MNO}$  which may include all or part of its customers, but  $P_{MNO}$  can contain the panel  $P_{ARA}$  of the ARA. For this a corresponding agreement will be necessary between the ARA and the MNO to agree on the panel and audience measurement data to be provided by the MNO to the ARA.

Fig. 3 below illustrates this MNO centred mobile TV audience measurement ecosystem.

The ARA may get necessary information from the MNO on the customers being part of the requested panel. On the other hand, the ARA may provide programme information to the MNO for generating its own audience reports or provide its audience reports to the MNO if required.

The MNO has to enable the mobile phones with the corresponding device software for measurement and transmission of the audience data.

From the ARA point of view it is harmful that the panellists are not contracted by ARA but by the MNO. They will require from MNOs neutrality and transparency in data provision. Furthermore, only ARA will be able to report a multi-platform usage.

The MNO may or may not handle panel for unconnected devices. If persons with unconnected devices shall be included in the panel, and the MNO is not

<sup>2</sup> Marketers are not presented here but still will provide prizing information to the research agency.

**Draft**

able or interested to handle, the ARA can handle this corresponding to the previous model.

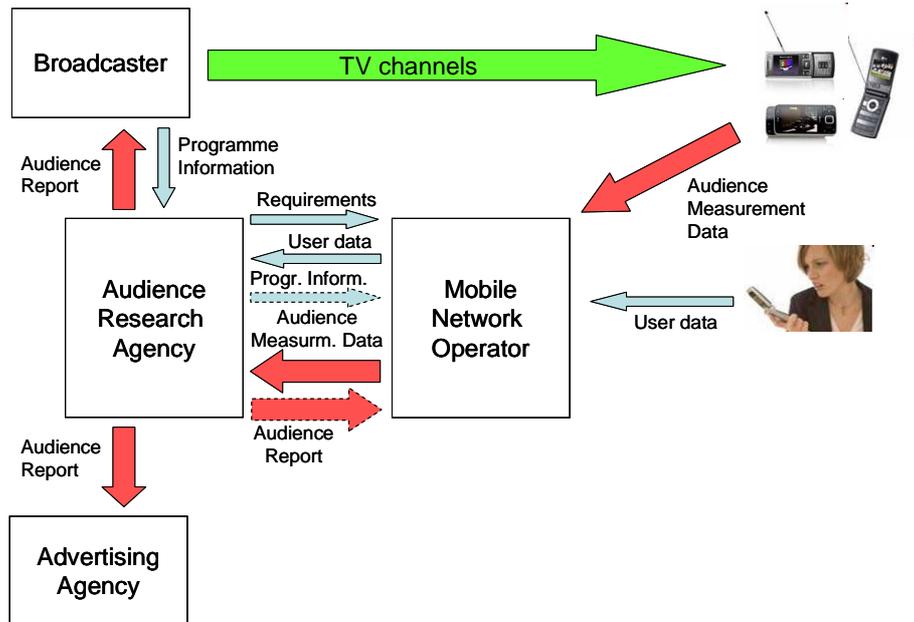


Fig. 3: MNO centred mobile TV audience measurement ecosystem

Draft

### 3 Audience Measurement System Overview

#### 3.1 System architecture

The audience measurement system consists of two main entities:

- Audience Measurement Server (AMS) system, which corresponding to the described ecosystems may be operated either by the Audience Research Agency or by the Mobile Network Operator.

The AMS can be subdivided in the Data Gathering Agent (DGA) and the Audience Report Generator (ARG)

- Audience Measurement Client (AMC) system, being part of any mobile device of the panellists.

The Audience Measurement Client system can be subdivided in the Data Capturing Agent (DCA) and the Data Transmission Agent (DTA)

Fig. 4 demonstrates the audience measurement system architecture.

