

Media Content Distribution (MCD); MCD framework; Part 8: Audience Measurement



Reference

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Foreword

This Technical Report (TR) has been produced by ETSI Technical Committee Media Content Distribution (MCD).

This is a multi-part deliverable identifiable by the same main number and a common part of the title. This set of partial deliverables (parts and sub-parts handled and published independently but treated in a coordinated form) builds a whole deliverable handling the subject identified by the common part of the title.

The common part of the title is Media Content Distribution framework.

Each part and sub-part of the present set of deliverables covers a specific subject specified in the corresponding scope and referred to in the specific part of the title. To each part and sub-part of the whole deliverable, a specific number attached to the common main number of the deliverable will also be assigned.

The present document, the only one providing an overview of various methods of Audience Measurement, referring to Legal and Regulatory requirements in various countries, providing Case Studies of activities in several countries, and technical and functional requirements for audience measurement, it is part 8 of the multi-part deliverable covering the Media Content Distribution framework, as identified in part 1 [i.1] of this multi-part deliverable. This part 8 is an informative document trying to identify the situation within the market sector corresponding to the scope; the rather large number of trademarks cited could not be reduced due to the context of the study and the particular evolution of the document. In all the cases, the references to trademarks should not be considered for other purposes than the illustration of simple examples.

For a rational maintenance and easy usage of the complete set of the documents, only part 1 of the set of the documents, will maintain an updated list of the documents in the series, all the other documents should refer to part 1 [i.1], working therefore as the central point of the series.

Introduction

In the context of MCD work, the collection of audience measurement was considered a relevant item since it provides valuable information for market players acting in a rash evolving convergence environment between traditional sectors of Telecom and Broadcast. Also the opportunities opened by this evolution are associated with challenges needing appropriate analysis.

The present stage of the present document relates to an initial survey on audience measurement related matters in the MCD domain and is not intended to be a complete, exhaustive one. The aim of this initial exercise was to identify issues determined by the present rapid evolution of convergence and consequent usage of multiple distribution systems for the traditionally broadcasted contents. Matters like the protection of contents, communications services, applications services and users' data (security needs in general) were identified as a major issue and a description of the situation in different regions was made. This, however corresponding to an initial stage, it is believed to be relevant for publication aiming the stimulation of further discussions in the development of MCD systems and awareness of market players. It is nevertheless recognized that a future edition of the present report can go further in depth and updated information.'

This material is expected to be a central tool for the identification of MCD requirements and the specification of a roadmap for the standardization work to be developed.

1 Scope

The purpose of the present document is to assess activities and business plans with relevance to Audience Measurement. It briefly also provides a synopsis of information related to Audience Measurement of television viewership and radio listenership that receive programs or information by means of broadcast to fixed and mobile locations, broadband networks, or on-line Internet.

Audience measurement is a market research tool used to assess the return on advertising investment and to maximize the value provided users. Such measurements are made to provide information to tailor messages or content to better suit the preferences of a target audience and which promotes advertisers and content providers objectives.

2 References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the reference document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at <http://docbox.etsi.org/Reference>.

NOTE: While any hyperlinks included in this clause were valid at the time of publication ETSI cannot guarantee their long term validity.

2.1 Normative references

The following referenced documents are necessary for the application of the present document.

Not applicable.

2.2 Informative references

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

- [i.1] ETSI TR 102 688-1: "Media Content Distribution (MCD); MCD framework; Part 1: Overview of interest areas".
- [i.2] ETSI TR 102 688-3: "Media Content Distribution (MCD); MCD framework; Part 3: Regulatory issues, social needs and policy matters".
- [i.3] Interactive Advertising Bureau: "Audience Reach Measurement Guidelines", Version 1.0-February 23, 2009.

NOTE: Available at: http://www.iab.net/media/file/audience_reach_022009.pdf.

- [i.4] Directive 2002/19/EC of the European Parliament and of the Council of 7 March 2002 on access to, and interconnection of, electronic communications networks and associated facilities (Access Directive).
- [i.5] Directive 2002/58/EC of the European Parliament and of the Council of 12 July 2002 concerning the processing of personal data and the protection of privacy in the electronic communications sector (Directive on privacy and electronic communications).
- [i.6] ISO 9000: "Quality management systems - Fundamentals and vocabulary".
- [i.7] CableLabs SaFI-CIP: "Campaign Information Package Specification".

NOTE: Available at: <http://www.cablelabs.com/advancedadvertising/specifications/safi.html>.

- [i.8] CableLabs SaFI-IAF: "Interactive Application Fulfillment Summary Interface Specification".
NOTE: Available at: <http://www.cablelabs.com/advancedadvertising/specifications/safi.html>.
- [i.9] CableLabs SaFI-IAM: "Interactive Application Messaging Specification".
NOTE: Available at: <http://www.cablelabs.com/advancedadvertising/specifications/safi.html>.
- [i.10] CableLabs SaFI-SMS: "Service Measurement Summary Interface Specification".
NOTE: Available at: <http://www.cablelabs.com/advancedadvertising/specifications/safi.html>.
- [i.11] "The Communications Assistant for Law Enforcement Act" embodied in United States law 47 USC 1001.
NOTE: Available at: <http://www.techlawjournal.com/agencies/calea/47usc1001.htm>.
- [i.12] "The Electronic Communications Privacy Act" embodied in United States law beginning at 18 USC 2510.
NOTE: Available at: <http://www.law.cornell.edu/uscode/18/2510.html>.
- [i.13] "The Stored Communications Act" embodied in United States law beginning at 18 USC 2701.
NOTE: Available at: http://www.law.cornell.edu/uscode/18/usc_sup_01_18_10_I_20_121.html.
- [i.14] Directive 89/552/EEC of 3 October 1989 of the European Parliament and of the Council on the coordination of certain provisions laid down by law, regulation or administrative action in Member States concerning the provision of audiovisual media services (Audiovisual Media Services Directive).
- [i.15] EGTA blue print: "Audience measurement: what television advertising sales houses want..." Results of a consultation among EGTA members - April 2007.
NOTE: Available at: <http://www.egta.com/documents/egta%20position%20paper%20on%20audience%20measurement%20-%20Final.pdf>.
- [i.16] "Video on demand and catch-up TV in Europe" (October 2009).
NOTE: Available at: http://www.obs.coe.int/oea_publ/market/vod2009.html.
- [i.17] ARPP: "20.12.2010 - Nouvelle Recommandation déontologique ARPP: Internet V 3.0".
NOTE: Available at: <http://www.arpp-pub.org/nouvelle-recommandation-arpp.html>.
- [i.18] ITU-T Draft Recommendation H.IPTV-AM.0: "IPTV application event handling: Overall aspects of audience measurement for IPTV services".
- [i.19] ITU-T Draft Recommendation H.IPTV-AM.1: "IPTV application event handling: Audience measurement for IPTV distributed content services".
- [i.20] ITU-T Draft Recommendation H.IPTV-AM.2: "IPTV application event handling: Audience measurement for IPTV interactive services".
NOTE: The above three references ([i.18], [i.19],[i.20]) are not published at the date of publication of the present document, they are planned to be adopted and published during 2011. The definitive numbers of these Recommendations are also not yet assigned.
- [i.21] "CNN, most extensive cross-platform audience reach".
NOTE: Available at: <http://www.bizcommunity.com/Article/111/19/40072.html>.
- [i.22] Synovate: "Key facts about EMS and EMS Select".
NOTE: Available at: <http://ems.synovate.nl/PDF/FactsheetEMS2010.pdf>.

[i.23] EMS Select 2009.

NOTE: Available at: http://ads.economist.com/fileadmin/PDFs/Research/EMS_2009updated.pdf.

[i.24] Synovate survey: "Pan-European Media and Marketing Surveys for 2008".

NOTE: Available at: <http://www.synovate.com/news/article/2008/07/synovate-releases-its-pan-european-media-and-marketing-surveys-for-2008.html>.

[i.25] "Le Royaume-Uni, pionnier de l'audience mobile", Journal du Net.

NOTE: Available at: <http://www.journaldunet.com/ebusiness/internet-mobile/mesure-d-audience-internet-mobile/l-exemple-britannique.shtml>.

[i.26] "Internet mobile : vers quelle mesure d'audience ?", Journal du Net.

NOTE: Available at: <http://www.journaldunet.com/ebusiness/internet-mobile/mesure-d-audience-internet-mobile/>.

[i.27] "European Audiovisual Observatory's Yearbook".

NOTE: Available at: http://www.obs.coe.int/oea_publ/yb/

[i.28] "Advertising Expenditure Forecasts", Zenith Media, London.

[i.29] "Advertising Association and European Advertising Tripartite", The European Advertising and Media Yearbook, NTC Publications Ltd, Henley-on-Thames.

[i.30] "Europub. Le marché publicitaire européen", The European Advertising Market, Havas, Paris.

[i.31] "World Advertising Trends", NTC Publications Ltd, Henley-on-Thames.

[i.32] "Young and Rubicam, European Media Cost Comparison", NTC Publications Ltd, Henley-on-Thames.

[i.33] "Communications Act of 1934 amended in 1996" (United States of America).

[i.34] Act No. 57 of 2003: "Act on the Protection of Personal Information" (Japan).

[i.35] "Japanese Constitution", Article 21.

[i.36] "Japanese Telecommunications Business Act", Article 4.

[i.37] ETSI TS 102 796: "Hybrid Broadcast Broadband TV".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

active feedback: any sort of information received from the user explicitly and actively, mainly before or during the usage of the services from the system in order to understand the user's current situation

NOTE: Examples of active feedback include ratings or a questionnaire on how the user's impression towards a specific service.

client: individual that is a member of the group participating in an audience measurement campaign.

connected TV: integration of the internet access into television sets and set-top boxes, as well as the technological convergence between computers and these television devices

NOTE: Examples of connected TV are Hybrid Broadcast Broadband TV [i.37] (associated to cable, satellite or terrestrial TV), Internet or IPTV based TV. HbbTVTM is a specific application of this standard.

digital signage: electronic display showing information (advertising, timetables, weather forecast, other contents) in private and public environments (retail stores, corporate buildings, airports, railways or bus stations, others)

passive feedback: any sort of information observed from the user during the usage of services provided from the system without the users being aware, under the condition that the user has at one time provided permission for the system to obtain personal information

NOTE: Such examples of passive feedback are history of service of what the user has used in the past.