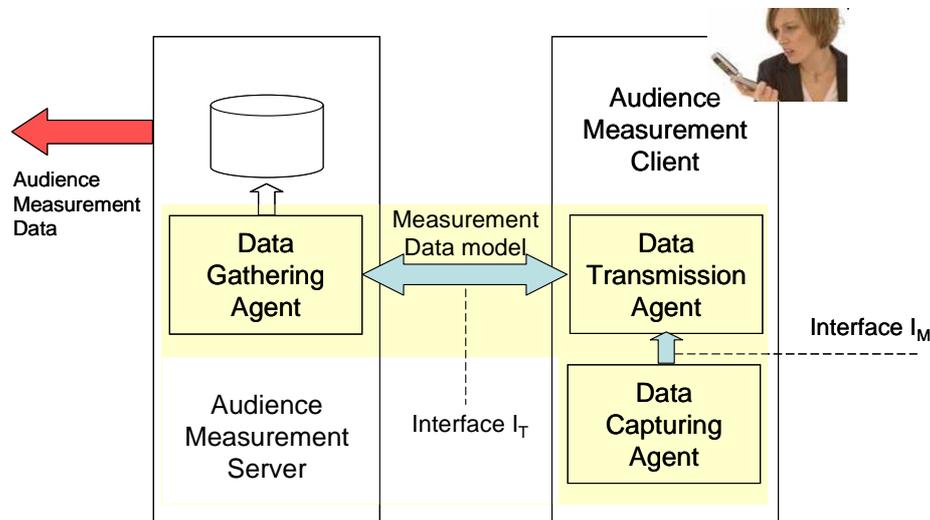


Fig. 4: Audience measurement system architecture

The Data Capturing Agent records the content consumption at the device. The details what to measure is specified by the data model of the panel.

The Data Transmission Agent provides the recorded audience measurement data to the Audience Gathering Agent of the Audience Measurement Server following specified provision rules.

So, for unifying audience measurement of mobile TV, the following specifications are of importance:

- Measurement data model of the measurement record

## Draft

- Interface  $I_M$  between Data Capturing Agent and Data Transmission Agent
- Interface  $I_T$  between Data Transmission Agent and Data Gathering Agent

Furthermore, panel establishment and authentication procedures may be necessary between the Audience Measurement Server and Client systems.

### 3.2 Users and panel

For generating statistical proven audience reports a panel of users will be defined. In a special case the panel may include all users.

To generate required audience reports, detailed user information is necessary. Annex A.1 contains a list of user attributes specified by the ARENA project.

During the process of gathering the audience measurement data the user should be uniquely identified for later correlation of the measurement data with the attribute list of the user.

To simplify the initial audience measurement implementations, in the mobile phone case **the owner of the mobile phone is considered as the (only) user** consuming the content on the device.<sup>3</sup>

However, as one user may own several mobile phones, the mobile phone identifier can be used for uniquely identifying the device, which has been used for viewing the content. The Audience Measurement Server then should be able to map the device identifier to the user who owns the device.

Other than in the stationary measurement situation within in family, where more than on user is considered, not all of them necessarily active, in the mobile case we do not specially identify active users as we assume that if a content is displayed at the mobile device it will be consumed by its owner.

However, whether the user is really consuming the content by watching at the display cannot be detected (as cannot in the stationary case as well).

### 3.3 Assets and instances

Corresponding to the ARENA project we differentiate Assets and Instances of content.

An **Asset** is a multimedia content consisting of a combination of audio, video or interactive applications to be consumed together. This term identifies the content in isolation, without any reference to the version that is consumed by the audience.

The duration of an asset can be very short, as is the case for advertisements.

An **Instance** identifies the version of an Asset received/consumed by the user.

If the same programme is broadcast several times, perhaps in slightly different formats, such as with a different aspect ratio, we can identify multiple instances but only one asset.

Receiving the same content through broadcast or 3G networks may be considered as example of different instances in mobile environment<sup>4</sup>.

<sup>3</sup> This is different from the stationary TV case where in a household several users share the same TV set.

<sup>4</sup> The definition of assets and instances of them is done by the broadcasters.

**Draft**

Fig. 5 demonstrates the relationship between an asset and different instances being consumed by a user.