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

Ad	Advertisement
ADM	AD Management service
ADM	Association for Downloadable Measurement

NOTE: Available at: <http://www.markosweb.com/www/downloadablemedia.org/>

ADS	Ad Decision Service
AKA	Authentication and Key Agreement
AM	Amplitude Modulation (Radio)
AM	Audience Measuring
ANSI	American National Standards Institute
ARPP	Autorité de Régulation Professionnelle de la Publicité

NOTE: <http://www.arpp-pub.org/>

AVMS	Audiovisual Media Services Directive
BBC TM	British Broadcasting Corporation
BD	Blu-ray Disc
BDSG	German Federal Data Protection Law " <i>Bundesdatenschutzgesetz</i> "
CCTV	China Central TV
CIP	Campaign Information Package
CoR	Content on Request
CPNI	Customer proprietary network information
DAB(+)	Digital Audio Broadcasting (plus)
DPI	Deep Packet Inspection
DRM(+)	Digital Radio Mondiale (plus)
DSL (xDSL)	Digital Subscriber Line; e.g. x=A (asymmetric), x=V (very high speed)
DVB-H	Digital Video Broadcast Handheld
DVB-T/T2	Digital Video Broadcast Terrestrial / Terrestrial Second Generation
DVB-C/C2	Digital Video Broadcast Cable / Cable Second Generation
DVB-S/S2	Digital Video Broadcast Satellite / Satellite Second Generation
DVR (nDVR)	Digital Video Recorder (network DVR)
EASA	European Advertising Standards Alliance

NOTE: <http://www.easa-alliance.org/>

EGTA	European Group on Television Advertising
EPG	Electronic Programme Guide
ETV	Enhanced Television
EU	European Union
FCC	Federal Communications Commission (USA)
FM	Frequency Modulation
FTTH	Fiber To The Home
GGTAM	Global Guidelines for Television Audience Measurement

GSMA	Global System for Mobile Communications (GSM) Association
HbbTV™	Hybrid Broadcast Broadband TV
HD(TV)	High Definition (Television)
HFC	Hybrid Fiber Coax
HTTP	HyperText Transfer Protocol
IAB	International Advertising Bureau
IAF	Interactive Application Fulfillment Interface
IAM	Interactive Application Messaging Interface
ID	IDentifier
iDTV	Interactive Digital TV; integrated device TV
IP	Internet Protocol
IPTV	Internet Protocol (based) Television
ISP	Internet Service Providers
LLC	Limited Liability Company (USA Law)
MA	Measurement Agency
MBMS	Multimedia Broadcast Multicast Service
MHP	Multimedia Home Platform
MPEG	Moving Picture Experts Group
MRC	Media Rating Council
MSO	Multiple System Operator
NOI	Notice of Inquiry
PC	Personal Computer
PII	Personally Identifiable Information
PPM™	Portable People Meter
PSN	Placement Status Notification
RF	Radio Frequency
RFI	Request For Information
SaFI	Stewardship and Fulfillment Interfaces
SARFT	State Administration of Radio, Film & Television

NOTE: State Administration of Radio, Film & Television (in China, see on the web http://www.chinaproject.de/Medien/State_Administration_of_Radio_TV.htm).

SCTE	Society of Cable Television Engineers
SDO	Standards Development Organization
SD(TV)	Standard Definition (Television)
SMSI	Service Measurement Summary Interface
STB	Set Top Box
TV	TeleVision
US	United States (of America)
UGC	User Generated Contents
VoD	Video on Demand

4 Discussion

4.1 Why Audience Measurement

Commercial audience measurement has changed considerably since its inception in the 1930s, shortly after broadcasting began. New technologies developed for the distribution of news and entertainment and new methods of estimating media audiences developed along with them. These methods relied on advances in data collection, processing technologies, and statistical methods to improve the collection and analysis of audience information.

Today the audience measurement industry faces challenges testing its resiliency. "Choice" of program and time is now promoted as one of the main appeals for viewers and listeners of TV and radio. Advertisers, content producers, network managers and others are interested in who these people are and what programs they chose. Therefore Audience Measurement is of significant importance to content providers and advertisers in as much as they can be an indicator of how well and how often audiences view or indicates interest in their product.

Activity in this area has gone on for many years first using a diary method but, increasingly, more common are electronic and software methods. Data may be collected in monitoring sessions down to the level of listener opinion of individual pieces of music or other items, cross referenced against their age, race, economic status and other personal and social attributes. With any of the methods, special attention should be given to a participant's concerns of privacy and identity isolation of the collected information from a measurement user or others, as well as attaining permission of the participant to collect the data. This is further discussed in the next clause.

4.2 Methods of Audience Measurement

Primary methods of Audience Measurement fall under three general categories although mixtures of them are also used. The categories may be identified as diary, electronic (metered) and software.

4.2.1 Personal diary

The diary method was an early one used by commercial audience measurement firms and relies on individuals keeping and submitting personal records to a collecting agency central location. A diary is a small foldout pamphlet-style journal in which the diary keeper records the radio stations, satellite radio channels, Internet radio stations or TV stations they listen to during each day of the survey period. The diary keeper is supposed to be selected randomly and be representative of the audience area. They record the time of day, the location, and start and stop times of each listening occasion.

This method is relatively cheap. Demographic information and other attributes relating to personality, values, attitudes, interests, or lifestyles (psychographic) may be readily obtained down to a detail desired by the collecting agency. The method is subject to human frailty of mistakes, forgetfulness, and subjectivity of the individual keeping the diary. It is also subject to distorted record-keeping intended to reward a station or a "Personality". Even with these deficiencies many measurement firms believe that the diary method provides the most accurate measurement.

4.2.2 Meters

In more recent times electronic equipment has been developed to track what a consumer watches on TV or is listening to on radio. One example is Arbitron®'s Portable People Meter (PPM™). This meter is a cell-phone-sized device that electronically tracks exposure to radio, broadcast, television, and cable media as consumers wear it throughout the day. An encoder is embedded at the station or network being monitored which emits sub-audible tones that are picked up by a microphone and processed in the meter.

4.2.3 Software

Software generic methods of Internet Audience Measurement include measurement of:

- 1) a sample of users who are metered;
- 2) measurement from analysis of server log files; and
- 3) measurements from a sample of users who are then surveyed.

In the metered method (1) a passive software meter is installed, sometimes electronically downloaded, at a participating Internet user's location which automatically transmits measured data back to a central recording location. It thus can relate activity to specific humans whose demographic characteristics are knowable. And it can measure URL by URL actual usage of websites. Statistical sampling and sample maintenance are necessary to assure users of the data that a sample is representative of the situation being tested.

In method (2), utilizing server log files, each time a file is requested from a website, its server records the request and subsequent actions in a log file thus essentially providing an inventory of activity. The Association for Downloadable Measurement (ADM) is an industry association focused on providing advertising and audience measurement standards. Its members include content producers, media companies, advertising agencies, and audience and advertising effectiveness measurement companies among others. The ADM has established Download Measurement Guidelines which provide a set of specific measurement methods and techniques that are supported by sellers and buyers of portable media. Some of the measurement data expected to be logged by the servers includes request information about the media being downloaded as well as an IP address, Time Stamp, identification of the User Agent making the request such as a web browser, pod catcher or web bot, the media file requested, the amount of bytes transferred to the media consumer and others.

The International Advertising Bureau (IAB) has recently issued a set of Audience Reach Measurement Guidelines [i.3] which provide the detailed definitions for measurement of Audience Reach related to Internet-based content or advertising. The Guidelines are intended to cover on-line browser or browser-equivalent based Internet activity and emerging technology utilizing standard HTTP protocols.

A weakness in these methods is that all activity may not be logged by the server because of caching elsewhere in the network and the inventory is missing unknown amounts of actual traffic. In the opposite direction the inventory may overstate the desired traffic count because of robots or spiders that automatically surf the internet to gather information on various sites, often covertly, and may generate significant log file traffic. A further disadvantage is that demographic information about the user requesting the file is nearly nil or very difficult to attain.

In the 3rd method, a sample of Internet users is obtained and then the respondents are queried through standard survey methods using telephone, mail, Internet, or in-person interviews. A salient advantage of this method is that apposite detailed attitudinal, demographic and life style information may be obtained providing for an understanding of the composition of audiences at various sites.

4.3 Measurement Gordian knot

While "Choice" is now a commanding driver in an individual's program selection, the content producer or advertiser finds their audiences in a wide range of dispositions, locations and contexts, especially with increasing specialized programming for specialized audiences.

To obtain an accurate audience measurement of video or radio has become very complex. The complexity can be appreciated if one considers the many ways available for users to obtain video or radio in real or delayed time, listed below, along with the trend for globalized advertising, taking into account, that available content is distributed by a number of services via different networks and to a wide variety of multi-media terminal devices (non-exhaustive list):

Services (Multi-Media, TV and/or Radio):

- Linear Broadcast, incl. HDTV
- Video-on-Demand (Content-on-demand), incl. HDTV
- IPTV (Linear and VoD), incl. HDTV
- Internet (Web) TV, incl. HDTV e.g. via HTTP adaptive streaming protocol
- Mobile TV (terrestrial and cellular)
- (n)DVR (network based)

Networks:

- Terrestrial Broadcast networks (e.g. DVB-T/T2, DVB-H, DAB+, DRM+, HD-Radio, AM, FM)
- Cable networks (e.g. DVB-C/(C2), HFC, FTTH, xDSL)
- Satellite networks (e.g. DVB-S/S2)
- Mobile, cellular networks (e.g. content via MBMS)

Terminal Devices:

- TV Receiver (SD/HD-TV) incl. iDTV
- Set-Top-Boxes (STB)
- Hybrid Receiver (Broadcast and Broadband); e.g. iDTV, STB
- Blu-ray™-Player, incl. BD-live™ function via Broadband
- DVR (private, user equipment based)
- Gaming Devices (e.g. Xbox™, Nintendo™, PlayStation™)

- Slingbox™
- Radio Receiver (e.g. FM, DAB(+), Web)
- Mobile Phones incl. Smart Phones
- PCs

From this listing it is obvious that an integrated measuring system amalgamating traditional TV, streaming video, in or out of the home and viewing or listening on a variety of platforms is required. An integration of TV and Internet measurement augments the complexity necessitating streaming and cross-platform measurements. In this entangled media environment familiar audience measurement methodologies will prove inadequate. Various organizations are working to develop new and better capabilities but this may take considerable time and many of which will be proprietary solutions.

5 Regulatory Factors

5.1 United States

5.1.1 Consumer Privacy: United States

In the United States, communication, collection, retention and disclosure of audience measuring information may be governed by federal, state, and common law privacy and data retention laws. On a federal level, the Communications Act of 1934 [i.33], amended in 1996, provides a comprehensive consumer protection framework relating to privacy with regards to cable network operators or other providers of a subscription video service.

The Communications Act:

- requires such network operators to provide annual written notice to consumers of the nature of personally identifiable information (PII) collected, including clearly and conspicuously describing how it is used, disclosed to others, and maintained;
- prohibits network operators from collecting PII without prior customer consent, except as necessary to render service and detect service theft, and from disclosing PII without prior customer consent, except as necessary to render services or conduct other legitimate business activities related to rendering service;
- provides detailed requirements governing how subscriber records may be disclosed pursuant to court order;
- requires that subscribers be given access, at reasonable times and convenient locations, to all their own PII that is collected and maintained, and a reasonable opportunity to correct any errors in PII; and
- requires network operators to take "such actions as are necessary" to prevent unauthorized access to PII, including destroying it if it is no longer necessary for the purposes for which it was collected and there are no pending court orders or requests for access to such information.

The United States Federal Trade Commission's "Self-Regulatory Principles for Online Behavioral Advertising", issued in February 2009, raise questions as to whether all information about a consumer, not just PII, should be protected. While these principles do not create a regulatory obligation, they may provide an indication of where regulations may be heading with regard to consumer information.

In addition, in accordance with section 222 of the Communications Act, network providers of voice services, analog, digital, wireline and wireless must protect the confidentiality of customer proprietary network information, ("CPNI"). CPNI consists of information such as the time, date, duration and destination number of each call, the type of network a consumer subscribes to, and any other information that appears on the consumer's telephone bill.

The foregoing assumes that all audience measurement will be done on a voluntary basis with the acquiescence and knowledge of each person in the audience who is providing measurement data. If this is not the case, legal complexity will arise in order to meet U.S. laws such as:

- the Electronic Communications Privacy Act [i.12], which governs the interception of a communication;

NOTE: Law enforcement's interception of communications is permitted under the Electronic Communications Privacy Act [i.12]. What may be collected and what is required for collection from the telecommunications provider is governed under Communications Assistance for Law Enforcement Act [i.11].

- the Stored Communications Act [i.13], which governs the disclosure of private communications stored on a third party's server and the Video Privacy Act, which governs the disclosure of video rental information.

An example of a means of unconscious audience measure, within the context of the Internet, is the use of deep packet inspection (DPI) devices which might lead to conflict with data protection legislation in some countries. DPI is a form of [computer network packet filtering](#). These devices have the ability to look at Layer 2 through Layer 7 of the [OSI model](#). This includes headers and data protocol structures as well as the actual payload of the packet as it passes an inspection point. In addition to using DPI to secure their internal networks, [Internet service providers](#) (ISP) also apply this technology on the public networks provided to customers. Common uses of DPI by ISPs are [lawful intercept](#), which is also required by various governments around the world and their agencies, network [policy definition and enforcement](#), [targeted advertising](#), [quality of service](#), offering tiered services, and [copyright enforcement](#).

Legal issues have arisen in the United States and in the United Kingdom when DPI was used for targeted advertising based on web browsing behaviour; similar legal implications need to be taken also into account in Germany and other countries.

Packet inspection serves a number of pro-consumer purposes. First, it can be used to detect and prevent spam and malware, and protect subscribers against invasions of their home computers. It can identify packets that contain viruses or worms that will trigger denial of service attacks; and it can proactively prevent so-called Trojan horse infections from opening a user's PC to hackers and surreptitiously transmitting identity information to the sender of the virus. Packet inspection can also be used to help prevent phishing attacks from malicious emails that promote fake bank sites and other sites. And it can be used to prevent hackers from using infected customers' PCs as "proxies," a technique used by criminals, in which user PCs are taken over and used as jumping-off points to access the Internet, while the traffic appears to be generated by the subscriber's PC. As a result, the technology can be used in spam filters and firewalls.

Second, packet inspection can be used for network diagnostics and capacity planning. Network operators cannot plan for network growth without understanding how Internet traffic is growing and the uses to which it is put. By using this technology to analyze the aggregate growth and usage changes in network traffic patterns over time, network operators can anticipate the needs of their subscribers and appropriately plan for network growth.

Third, packet inspection can help network operators accurately respond to formal requests from law enforcement agencies for the interception of communications for law enforcement purposes. When law enforcement agencies identify traffic of concern, this technology allows network operators to comply with their legal obligations to flag that traffic. In addition to the United States' federal laws, each individual state may, or may not, have laws which may affect the gathering, storing and distributing of audience measurement data. For example, California, Connecticut, the District of Columbia, Illinois, New Jersey and Wisconsin have their own, unique laws governing subscriber access to correct information or have their names deleted from cable operator data files and limiting disclosure of certain types of information collected by the cable operator. Also, in addition to federal and state laws, traditional privacy tort laws may affect the collection of audience measurement information, particularly if such information is not properly anonymized and/or stored and used in the aggregate. Examples of privacy tort suits that may impact the collection and use of audience information are:

- intrusion upon seclusion - the intentional intrusion upon the solitude or seclusion of another or his/her private affairs;
- public disclosure of embarrassing facts; and
- false light - information published about a person that is false or places the person in a false light and is highly offensive. This could occur if a disclosure is made about a particular audience member which may be inaccurate, such as in the instance of a Twitter imposter.

One concern that many network users have, and have expressed in U.S. Congressional hearings, is that of DPI. Whether Congress will pass any laws affecting the use of DPI was unknown at the time of collecting the information for the present document.

5.1.2 Rating Services Oversight: United States

In the United States a Committee of the U. S. Congress held hearings in the early 1960s on the purpose and accuracy of audience research related to the TV and Radio Industries. After investigations and extensive hearings the Committee determined that Industry self-regulation, with independent auditing of rating services, was preferable to government intervention.

As a result of this, an industry-funded organization to review and accredit audience measurement firms was created which is now known as the Media Rating Council (MRC). The Mission of the MRC, developed with the support of the Congressional Committee, is "to secure for the media industry and related users audience measurement services that are valid, reliable and effective; to evolve and determine minimum disclosure and ethical criteria for media audience measurement services; and to provide and administer an audit system designed to inform users as to whether such audience measurements are conducted in conformance with the criteria and procedures developed. "Membership on the Board of Directors of the MRC is open to any media organization that relies on or uses media research and precludes any firms that provide media ratings such as Nielsen or Arbitron®. The Board includes TV and Radio Broadcasting, Cable, Print, Internet and Advertising Agency organizations as well as Advertisers and Trade Associations.

The MRC carries out three main activities:

- Establishing and administering Minimum Standards for rating operations;
- Accrediting rating services on the basis of information supplied by the services; and
- Auditing the activities of rating services through independent firms.

Even though there is much reliance on the MRC to try to assure that measurement firms are carrying out their responsibilities properly, a Federal regulatory agency may inject itself into the process at times when it deems it is necessary.

An example, occurring in May of 2009, is a "Notice of Inquiry" (NOI) proceeding by the Federal Communications Commission (FCC), which is an independent US government agency directly responsible to Congress, that regulates interstate and international communications by radio, television, wire, satellite and cable.

NOTE: An NOI is not the same as a formal investigation. Parties may express their views on a variety of issues in an NOI, which is different from a closed, adversarial proceeding before an administrative law judge.

The FCC has begun this NOI to examine the use of the Portable People Meter (PPM™) technology of radio audience measurement now being rolled out in radio markets throughout the country. Various groups have contended that Arbitron®'s PPM™ technology has certain methodological flaws that under count particular groups, including minority groups, and thus could have an impact on the financial viability of the stations listened to by such groups. The FCC's NOI in a series of questions asks about those perceived flaws, about the potential impact of any flaws on the use of Arbitron®'s market definitions for purposes of the FCC radio multiple ownership rules, the importance and adequacy of MRC accreditation in ensuring the integrity of the sampling methodology and the resulting audience measurements and on the more general question of whether the FCC even has the jurisdiction to regulate the use of the PPM™. These last two questions are perhaps the most important, and may be the most controversial. The FCC does not regulate Arbitron® now, it does use its information and market definitions in its own analysis, for example its statistics to determine radio license market areas. It will be sometime before the FCC decides how, or if, to proceed further. An adverse view on the reliability of Arbitron®'s data could have a serious financial impact on it.

5.2 Europe and the European Union

In Europe the most consistent and relevant regulation system applicable to the widest number of countries and population is the one adopted in the EU. All (27 in 2009) EU Member States must transpose into their national legislation the EU Directives. Other countries (3 EU candidate countries and 19 other European countries in 2009), depending on their agreements with the EU and their policy, adopt in general very similar rules. This results in a reasonable level of convergence of the regulatory framing conditions overall in Europe even if in some cases different specific implementation measures are applicable in the different countries. The general aspects of European regulation are explained in some more detail in the part 3 of the present series of documents (TR 102 688-3 [i.2]).

There is in Europe at present no particular general regulatory principle applicable to Audience Measurement, which is more often seen as a means of surveillance of the success of certain services or the popularity of some contents than as an area needing to be regulated. This means however that 'horizontal' principles need to be observed; for audience measurements the most relevant of these is the appropriate treatment of personal data and privacy related parameters. These aspects are treated in the Directive 2002/58/EC [i.5] *concerning the processing of personal data and the protection of privacy in the electronic communications sector (the Privacy Directive)*.

Audience measurement is also an important tool for the appropriate network dimensioning and may have relevant impact in the context of interconnection agreements or agreements between network and service providers and content providers. These aspects are largely left to the negotiation among the partners. The Directive 2002/19/EC [i.4] *on access to, and interconnection of, electronic communications networks and associated facilities (the Access Directive)* rules the interconnection regime.

5.2.1 Actors' views on regulation, self-regulating as the basis

The overall ideal image for the most relevant actors in this sector would be not to have major specific regulation on AM, except consumer protection. This is at present the situation, i.e. the activity is only subject to general legislation and in line with this main view, the situation should remain in the context of 'self-regulation'.

The main concern of the European Commission and the regulatory bodies of the member States is the consumer data protection. Otherwise the markets are mostly self-regulated and are believed to remain so.

An example of national authorities treatment of consumer data protection is the German Federal Data Protection Law (*Bundesdatenschutzgesetz, BDSG*), with implications on:

- Storage of personal data e.g. by private companies (essential prerequisite is the consent given by a customer / user to a private company in order to store personal, private data of a customer / user); refer to BDSG clause 28.
- Information given to the customer / user about his/her private stored data; refer to BDSG clause 33.
- Obligation to give information, concerning private stored data on request of the customer / user; refer to BDSG clause 34.
- Right to correct, delete or block private stored data on customer / user request; refer to BDSG clause 35.

With regard to self-regulation, the French ARRP (Autorité de Régulation Professionnelle de la Publicité) published in December 2010 "New deontological ARPP recommendations Internet V 3.0" [i.17]. These new guidelines have been written with regard to European harmonization of advertising self-discipline through the impetus of EASA - European Advertising Standards Alliance (of which ARPP is one of the founder members), taking into account the cross-border dimension of electronic media. This chart [i.17] proposes six rules explained in detail in the document aiming the consumer to feel "comfortable" with electronic media, summarizing they are:

- 1) Identification of the advertisement and of the adviser: every type of advertisement and the advertiser need to be clearly identified.
- 2) Protect children and teenagers: be particularly aware of the sent message and the gathering of their personal data.
- 3) Respect the human's being image: particularly be in line with the ARPP recommendations concerning the image of human being and races, religions, ethnic groups; never support or trivialize moral, physical, direct or suggested violence.
- 4) Loyalty, truth, honesty: make sure that advertising communication does not mislead the consumer nor degrade the consumers' trust in advertising messages.
- 5) User generated content: allow the moderation of user generated advertisement content when their creativity was solicited e.g. on a video platform (this is an innovation on this recommendation).
- 6) Comfortable usage: respect reasonable characteristics particularly for weight, dimensions, sound, time of exposure when advertising with digital media.

These principles are widely aligned with the AVMS Directive [i.14] and take into account new means like UGCTM and video platforms. For a very first time these recommendations [i.17] meet the specificities of digital advertising communication and therefore they have been written like a glossary. The goal is to guaranty the best applicability within the quickly changing digital domain. Today there are several advertisement techniques introduced, among which are advergaming, in-game advertising, behavioral advertising, advertising via SMS/MMS, viral campaigns, teasing, augmented reality, connected TV.

Furthermore, some channels announce AM changes, like the BBCTM who plans to expand AM to all platforms including live, recordings, narrative repeats, BBCTM iPlayerTM and HD for seven days after transmission.

To really convince advertisers that online TV can bring them the audience they want, a standard measure is clearly needed that can relate web viewing to regular TV watching. Although the online ad sector continues to grow at pace, the industry is clamouring for a universally accepted way to measure online TV viewing.

As advertisers care most about the impact of a campaign, the ideal portfolio of metrics would include reach and audience composition, the contribution of the media context and the impact of the advertising in terms of changed attitudes, perceptions and behavior.

The ultimate gold standard will be influenced both by technology and market developments. However, players like GoogleTM or YahooTM might become the ultimate measuring tool as their powerful search machines might evolve to a sort of enhanced EPG (Electronic Programme Guide), offering the users and professionals AM information. This may need to be investigated to derive a realistic set of requirements for AM systems.