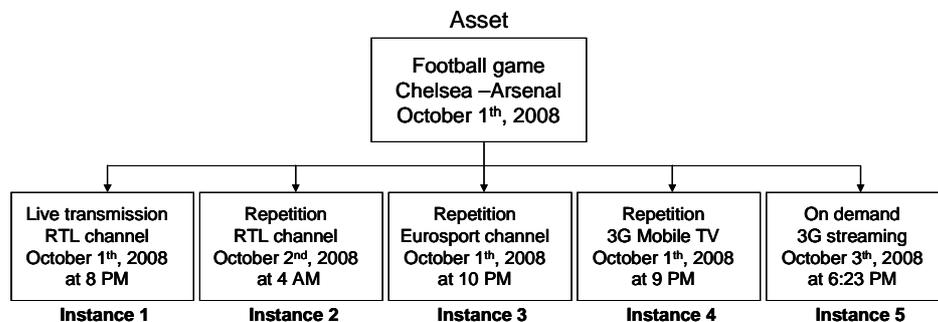


Fig 5: Relationship between an asset and different instances of it

Asset and instance information is provided as attribute lists by the broadcaster to the audience measurement system.

As the user consumes instances of content but not assets, asset attributes may not be part of the measurement data model but being kept in the Audience Measurement Server system to be used for generating audience reports.

For information only, annex A.2 contains a list of asset attributes specified by the ARENA project.

For the generation of audience reports the Audience Measurement Server should be able to uniquely identify the instance a user consumed.

For live and time-shifted broadcast, an instance can be uniquely identified by the set of following attributes

- Delivery system<sup>5</sup>
- Service provider<sup>6</sup>
- Channel identifier in the delivery system
- Transmission time (for detailed timing considerations – see below)

Besides these attributes forming a unique instance identifier other instance attributes can be necessary for generating audience reports.

For information only, annex A.3 contains a list of instance attributes specified by the ARENA project.

### 3.4 Transmission and consumption time

The broadcasted content can be consumed either live, when receiving it on the device, time-shifted or at a later time after recording it.

Even the time of live consumption will differ from the transmission time at the play-out due to transmission and processing delays.

<sup>5</sup> A mobile device may be able to receive an asset by different delivery systems, e.g. DVB-T or DVB-H. Another combination may be DVB-H and 3G

<sup>6</sup> Within one delivery system several service providers may broadcast the same content. Examples here are TIM and Vodafone in the Mediaset DVB-H multiplex.

## Draft

So, the following points of time can be identified:

- $t_0$  – Content transmission time at play-out (or encoding time)<sup>7</sup>
- $t_1$  – Time, when the content at the device is ready for live consumption or recording
- $t_2$  – Content consumption time

All defined times are to be measured with the accuracy of 0.1 seconds and stored in seconds, so time accuracy is 0.5 seconds or better.

If  $t_2$  is equal  $t_1$ , the content is consumed live, if  $t_2$  is higher than  $t_1$ , it is consumed time-shifted or after recording.<sup>8</sup>

In any case the consumed content should be related to the broadcasted content. This means that  $t_1$  should be related to  $t_0$ . Two options exist:

1. The broadcasted content includes the content transmission time  $t_0$ <sup>9</sup>
2. The mean delay can be calculated and taken into account in post-processing of the measurement data<sup>10</sup>. For this purpose the timer of the mobile device has to be synchronized according to  $t_0$ .

The mobile device shall maintain time accuracy relative to the actual time  $t_0$  of at least 0.5 seconds or better.

### 3.5 Services to be measured

The following services will be considered for consumption measuring:<sup>11</sup>

- Any type of linear broadcast: analogue and digital as well as radio and TV.
- Time-shifted content: the same services as linear broadcast but consumed after the original broadcast using internal storage or internal PVR
- Content on demand: the user selects the content from a remote repository over the mobile network. The content can be consumed as streamed or downloaded for later consumption
- Interactive services
- Electronic Programme Guide and Electronic Service Guide
- Access services: subtitling, audio description, signing, spoken subtitling.

The last three services are in adjunction to linear broadcast, time-shift or content on demand and have to be covered as far as relevant for mobile broadcast.

<sup>7</sup> This is wall clock time in the play-out center.

<sup>8</sup> Whether the content is consumed time-shifted or after recording (using a PVR) will be defined at the Audience Measurement Server depending on its definition.

<sup>9</sup> In fixed TV the videotext time is used. In case of DVB-H the RTP time can be used.