5.3 Japan

In Japan, personal information including audience measuring information is governed under the "Act on the Protection of Personal Information [i.34]", which was issued in May 2003. The act is applied to private/government operators who maintain personal information of 5 000 or more, and requires the operators to notify the personal of the information on how and where the information will be used. If operators do not report or follow appropriate measures issued from the competent minister in case of violation, criminal charges will be put against the operators.

The act requires operators to satisfy conditions which are necessary when obtaining or utilizing of personal information:

- 1) The operator must make clear of the usage of the information and must not exceed the boundaries of usage once the information has been obtained. The operator must discard any gathered personal information once the purpose for collecting the information has been accomplished.
- 2) The information must be obtained under legitimate procedures.

- 3) The obtainer must make clear on detail of the manager of the information. Such information include the name of the manager or organization responsible, the usage of the information, the procedures for disclosure, correction and discontinuation of the information, and contact information in case of questions or complaints.

The "Act on the Protection of Personal Information" [i.34] consists of 59 articles which defines general rules on the acquisition and management of personal information. Issues on personal information which are segment-specific (ex. Telecommunication, Broadcast, Cable Television Broadcast) are defined in separate guidelines issued from competent minister of each segment.

Personal information is defined in this act as being "information about a living individual which can identify the specific individual by name, date of birth or other description contained in such information (including such information as will allow easy reference to other information and will thereby enable the identification of the specific individual)". A list of typical information which are stated to be personal information (included in the guideline issued from the minister) are as follows:

- Name
- Address
- Date of birth
- Credit card number or bank account number

It is to be advised that not only single information which provides ease of identification by itself is considered personal information, but also information which cannot be used for identification by itself but can be used for identification when combined with other information. Also, it should be noted some information found in specific segments should not be obtained even if the user permission is present, such as medical or criminal records of an individual.

In order to maintain a sufficient security level, personal information should be managed under specific procedures, such as leaving a record on who and when the information has been accessed (ex. Direct access records such as room entrance records or remote access records such as network access to the database which stores the information). The information is advised to be kept in a secure state to prevent unauthorized disclosure, such as applying sufficient level of encryption or using a firewall.

Other laws which secure personal information include Article 21 of the Japanese Constitution [i.35] or Article 4 of the Telecommunications Business Act [i.36] protect the content of all communications, which should not be violated except for cases where warrant has been issued from the court.

5.4 China

Several years ago, the issues of personal information abusing became a very critical social problem. For example, after attended a public activity or registered for opening a new service, one might receive many advertisement SMS, spam mail or undesirable advertisement calling & investigation from an unauthorized 3rd party company, even maybe a telephone fraud. Those consequences are caused by unauthorized personal information abusing or divulging. But in the law, there was no particular clause to protect personal information from abusing and criminal activities. Therefore the punishment is not strong enough.

To resolve those problems, since 2003, many Chinese experts from various fields have been working on the draft of "personal information protection law". Recently this draft law has been submitted into the China State Council for consent. This draft defines the responsibility of a cooperation or organization that owns the personal information. Except for the criminal, tax and media investigation information, the law forbids any organization to divulge any personal information to a 3rd party user without the information owner's permission. Before this draft is completed, there is suggestion of modifying the "Criminal Law". The modification intends to define that any activity of divulging a citizen's personal information by government and public department SHOULD be determined to be illegal issues, including divulging, stealing and purchasing a citizen's personal information. If the personal information protection is covered by a clause in "Criminal Law", a "personal information protection law" will be issued in a short time, as an official version.

But considering the Chinese traditional and national situation, personal information, or personal privacy protection does not have a very clear definition boundary between different law clauses. For example, it might cause the conflict between children's privacy and parent's guardianship definition in law. Therefore the laws of European, Japan, or U.S. are not exactly suitable for Chinese issues. But we can see that the definition of personal information or privacy is continually being developed as time goes on.

6 Case Studies

6.1 United States Advanced Advertising and Audience Measurement

6.1.1 Television Ratings

Television audience measurement is currently predicated on sampling methodologies. These methodologies are often criticized, but a certain amount of inertia has led many customers to continue to subscribe, simply because they are the best available information. Conventional wisdom states that the methodologies may be flawed, but the results are directionally correct and data on most programs is considered comparable. Some criticisms still remain that some audiences are chronically under-measured, such as ethnic minority or low-income households.

Cable television distribution networks connect many television viewers to programming through either set-top boxes or directly through the television. This creates an environment where theoretically viewership could be directly measured. Two factors have worked against such measurement. U.S. law prohibits cable companies from collecting or using such measurement data without the expressed permission of the subscriber. Secondly, cable networks have historically been operated in one-way, broadcast modes. For the first factor, see the regulatory discussion above. For the second, cable networks have evolved.

Recent evolution has led cable plant to actually operate more and more in an interactive, two-way mode. Cable converter boxes are now increasingly digital. Further, a CableLabs specification called OpenCable™ (now tru2way) made it possible for digital televisions to connect directly to cable networks by emulating the functions of the set-top. More important, a software layer called the OpenCable™ Application Layer has created a common software layer that enables potential industry partners to reach a national footprint of cable customers with services and applications that can run in a standard way in all consumer devices.

6.1.2 Advertising usage measurement

The evolving, standards-based two-way cable network also presents potential for a more effective advertising business in the television world. It is well known that Internet advertising has grown tremendously in the last ten years, as an interactive and measureable platform. Internet content, however, still lags considerably in quantity and quality behind what is available on digital television platforms.

U.S. cable companies recently formed a joint venture called Canoe Ventures LLC.

NOTE: More information on this subject could be found by the date of publication of the present document on the address <http://www.canoe-ventures.com>.

The premise of the company is to develop new technology based ad products. They fall into three general categories:

- Interactive Ads -
Ads appearing in linear program streams can have embedded interactive triggers that, at the consumers selection, can offer voting or polling options (which can carry sponsorship), requests for information (which capture consumers request for information on the advertised product) or can trigger a change of channel into an on-demand environment where movies or other programs can be purchased and viewed.
- Viewer Selected Ads -
Ads may be reached through interactive triggers which bring the customer to long-form advertisements, or multiple companies can agree to carry the same long-form ad in their VoD environment and thus allow national promotional campaigns.

- **Addressable Ads -**
Demographic data about consumers (often derived from third-party data bases) can be matched to information connected to a particular ad that makes it of interest to that demographic. Addressability can not only be applied to linear, 30-second ads but also can be used in conjunction with interactivity or with video on demand environments. The combination of interactive applications functionality, achieved through a CableLabs standard called Enhanced Television or ETV, plus the two-way network and broadband communications plant, allow for ads that can be more effective at reaching audiences with ads of interest, and do so in a way that allows for customer viewership and interaction with all the different ad products to be measured directly, in a timely fashion, and in a standard format that all.

6.1.3 Audience Measurement Approaches

A number of specifications have been developed in the US to enable dynamic, addressable, and interactive advertising products, as summarized in clause 6.1.2, that interoperate among and across U.S. cable systems. Measurement facilities have been designed into the collection of specifications that will apply not only to measurement of advertising products but measurement of all types of television viewing as well as usage of interactive applications delivered as part of television programming.

Audience Measurement Through Stewardship and Fulfillment Interfaces: CableLabs has recently issued a family of specifications collectively labeled the 'Stewardship and Fulfillment Interfaces', AKA SaFI. This set of specifications includes:

- **CIP (Campaign Information Package)** [i.7]: A standardized web service interface to transmit campaign execution instructions to MSO systems. This includes information such as delivery instructions for content assets and identifiers for resolving measurement and application fulfillment messages.
- **IAF (Interactive Application Fulfillment Interface)** [i.8]: A standardized web service interface to export application responses from an MSO system. An example response is a viewers 'vote' or Request for Information (RFI).
- **IAM (Interactive Application Messaging Interface)** [i.9]: Provides a critical interface between interoperable applications (apps distributed to more than one MSO) and MSO systems, defining the common form of messages instantiated by interoperable apps. This provides a means for MSO systems to recognize messages and properly process them.
- **SMSI (Service Measurement Summary Interface)** [i.10]: A standardized web service interface to provide summary results of campaign execution. Example data include the number of STBs that viewed an application, the average start time and average dwell time of a particular overlay, and the number of STBs that dismissed the application.

The IAM, IAF, and SMSI interfaces provide a comprehensive measurement platform for affiliates providing applications and services to cable operators. This platform was defined for the near term needs of measurement across all advertising types (interactive, addressable, on-demand) as well as providing measurement capabilities more generally for television viewing, usage of interactive applications within television programming streams (enhanced television) and usage or purchasing of on-demand entertainment

Audience Measurement Application in SCTE 130 for Addressability: The SCTE (Society of Cable Television Engineers - an ANSI SDO) 130 family of specifications defines interfaces between logical components of a dynamic, addressable, ad placement system. The core interface defines message exchange between an Ad Decision Service (ADS) and an Ad Management Service (ADM). This interface includes the Placement Status Notification (PSN) element. PSNs allow an implementation to measure in real time all content play out and placement operations.

The CableLabs Service Measurement Summary Interface is designed to support SCTE 130 implementations, and provides a mechanism to summarize and export PSN information from an MSO system to an affiliate.

Audience Measurement for Interactive Application - CableLabs has defined the <tru2way>TM and ETV interactive platforms, for use on advanced and so-called legacy receivers, respectively. The OpenCableTM receiver metrics specification defines a set of data points that may be logged and collected from <tru2way>TM and ETV receivers. In addition, the IAM specification [i.9] described above provides a way to perform application level measurement.

Audience Measurement in Cross-Platform Context - US Cable operators and content providers are exploring ways to provide television programming outside of the traditional delivery mechanism. Examples include the 'TV Everywhere' model recently announced by Comcast, with Time Warner as a partner. In this model, cable subscribers may be able to access the same programming available through their cable provider via the open Internet. A number of principles have been announced for this new model, including the following:

- *"A new process should be created to measure ratings for online viewing. The goal should be to extend the current viewer measurement system to include advertiser ratings for TV content viewed on all platforms."*

The exact process is not openly defined at this point, but this clearly points to a promising new direction for comprehensive measurement. The Stewardship and Fulfillment Interfaces and SCTE 130, discussed above, are precisely defined so as to be agnostic to delivery platforms, be they RF, MPEG or IP. They allow standard reports to be returned to advertisers who are paying for the ad products.

6.2 Europe and the European Union

In Europe, as explained in clause 5.2, areas related to the free circulation of goods, like telecom equipment, or to the offer of services, have harmonized principles and a common policy. There is in fact a large market benefiting from the converging legislation developed by the European institutions. Nevertheless the detailed regulatory implementation measures are often established at national level and may, in some cases, impair a real single market.

In the area of media policy, apart general basic frame conditions established in the AVMS Directive [i.14] and explained in TR 102 688-3 [i.2], the recognition of the need to respect *the independence of cultural developments in the Member States and the preservation of cultural diversity in the Community* is a central principle. This fact associated to the historical broadcast market structure, often with a single or a major broadcaster in charge of the contents production and distribution, determined a national specific sector for audience measurement sector. Therefore it has been extremely difficult in the present document to collect information from so many sources, not all interested to support a single European specification of requirements and contribute for a common and more competitive market.