<sup>10</sup> The question of time accuracy in the devices is open so far.

<sup>11</sup> Not all of them will be part of the initial **bmcoforum** profile

**Draft**

### 3.6 Mobile device specifics

In a stationary TV environment the consumed content can be live broadcast or generated from different devices among them DVD recorders, PVRs and VCRs.

For the mobile devices we do **not** assume the usage of external devices (including removable storage devices) for content generation as in normal cases it cannot be expected that necessary information for the instance identification will be stored on them. So the viewing device is always considered as the content generating device.

**Draft**

## 4 Audience Data

### 4.1 Measurement relevant activities

The following main user activities have to be considered

- Consumption of linear content
- Recording of linear content, maybe in parallel with consumption of linear content
- Download of content
- Consumption (playback) of non-linear (recorded or downloaded) content

During the consumption of linear and non-linear content navigation, interactive and asset services can be used.

During the consumption of non-linear content and using the navigation, interactivity and access services additional measurement relevant activities can be initiated by pressing device keys.

Furthermore, the user may move, so that geographical location and/or in or out of home consumption may change during each of the above activities.

All described user activities will cause recording of measurement data (fig. 6)

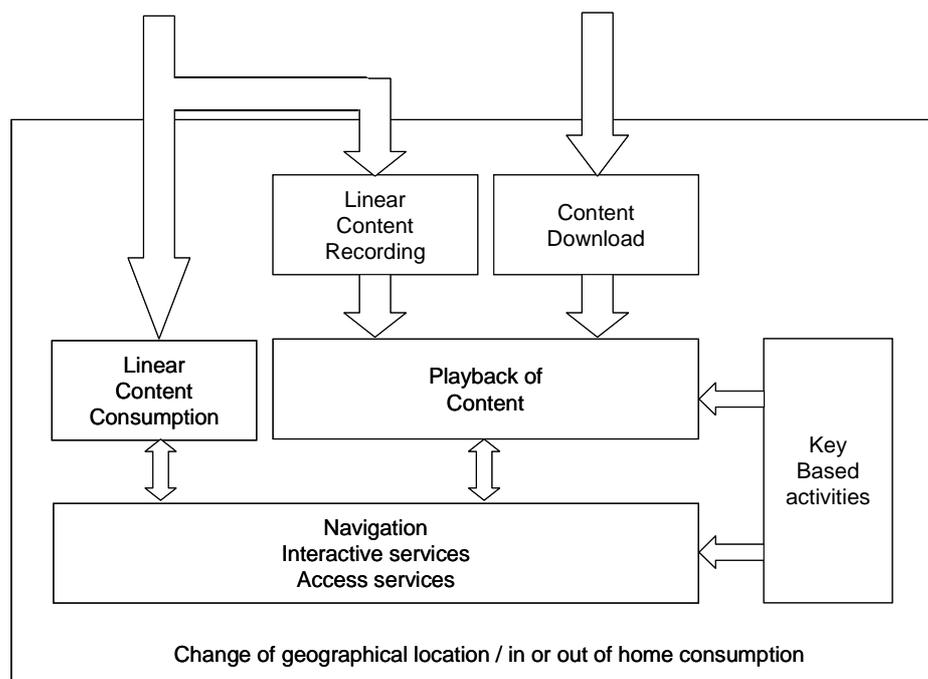


Fig 6: Measurement related activities

**Draft**

## 4.2 General data to be recorded

For all events described below the following data have to be recorded:

- Device identifier
- Geographical location
- In or out of home consumption<sup>12</sup>

*The measurement of in-or out of home consumption is proposed to be part of the **extended bmcoforum** profile only.*

## 4.3 Consumption of linear content

The following events are relevant for the consumption of linear content:

- Start of instance consumption
- Change of the instance to be consumed
- End of instance consumption

The following additional data have to be fixed for measurement:

- Instance identifier
- Current time

*The measurements of all events regarding consumption of linear content are proposed to be part of the **initial bmcoforum** profile.*

## 4.4 Recording of linear content

The following events are relevant for the recording of linear content:

- Start of instance recording
- Change of the instance to be recorded
- Stop of instance recording

The following additional data have to be fixed for measurement:

- Instance identifier
- Current time

*The measurement of all events regarding recording of content are proposed to be part of the **initial bmcoforum** profile only.*

## 4.5 Download of content

The following events are relevant for the download of content:

- Request of a download (attempt)  
This is recording just the request, not the download.
- Receipt of a download

---

<sup>12</sup> „In or out of home“ means being close to the user’s home viewing device

## Draft

This is recording the receipt of a requested download, not the consumption.

- Request of a license to play

This is just recording the request for a license for a previously downloaded piece of content, not its consumption.

The following data have to be recorded:

- Instance identifier
- Current time

*The measurement of all events regarding download of content are proposed to be part of the **extended bmcoforum** profile only.*

## 4.6 Playback of non-linear content

The following events are relevant for the playback of non-linear content:

- Start of instance playback
- Change of the instance to be played
- Stop of instance playback
- Press of key functions as play, pause, fast forward, rewind, stop, start record, stop record, video resize, etc

The events belong to each piece of content.

The following additional data have to be fixed for measurement:

- Instance identifier
- Current time
- Key function identifier

*The measurement of all events regarding playback of time-shifted content are proposed to be part of the **initial bmcoforum** profile press of key functions*

*The measurement of all events regarding playback downloaded content and of pressed key functions is proposed to be part of the **extended bmcoforum** profile.*

## 4.7 Navigation services

The main tool to facilitate the discovery and acquisition of content is usually referred to as Electronic Programme Guide (EPG) or Electronic Service Guide (ESG) for the DVB-H platform. The following describes the data that are to be measured at the relevant events to capture the user interaction with the EPG (or ESG) and the other tools that allow the user to change channel.

The following events are relevant for navigation services:

- Start of navigation service
- Stop of navigation service

## Draft

- Press of key functions<sup>13</sup>

The following additional data have to be fixed for measurement:

- Navigation service identifier
- Current time
- Key function identifier
- At start of navigation service, if the previous content is still visible/audible to the user
  - Visible/audible to what extent (e.g. has the video being scaled down)<sup>14</sup>
  - Instance identifier

*The measurement of start and stop events regarding navigation services is proposed to be part of the **initial bmcoforum** profile excluding previous content visibility/audibility.*

*The measurement of pressed key functions and previous content visibility/audibility is proposed to be part of the **extended bmcoforum** profile.*

## 4.8 Access services

Access services as defined in the ARENA project are a set of ancillary services extending the potential audience and enjoyment of an audio-visual piece of content. Typically these are subtitles for hard-of-hearing, audio description, signing and spoken subtitles.

Hereafter access services will be considered as part of interactive services, so no special measurement requirements are necessary.

## 4.9 Interactive services

Interactive services can be used to access audio/visual content, supply news and general information, online shopping, gaming, betting, etc.

The following describes the data that are to be measured at the relevant events when the user utilises interactive applications.

The following events are relevant for interaction services:

- Start of interactive service
- Stop of interactive service
- Press of key for an interactive element<sup>15</sup>

The following additional data have to be fixed for measurement:

- Delivery platform identifier

<sup>13</sup> Functions to be defined

<sup>14</sup> The user may be able to watch a programme in quarter screen while using a navigation tool to browse schedule information. The system must be able to identify how the previous A/V service has been affected by the activation of the navigation service, i.e. how large the video window is.

<sup>15</sup> Functions to be defined

**Draft**

- Service identifier
- Current time
- Interaction element identifier
- At start of interactive service, if audio/visual content is visible/audible to the user
  - Visible/audible to what extent (e.g. is the video being scaled down)<sup>16</sup>
  - Instance identifier

*The measurement of all events regarding interactive services is proposed to be part of the **extended bmcoforum** profile excluding content visibility/audibility.*

---

<sup>16</sup> The interactive service may contain audio/visual content or may allow the user to consume other audio/visual content. The system must be able to identify when this happens and what content is being consumed through the interactive application. The system must also identify the size of the video window

**Draft**

## 5 Measurement Procedure Requirements

### 5.1 Transmission of audience data

The terminal shall be capable to transmit the measured audience data

- On a daily basis
- Overnight
- Being scheduled

The transmission must be capable of being scheduled so that they include where required the inclusion of time-shifted viewing on the same day as the live broadcast.