At present the rash development of Internet and IP based systems are opening opportunities for new content distribution business models. This has the effect of moving the financing flow associated to publicity from the traditional sectors to new areas of services based in new technologies. Obviously these financing sources need the best possible information on the audience quantitative and qualitative characterization. The best examples may be found in video on demand offers, Internet based TV or in TS 102 796 [i.37] (where HbbTV™, is a specific application), where the bi-directionality of IP facilitates a market treatment allowing the characterization of very specific well identified sectors.

The other consequence of the usage of IP systems is that there is nearly no possibility to control the development or the deployment of such systems and policy makers are essentially supporting this evolution (obviously excepting illegal purposes). This means that, with more or less delay, there will be new technical solutions for AM systems crossing borders independently from any possible impairment.

TV audience measurement dominates at national levels and is evolving towards cross media measurements and crossborder activities. It is therefore important, particularly for the AM experts with experience in the sector, to collect the best possible set of characteristics of the European market and derive global requirements for new systems using the characteristics of emerging solutions and covering European needs.

6.2.1 General overview

AM measures how many people are consuming a specific contents (radio, television, normally related to linear broadcast but also for on demand services newspapers and magazines and recently increasingly for web contents). Some mobile measurement initiatives are under way. AM may help broadcasters and advertisers not only to quantify (how many) but also to qualify the type of clients. This qualitative and quantitative type of survey may be called audience research.

Measurements may be organized by markets, which often correspond to metropolitan areas, large or small. There is no unique AM European institution covering all countries. Audience surveys in different countries are generally not comparable. National data is available from different national organizations listed on the European Audiovisual Observatory website, where links are offered to each one of them.

NOTE 1: The main web site of the Audiovisual Observatory is <http://www.obs.coe.int/> and offers the list of Sites of the TV Audience Measurement Companies is on <http://www.obs.coe.int/db/gavis/00002194.html>.

The fact that national TV data and measurements cannot be directly and accurately compared at an international level is a major impairment for a consistent market analysis in Europe. In a later version of the present document, it would be helpful to collect more detailed technical data from each organization in order to better understand where an international level standardization might be possible and how these players with clearly defined national interests could be involved and interested in a standardization process.

TV audience is still increasing worldwide and (in general) per country. TV - AM is an essential tool to quantify this growth. Even if TV is (and will remain) the most efficient form of communication with mass markets, brand communication is no longer restricted to traditional advertising media. Today everything is supposed to be used as a support to communicate and even the store itself is considered as a medium to relay a message.

Advertisers pay for advertising and for market research, they want media research and AM to be tailored to their needs. EGTA, the European (not for profit) association of television and radio (advertising) sales houses, collected their needs and put the results of the consultation in a short document identified as 'EGTA blue print' [i.15] and entitled "Audience measurement: what television advertising sales houses want ...".

NOTE 2: EGTA is the European Group on Television Advertising and their web page is <http://www.egta.com/>.

EGTA considers following list extracted from the above mentioned document [i.15] as the advertiser basic wishes:

- A consumer centered rather than a medium approach
- Unified rather than a segmented information
- A holistic rather than a silo-based approach (a system that takes on board the synergies between media)
- A measurement of "engagement - relevance - emotions" rather than simple exposure and "opportunities to see"
- A system that encompasses psychographic elements rather than demographically-defined eyeballs only
- A system that explains the "who-what-how-when-where" of media consumption rather than the present "who-what"
- A system based on large sample size, speed and flexibility
- A "single source" set of data that both accommodates multi-media measurement and relates media consumption to purchasing behaviours
- Data that allows for predictive modelling

This list has been completed with arguments that the television advertising sales houses want to push. They also addressed six basic messages to the advertising industry among which the question of the cost coverage taking into account such needs. It would be challenging to analyse to what extent these recommendations have been transformed in particular actions/measurements and what still does need to be done.

Other challenges and opportunities of iDTV for audience measurement systems is a set-top box-based approach. The European Audiovisual Observatory has published a (paying) report [i.16] entitled 'Video on demand and catch-up TV in Europe', where the part 7 covers audience measurement in the context of on-demand audiovisual services.

NOTE 3: The table of contents of the part 7 of this document [i.16] can be found on the web page http://www.obs.coe.int/oea_publ/market/vod2009_details.html#part7.

The already mentioned Audience Reach Measurement Guidelines [i.3] of IAB believes that all companies involved in AM should be audited for their processes. These audits are intended to establish the source of any measurement discrepancies and to find potential solutions. The goal of the IAB and its members is to achieve transparency in audience counts and to revise out-of-date methodologies. Their recommendations are related to Internet-based content or advertising, including appropriate controls, filtration procedures and disclosures associated with this measurement. They are intended to cover on-line browser or browser-equivalent based Internet activity. Six main recommendations extracted from these guidelines [i.3] are:

- Client-Initiated Counting is crucial. These guidelines rely on the central concept that counting should occur on the client side, not the server side, and that counting should occur as close as possible to the final delivery of an advertisement to the client.

- Filtration procedures are necessary to ensure that non-human activities (for example, known or suspected robot/spider originating transactions) are excluded from measurement counts.
- Caching must be appropriately accounted to ensure that content not actually delivered to a client is excluded from counts.
- The contribution of internal traffic to a web site should be excluded from counts, if material, and disclosed to data users.
- Transparency to data users is a paramount goal of these guidelines. Appropriate disclosures must be made to users concerning the measurement methodologies employed. Appropriate Disclosures also include the proper labelling of measurement metrics as defined in this guideline [i.3].
- Accountability (record keeping and transaction legitimacy) should remain the purview of the measuring/selling organization and not be delegated exclusively to transaction partners which help facilitate completion of measured transactions. Selling organizations should keep necessary records and evaluate transaction partners for legitimacy, to the extent reasonable.

6.2.2 Alternative counts, multi-platform broadcasters needs

In the present situation there is still a difference between organizations gathering and analyzing primarily radio and TV audience information and those collecting and working out Internet data but from the ongoing development it is to assume that collaboration from the sectors is needed to face the increasing complexity and wider scope of the field under study. These studies are expected to increasingly integrate printed press information as well.

NOTE 1: Taking Switzerland as an example, Publica Data AG (<http://www.publicadata.ch/>) is working with Mediapulse™ (<http://www.mediapulse.ch/>) rather in the broadcasting domain and Net-Metrix (<http://www.net-metrix.ch/>), a collaboration between Mediapulse™ and WEMF/ REMP, rather acting in printing research, <http://www.wemf.ch/d/medienstudien.php> is focused on Internet. Other examples can be obtained from the Audiovisual Observatory page: <http://www.obs.coe.int/db/gavis/00002194.html> for other countries.

Multi-platform broadcasters need a metric that gives a single view of what people are watching across all platforms, but also identifying the contribution of each platform.

SkyView™, e.g. has a voluntary panel of 33 000 homes giving detailed information on the viewing habits of Sky subscribers. While SkyView™ can give a deep understanding of Sky's own products and services, it does not provide a comprehensive view across all platforms, so they also need an industry standard measurement to give a full picture.

Aside from data fusion, hybrid measurement is another possible model. Panel research would provide estimates of online audience reach and demographic profiles, while server or set-top box data would supply details on actual online behavior.

Broadcasters seem also forging their own initiatives to evolve audience relationships via registration. A by-product of a registered panel is accurate audience profile information about the most engaged part of the online audience.

According to Synovate's European Media and Marketing Survey, e.g. CNN™ has the most extensive cross-platform reach among other international commercial television news networks. In the same press article it said that the survey measured daily, weekly and monthly audience reach among the main income earners in the top 20 % of Europe's households by income from January to December 2008. CNN™ was dominant for weekly and monthly reach in EMS Select 20, representing the top 3 % of high income earners, frequent flyers and top managers. Each month, CNN™ International reaches 44,1 % of Select universe, 18 % more than closest TV competitor BBC™ World (37,4 %). It registers the highest levels of cross-platform reach (48,4 %) of its comparative set and higher than nearest commercial competitors Euronews (+27 %) and CNBC (+107 %). In EMS 20, on a monthly basis, approximately 20 % of CNN™'s total audience engage with the brand both on television and online, making it the highest platform cross-over of audiences amongst all international commercial news networks.

NOTE 2: The source of above information was the press article [i.21] (January 2011): <http://www.bizcommunity.com/Article/111/19/40072.html>

NOTE 3: Synovate 's European Media and Marketing Surveys (<http://ems.synovate.nl/>) can be found on web pages like:
<http://ems.synovate.nl/PDF/FactsheetEMS2010.pdf> [i.22]
http://ads.economist.com/fileadmin/PDFs/Research/EMS_2009updated.pdf [i.23]
<http://www.synovate.com/news/article/2008/07/synovate-releases-its-pan-european-media-and-marketing-surveys-for-2008.html> [i.24]

The EMS Digital Life survey, which reports the time spent on viewing by media type, indicates that TV and Internet are complementary media, used at different times of the day. CNNTM brand users over-index on their consumption of TV and online media with one third on average watching television or using the Internet at any given time of the day.

In comparison, to general EMS respondents, CNNTM.com users are more likely to be found online (excluding email and chat) - at any time of the day, namely because viewers of CNNTM also want to showcase their own diverse view on CNNTM's programming and CNNTM gives them the opportunity to play a role in the discussion, across TV, online and mobile.

6.2.3 Mobile TV measurement is one of the stakes in 2011

The UK is pioneer in terms of mobile Internet AM. Comscore set up the measurement system for the four mobile operators O2, Orange, T-Mobile, Vodafone and 3, representing 90 % of the mobile market in the United-Kingdom and the GSM Association (GSMA). First results were published in February 2010 for the audience in December 2009. Three years were needed to set-up this service.

NOTE 1: This information was extracted in January 2011 from the article '*Le Royaume-Uni, pionnier de l'audience mobile*', Journal du Net [i.25], found on: <http://www.journaldunet.com/ebusiness/internet-mobile/mesure-d-audience-internet-mobile/l-exemple-britannique.shtml>; further details with interesting figures are available on this site

The methodology is based on gathering the connection logs of mobile users to the operators, enriched with demographic data coming from the panel (the set-up process was in 2010). It is not possible to transfer just panel measurements from the fixe Internet to mobile devices as it is impossible to place measurement systems on each mobile phone.

First results of the above survey show that FacebookTM is the most visited mobile site in the UK in December 2009 before all others, followed by GoogleTM and then the portals of the mobile operators. It seems that the more the mobile phones are open systems the more the mobile users are getting emancipated from their operators and research motors. That point needs certainly to be considered in terms of audience measurement developments.

In France, the TV - AM company Médiametrie is developing a similar approach as in the UK with French Mobile operators. To finance such an AM system, the three dominant French mobile operators Bouygues, SFR and Orange were expected to invest each 1 million €, 3 millions € in total. Médiametrie won a call for tender in the mid 2009 against the German GfK and the English Comscore.

NOTE 2: This information was extracted from [i.26]:
<http://www.journaldunet.com/ebusiness/internet-mobile/mesure-d-audience-internet-mobile/en-savoir-plus.shtml>
<http://www.journaldunet.com/ebusiness/internet-mobile/mesure-d-audience-internet-mobile/mesure-et-indicateurs.shtml>

In Germany the regulator is looking closely to consumer protection matters, especially to confidentiality and personal data. Nielsen won in mid-2009 the call for tender launched by the German mobile operators and is still working on the definition of its offers. The objective is to push the mobile advertising market (m-publicity or m-advertising). First impacts are expected on the 2nd quarter 2011

NOTE 3: This information was extracted from [i.26]:
<http://www.journaldunet.com/ebusiness/internet-mobile/mesure-d-audience-internet-mobile/projets-internationaux.shtml>
<http://www.journaldunet.com/ebusiness/internet-mobile/mesure-d-audience-internet-mobile/objectif-pub.shtml>

At this stage there is no information about other calls for tender in other European countries than in the pre-cited UK, France and Germany. Experts think nevertheless that other countries should follow quite quickly these examples (like Italy, Spain, Denmark and the Netherlands). In the US there is apparently no AM system for mobile usage but players seem to be interested in it even if it seems difficult to achieve consensus among all mobile operators.

A problem to be considered for the mobile AM is the Wi-Fi access. If the consumer is Wi-Fi connected he is normally out of any control of the mobile operator, he uses a fixe access of an Internet provider and no longer his mobile login. According to Comscore, approximately 20 % of overall mobile Internet connexions are done via Wi-Fi and up to 50 % for iPhones. This aspect is expected to be integrated in the mobile AM systems during 2011.

NOTE 4: This information was extracted from [i.26]:

<http://www.journaldunet.com/ebusiness/internet-mobile/mesure-d-audience-internet-mobile/impact-du-wi-fi.shtml>

6.2.4 Research Institutes are developing combined AM systems

As there is no satisfying combined Cross Media Audience Measurement system, advertiser representatives are looking at solutions to their needs and researchers (academic or not) are aware of the interest for the concerned stakeholders.

Fraunhofer Institute IGD Research Institute in Germany (<http://www.igd.fraunhofer.de/>), a major player in applied visual computing, e.g. has a research group on "Networked Media research and innovation" investigating AM issues related to personalized, adaptive media presentation systems, 3D media as well as vision based media applications for digital signage displays and other screens.

The idea of their upcoming innovations is to provide an open platform that allows advertisers to directly distribute interactive, user context related and personalised advertisements that are semantically linked to content of a broadcast service provider. It will target the coherent distribution of advertisements on heterogeneous networked media platforms. This would include Connected TV platforms such as those specified in TS 102 796 [i.37] (where HbbTVTM, is a specific application), MeegoTM, GoogleTVTM or other IP based TV platforms, mobile and Internet based TV services as well as digital out of home media services. The main focus of such a platform will lie on the personalisation of the advertisement content. This will be based on a semantic enabled content annotation and retrieval approach especially targeted to interactive advertisement content taking into account user profiling and contextual user sensing. It will further be capable to adapt the advertisement content to the requirements given by the underlying distribution channel as well as by the targeted end-user platform.

The platform will provide advertisers the necessary means to directly address customers while adapting the message of the advertisements to individual needs while ensuring that they address exactly the right customer in the right context. It will further give them the possibility to collect relevant AM based feedback profiling and quantifying customers groups in order to adapt their campaign and to better address the right audience. This kind of platform addresses different types of screens (TV, Mobile, PC, Out-of-Home).

It is known that research institutes are contacting academic laboratories and other partners in order to develop a satisfying AM system for the advertising industry. It might be wise to do some market research and identify the relevant players needs and the standardization environment might be the ideal environment to support such project collaboration.

6.2.5 Other sources to be considered in AM standardization process

Other sources of information that should be considered (copied from the European Audiovisual Observatory [i.27], last up-date 2007) are in the following clauses. It is recommended to invite at least a part of these organizations and sources and consider as far as possible their inputs before the next version of the present document will be published.

6.2.5.1 International Professional Organisations

Organization	Remarks	Communications' addresses
International Advertising Association (IAA)	The IAA represents tripartite interests (agencies, advertisers, media) at international level.	http://www.iaaglobal.org
International Chamber of Commerce (ICC)	The International Chamber of Commerce represents companies at international level. Its activities include the drawing up of codes of conduct as regards commercial communication and advertising.	http://www.iccwbo.org/
World Federation of Advertisers (WFA)	The WFA represents at a global level the interests of advertisers in businesses connected with marketing and communication.	http://www.wfanet.org/
World Advertising Research Center (WARC)		http://www.warc.com/

6.2.5.2 European Professional Organisations

Organization	Remarks	Communications' addresses
Advertising Information Group (AIG)	The AIG is an umbrella group for a number of national tripartite bodies, namely: the Advertising Association (AA - GB), the Austrian Fachverband Werbung und Marktkommunikation (AFWM - AT), the Dutch Stichting Stuurgroep Reclame (DSSR - NL), the Hungarian Advertising Association (HAA - HU), and the Zentralverband der Deutschen Werbewirtschaft (ZAW-DE).	http://www.aig.org/
Association of Commercial Television in Europe (ACT)	The ACT represents a certain number of European commercial television companies, particularly those financed by advertising. The ACT is a member of the Advisory Committee of the European Audiovisual Observatory.	http://www.acte.be
Association of Television and Radio Saleshouses (EGTA)	The EGTA (European Group of Television Advertising) is a trade association based in Brussels. It gathers 40 sales houses and/or commercial departments which, on behalf of some 100 television channels (private and public) spread across 26 European countries (+ Korea), collect more than 16 billion Euros, thus representing more than 60 % of all TV advertising investment in Europe. Through the years, the EGTA has clearly become the reference centre for advertising in Europe.	http://www.egta.com
European Advertising Standards Alliance (EASA) - Alliance européenne pour l'éthique en publicité	The EASA gathers together national bodies for advertising ethics.	http://www.easa-alliance.org/
European Association of Communication agencies (EACA)	EACA represents the associations of communication agencies.	http://www.eaca.be/
European Federation of Magazine Publishers (FAEP)		http://www.faep.org
European Newspaper Publisher' Association (ENPA)		http://www.enpa.be
Federation of European Direct Marketing (FEDMA)		http://www.fedma.org
Federation of European Direct Marketing (FEDMA)		http://www.fedma.org

6.2.5.3 National Professional Organisations

	Organization	Post address	Communications' addresses
AT	Fachverband Werbung und Marktkommunikation	Wiedner Hauptstraße 73, 2. Stock A-1040 WIEN	Tel.: +43 (0)5 90 900-3541 Fax: +43 (0)5 90 900-285 werbung@wko.at http://www.fachverbandwerbung.at/
BE	Belgian Association of Advertising Agencies (B3A)	3 Rue Saint Quentin B-1000 BRUSSELS	Tel.: +32 2 231 07 10 Fax: +32 2 231 01 04
BG	Association of Advertising Agencies - Bulgaria	13 'Veliko Tarnovo' Street. BG-1504 SOFIA	Tel.: +359 2 43 28 13 Fax: +359 2 43 28 13
CH	Bund Schweizerwerbeagenturen BSW / USC	bsw leading swiss agencies Konradstrasse 61 8005 Zürich	Tel.: +41 (0)43 444 48 10 Fax: +41 (0)43 444 48 11 info@bsw.ch http://www.bsw.ch/
CY	Cyprus Association of Advertising Agencies (CAAA)	CCCI Building P.O. Box 1455 Griva Digni N° 38 NICOSIA	Tel.: +357 2 66 95 00 Fax: +357 2 66 10 44 http://www.ccci.org.cy
CZ	Association of Czech Advertising Agencies and Marketing Communication (ACRA M.K.)	Holušická 3, CZ-148 01 PRAHA 4	Tel.: +420 272 661 061 acra@acra-mk.cz http://www.acra-mk.cz
DE	Gesamtverband Werbeagenturen (GWA)	Friedenstrasse 11 D-60311 FRANKFURT/MAIN	Tel.: +49 69 256 00 80 Fax: +49 69 23 68 83 http://www.gwa.de
DE	Zentralverband der deutschen Werbwirtschaft (ZAW)		http://www.interverband.com/zaw/
DK	Danske Reklamebureauers Brancheforening (DRB)	20 Badstuestraede, P.O. Box 74 DK-1003 COPENHAGEN K	Tel.: +45 33 13 44 44 Fax: +45 33 11 63 03 http://www.drb.dk
ES	Asociación Española Agencias Publicidad (AEAP)	Sagasta 26 E-28004 MADRID	Tel.: +34 91 447 75 77 Fax: +34 91 447 78 81 http://www.aeap.es
FI	Mainostoimistojen liitto r.y. (MTL)	Vuorikatu 22 A 3 SF-00100 HELSINKI	Tel.: +358 9 625 300 Fax: +358 9 625 305 http://www.mtl.fi
FR	Association des Agences-Conseils en Communication (AACC)	40 Blvd Malesherbes B.P. 66-08 F-75362 PARIS CEDEX 08	Tel.: +33 (0)1 47 42 13 42 Fax: +33 (0)1 42 66 59 90 http://www.aacc.fr
FR	Syndicat National de la Publicité Télévisée (SNPTV)	1 Quai du Point du Jour 92656 Boulogne Cedex	Tél : +33 (0)1 41 41 43 21 Fax : +33 (0)1 41 41 43 30 http://www.snptv.org/ Email: pubtv@snptv.org
GB	Advertising Association		http://www.adassoc.org.uk/index.html
GB	Institute of Practitioners in Advertising (IPA)	44 Belgrave Square GB-LONDON SW1X 8QS	Tel.: +44 171 235 70 20 Fax: +44 171 245 99 04 http://www.ipa.co.uk
GR	Hellenic Advertising Agencies Association (HAAA)	Yperidou 7 GR-105 58 ATHENS (Plaka)	Tel.: +30 1 3246 215/ 6/ 7/ 8 Fax: +30 1 3246 880 http://www.edee.gr
HU	Association of Advertising Agencies in Hungary (MaRS)	Andrássy út 101 Magyar Sajtó Háza H-1068 BUDAPEST	Tel.: +36 1 342 49 29 Fax: +36 1 322 10 24
IE	Institute of Advertising Practitioners in Ireland (IAPI)	8 Upper Fitzwilliam Street IRL-DUBLIN 2	Tel.: +353 1 676 59 91 Fax: +353 1 661 45 89 http://www.iapi.ie
IS	Samband Íslenskra Auglýsingastofa (SÍA)	Háteigsvegi 3 IS-105 REYKJAVIK	Tel.: +354 562 95 88 Fax: +354 562 95 85 E-mail: sia@sia.is http://www.sia.is
IT	Associazione delle Imprese di Comunicazione (AssoComunicazione)	Via Larga 23 I-20122 MILAN	Tel.: +39 02 58 30 71 69 / 74 50 / 71 94 Fax: +39 02 58 30 71 47 http://www.assap.it
NL	Dutch Stichting Stuurgroep Reclame (DSSR - NL)		http://www.aig.org/srch.html

	Organization	Post address	Communications' addresses
NL	VEA/Dutch Association of Communication Agencies	A.J. Ernststraat 169 NL-1083 GT AMSTERDAM	Tel.: +31 20 642 56 42 Fax: +31 20 646 47 37 http://www.vea.nl
NO	Norwegian Association of Advertising Agencies (NAAA)	Hegdehaugsveien 24 P.B 2373 Solli N-0201 OSLO	Tel.: +47 23 19 60 40 Fax: +47 23 19 60 49 http://www.rbf.no
PL	Polish Advertising Agencies Association	J Walter Thompson - Parintex Sp.Z. O.O. Ul. Zurawia 45 PL-00-680 WARSZAWA	Tel. +48 22 625 7888 Fax +48 22 621 4322
PT	Associação Portuguesa das Empresas de Publicidade e Comunicação (APAP)	Rua Rodrigo da Fonseca 204, 4º Dtº P-1000 LISBOA	Tel.: +351 1 385 46 72 Fax: +351 1 385 65 18
RO	Romanian Association of Advertising Agencies	Calea Plevnei Nr. 53 Etaj 6, Sector 1 Bucarest/Romania	Tel. +40 1 312 6868 - Fax +40 1 312 1497
RU	Russian Advertising Association	20 Usievicha str. Korp 1 RU-125190 MOSCOW	Tel.: +7 095 969 2021 Fax: +7 095 969 2022
SE	Sveriges Reklamförbundet (SRF)	Norrlandsgatan 24 P.O. Box 1420 S-111 84 STOCKHOLM	Tel.: +46 8 679 08 00 Fax: +46 8 679 08 01 http://www.reklam.se
SK	Klub reklamnych agentúr Slovenska (KRAS)	Advertising Agencies Club of Slovakia Staré Záhady 1 SK-821 05 BRATISLAVA	Tel.: +421 7 43 42 50 40 Fax: +421 7 43 42 50 40 http://www.kras.sk
SI	Slovene Association of Advertising Agencies	Ob zeleni jami 3 Ljubljana Slovenia	Tel. +386 61 140 4597 Fax +386 61 140 4599
TR	Reklamcilar Dernegi (RD)	Yildiz Çiçeği Sokak N° 19 Etiler T-80630 ISTANBUL	Tel.: +90 212 257 88 73/ 74/ 75 Fax: +90 212 257 88 70 or Fax: +90 212 287 17 98 http://www.rd.org.tr

6.2.5.4 Sources of Statistical Information

There are a number of publications supplying European statistics on advertising.