*These requirements are proposed to be part of the **initial bmcoforum** profile.*

### 5.2 Storage of audience data

The terminal shall be capable of storing audience data for at least 3 days.

So, any terminal must have at least 3 days storage capacity for consumption statements, to avoid data loss in the event of polling failures.

*This requirement is proposed to be part of the **initial bmcoforum** profile.*

### 5.3 Simultaneous retrieving and capturing

The terminal must be capable of capturing audience data while transmitting audience data to the audience Measurement Server. The retrieval of the audience data must not prevent the terminal from capturing further audience data.

The process of retrieving audience data must not interfere with the collection of data.

*This requirement is proposed to be part of the **initial bmcoforum** profile.*

### 5.4 Inconsistency check

The terminal shall check as far as possible the captured audience data for potential inconsistencies.

*This requirement is proposed to be part of the **initial bmcoforum** profile.*

### 5.5 Security and privacy

The terminal must not permit unauthorized requests for access to data and not send data to the AMS without identifying it.

*These requirements are proposed to be part of the **initial bmcoforum** profile.*

**Draft**

## Annex

### A.1 User attributes list

The following list of user attributes is taken from the ARENA project and for information only. Take into account here that the ARENA project is considered cross-platform consumption including stationary TV, IPTV and mobile TV.

Must be able to identify an individual and a household as a minimum by:

- Age
- Gender
- Mobile phone ownership (\*)
- Socio economic status
- Presence of children
- Multi-channel platform ownership (\*)
- Detailed description and location of all receiving equipment (\*)
- History of acquisition of receiving equipment (\*)
- Broadband access (\*)

The list of attributes of interest should be considered as the minimum amount of information that the system must have available.

*Comment: The (\*) labeled items are optional for mobile broadcast audience measurement but important under cross-platform measurement aspects.*

### A.2 Asset attributes list

The following list of asset attributes is taken from the ARENA project and for information only.

Where applicable, such attributes could be:

- The Event Title
- A Secondary Event Title
- A unique event number
- A description of the event
- As necessary the strand to which the event belongs
- Origination date – i.e. when the programme production was completed
- Original series number
- Original episode number within series
- Interactive streams associated
- Format information such as the aspect ratio
- Languages available

## Draft

- Audio format
- Subtitle availability
- Genre and subgenre
- Sponsorship, i.e. the company that sponsors the content
- Countries of origin
- Date of First Play out
- Strand to which Asset belongs (Note: the Strand is the parent to an Asset)
- The Event type – e.g. programme, spot, promotion, station ident, sponsorship, page, etc.

### A.3 Instance attributes list

The following list of instance attributes is taken from the ARENA project and for information only.

Where applicable, the following list of attributes associated with an instance shall be available to the system:

- The type of delivery system
- Channel ID
- Station (regional variant) ID
- Interactive streams
- The Service
- The Platform the service was accessed via
- The name of Channel/Brand – e.g. BBC1
- Scheduled date – Note; only applicable for linear service only
- The programme number of the asset of which this is an instance
- A unique instance identifier
- Scheduled start time – Note: Likely to be for linear service only
- Scheduled duration-- Note: Likely to be for linear service only
- First run, repeat status etc.
- Details of any re-versioning for this Instance
- Parental advisory
- Transmission date
- Event start time
- Event end time (or duration)
- Break Type
- Position in Break
- Interactive type

**Draft**

## Authors

This report has been compiled as part of the "Content formats and services" work item of **bmcoforum**.

The following **bmcoforum** members participated in the editorial team:

Goldbach Media	Jürg Bachman
Mediapulse	Manuel Dähler
University of Braunschweig	Philipp Steckel

Furthermore the following **bmcoforum** members have contributed to the report:

RRD	Christian Besler
Nokia Siemens Networks	Werner Trapp
Telecom Italia Mobile	Gian Paolo Balboni

The main editor of the report Claus Sattler is the Executive Director of **bmcoforum**.