The European Advertising and Media Forecast is no doubt the most important of these publications. The statistics which appear in this regular publication are the outcome of an attempt at harmonisation carried out since the mid-1980s by the statistics group of the European Advertising Tripartite. Currently edited by the British tripartite association (Advertising Association) and NTC Publications. Orders can be sent to:

Organization	Post address	Communications' addresses
NTC PUBLICATIONS LTD	Farm Road HENLEY-ON-THAMES Oxfordshire RG9 1EJ UNITED KINGDOM	Tel.: +44 1491 411 000 Fax: +44 1491 571 188 http://www.warc.com

A summary of the data published in the European and Advertising Media Forecast is published in the European Audiovisual Observatory's Yearbook [i.27] (http://www.obs.coe.int/oea_publ/yb/).

Other yearly relevant publications:

Publication	Organization
Advertising Expenditure Forecasts [i.28]	Zenith Media, London
Advertising Association and European Advertising Tripartite [i.29]	The European Advertising and Media Yearbook, NTC Publications Ltd, Henley-on-Thames
Europub. Le marché publicitaire européen [i.30]	The European Advertising Market, Havas, Paris
World Advertising Trends [i.31]	NTC Publications Ltd, Henley-on-Thames
Young and Rubicam, European Media Cost Comparison [i.32]	NTC Publications Ltd, Henley-on-Thames

6.2.5.5 Information from further projects and actions

A more substantial collection of information from the many European actors in this domain is necessary to allow some comparative studies and draw conclusions for the European market. Particularly a better understanding on advertising techniques may help to specify what needs to be measured and how to present and supply measurement results.

NOTE 1: Sites like <<http://www.adage.com/>> or <<http://advertising.utexas.edu/world/>> may help on advertising.

In Europe the project ARENA, funded by the EU in the context of the Information Society Technologies, intended to *look carefully at the business requirements for modern audience research and create a reference model applicable to any situation where digital media content is conveyed to the public by wired or wireless connections*. Arema recognizes audience research as a vital part of TV and radio broadcasting in the context of the convergence of broadcasting, IT and telecoms. They studied the more recent forms of media content delivery, such as the Internet, mobile phones, PVRs and portable media viewers.

NOTE 2: More information about the project ARENA, including many public documents are available on their public web site <www.ist-arena.org>. The following areas of this site are particularly interesting:

- The project Summary offers the background and the vision of the project.
- The documentation offers a number of interesting deliverables, some of them publicly available, e.g. the 'model description' or the 'analysis of audience research requirements and platform'

ARENA understands the rapid proliferation of platforms and service and the consequent new challenges for audience research. When there was only analogue TV, there were very few channels to choose from, and each channel had its own frequency detectable from the TV set. Technically it is no longer that simple, and there are no commonly accepted metrics for new media audiences, if that is still the right word. The technologies and the formats of the results diverge as they follow the properties of individual platforms. When the same content is available from different sources, it becomes difficult to aggregate and compare audience figures.

ARENA intends to:

- devise a basic methodology that can be applied across these platforms and services; and
- create and demonstrate specific implementations for:
 - MHP over Digital Terrestrial TV and satellite systems;
 - VoD/ CoR over DSL, and DVB-H mobile services.

This will be done by analysing requirements and by creating a reference model applicable to any situation where digital media content is conveyed to the public by wired or wireless connections. The project will first simulate the model on general-purpose hardware.

Open standards were used for modelling, implementations and classifying audiences and media content. The work will be publicised and contributions sent to standards bodies. A collaboration between ETSI and ARENA is recommended.

6.2.5.6 Standardization and SDO's

Some standardization activities have already started. Among them the most relevant for AM is a series of ITU-T Recommendations under study (planned to be published during 2011) with the designation '*IPTV application event handling*':

- "Overall aspects of audience measurement for IPTV services" [i.18];
- "Audience measurement for IPTV distributed content services" [i.19];
- "Audience measurement for IPTV interactive services" [i.20].

6.3 Japan

6.3.1 Personalization using Passive Feedback: (see Figure 1)

Passive feedback in audience measurement is information such as the user's viewing history of web pages or video content, which is obtained from servers linked to devices such as mobile phone, PC or set-top box. Passive feedback information consists of when and what sort of content the user has used in the past, which can be used to estimate the user's preference.

Typical applications which utilize passive feedback information are movie recommendation systems. For example, Video on Demand services used on set-top boxes provide a list of recommended movies towards the user, based on their preferences. First, the content recommender server obtains history information of all subscribed users from the content delivery server. History information is based on the subscribed users' entire past movie on when and which movie the user has viewed in the past, with no need of additional information about the user's attributes, some of which can be considered as personal information (e.g. age or gender). Once the content recommender server has obtained the history information, the information can be used to calculate the most preferred movie for each subscribed user. After the calculation process, the portal site server can make a request the content recommender server for a list of recommended movies to present towards the user.

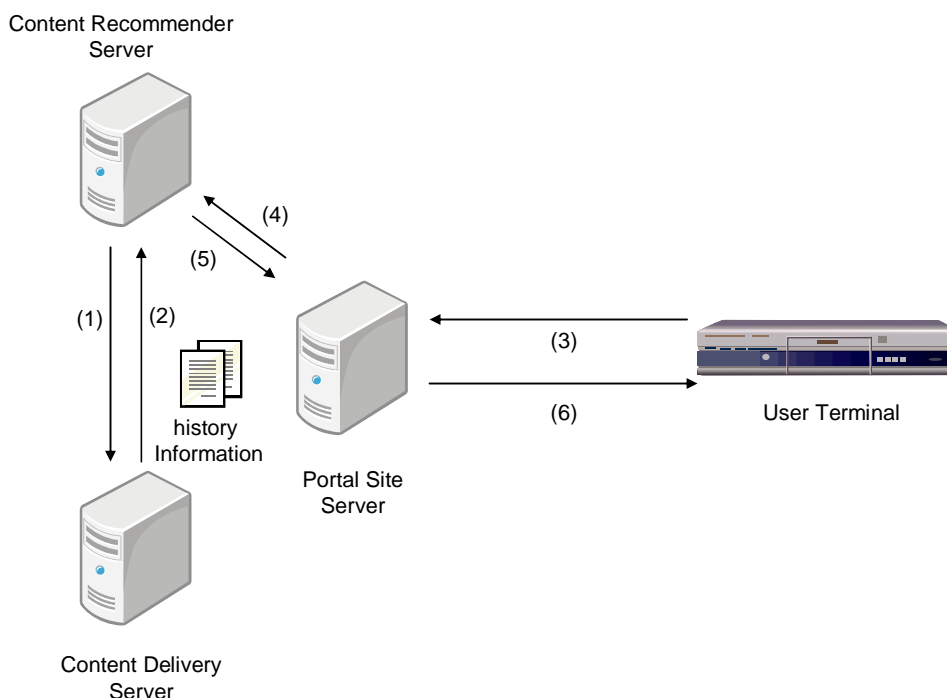


Figure 1: Recommendation Service based on Passive Feedback

6.3.2 Personalization using Active Feedback (See Figure 2)

Passive feedback such as user's past viewing information provide valuable information which can be used for user personalization, such as recommendation services. However, passive feedback cannot provide specific information on the user's current situation, which can be a problem when creating recommendation results. For example, when creating recommendations for movies towards a specific user, the result is expected to differ whether the user is alone, with his or her family, or if there are children present or not.

Information which passive information cannot provide can be obtained by using an interactive interface where the user can feed additional information towards the system. An example of this is movie recommendation application for mobile phone, which uses the user's current situation, such as what type of movie the user currently wishes to view or what other people the user is with at the moment, in addition to the viewing history of the user.

With the combination of passive and active information provides more context-aware recommendations towards the user.

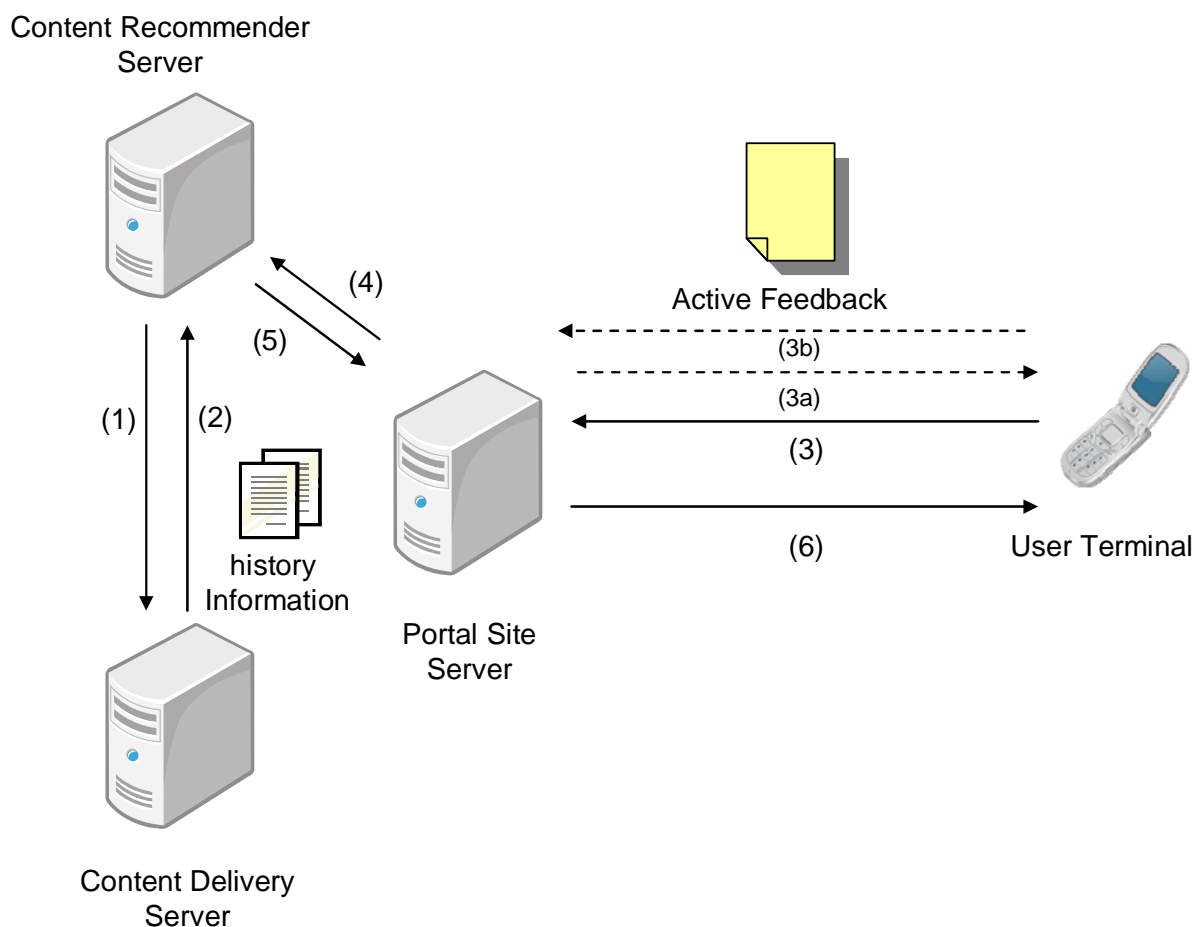


Figure 2: Recommendation Service based on Active Feedback

6.3.3 Audience Measurement chain

Gathering information on Audience Measurement is important for applications such as Addressable Ads (clause 6.1.2) and Personalization Service (clauses 6.3.1 and 6.3.2). It is also important to provide the gathered information on Audience Measurement to the broadcasters or advertisers as feedback to their services. The eco system regarding the collection and the use of information on Audience Measurement is shown in Figure 3. In this figure, the Communication Platform provides services toward the users and sends feedback reports to the Advertisers. The numbers in Figure 3 represent the sequence of the entire process. Below, we will provide a brief description of each step:

- Step 1: The Content Producer creates and sends content and related metadata to the Content Aggregator.

- Step 2: The Advertiser acquires information on contents which are available to associate their advertisement and time of distribution (e.g. Information on what time of day the content will be on air). The Advertiser then sends the advertising policy information (e.g. What sort of audience should the advertisement be shown) to the Communication Platforms through the Content Aggregator.
- Step 3: The Communication Platform acquires user's profile, user's preference, and service history information from the user's terminal or access network.
- Step 4: The information gathered in Step 3 is then distributed to the most appropriate advertisement or service, which is decided by judging from both the information gathered from the user and policies defined by the advertisers.
- Step 5: The Communication Platform creates Audience Measurement Summary, which is data consisting of gathered statistics from the information of the users. The Audience Measurement Summary and the Service Measurement Summary are then sent to the Content Aggregator and Advertisers.

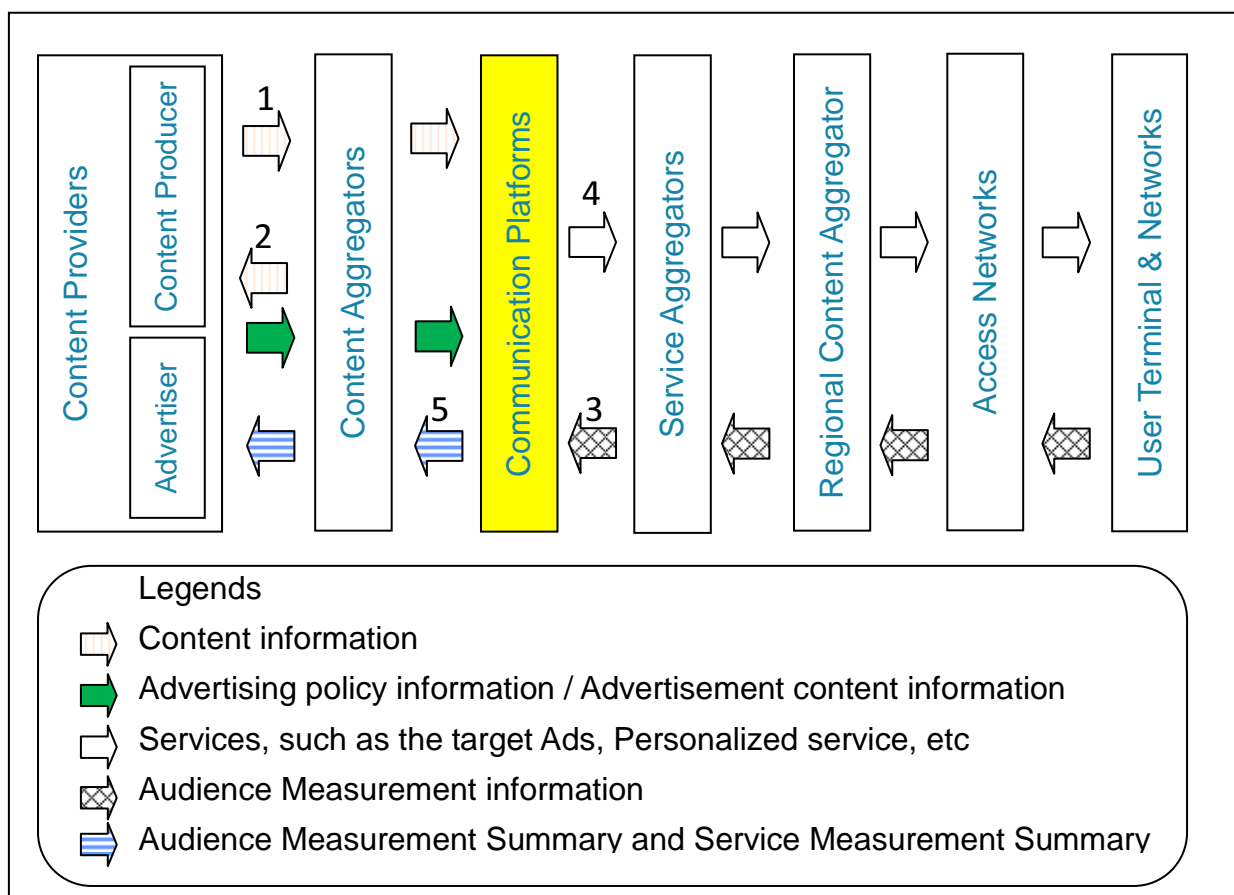


Figure 3: Reference graphic representation of Audience Measurement chain

6.3.4 Personalized Service Platform

As described in clauses 6.1.2, 6.3.1 and 6.3.2, the audience measurement information is useful to provide various personalized services like target advertising, content recommendation, etc. To provide such "Personalized services", some common functional components are required and defined as the "Personalized service platform".

The Personalized service platform recommends the best content/advertisement corresponding to the user information and the service policy of the content/advertisement owner. After the service providing function provides it to the user, service measurement summary results are reported from the platform to the content aggregator.

6.3.5 Functional Architecture for Personalized Service Platform

Figure 4 shows the functional architecture of the personalized service platform. As shown in Figure 4, multiple services are provided for different types of user terminals such as TV, PC and mobile handset. Each service has its own audience measurement functionality. Therefore, to provide the cross-platform content/advertisement distribution, the "Cross-platform aggregator" which integrates the measurement information from multiple services and/or platforms is required.

The interfaces of the personalized service platform are defined as follows:

- A: I/F for gathering information on audience measurement from the user's terminal, access network, service providing server, etc.
- B: I/F for sending audience measurement summary and service measurement summary to the service/content aggregator.
- C: I/F for providing measurement information corresponding to the query sent from the cross-service/platform aggregator which collects measurement information from each service and/or platform. Additionally, if external user information manager exists, the platform accesses it through this interface.
- D: I/F for providing measurement information aggregated by the the cross-platform aggregator.

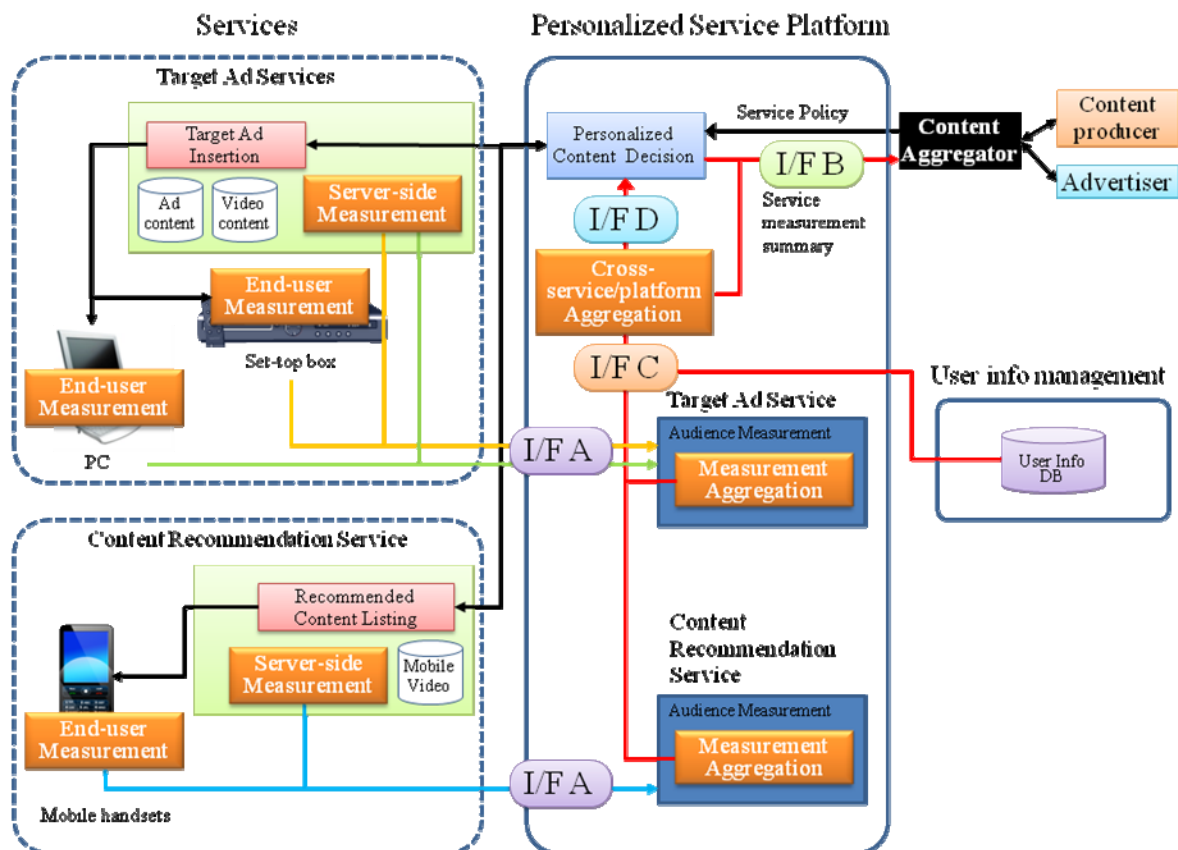


Figure 4: Functional architecture for audience measurement framework

6.3.6 Detailed functional component for Audience Measurement

As shown in Figure 4, multiple types of services would implement their own audience measurement function. Figure 5 shows the generalized functional diagram of the audience measurement function. The "Service Providing Server" box corresponds to the server-side measurement box, the "User Terminal" box corresponds to the end-use measurement, and the "Audience Measurement Aggregation Server" corresponds to the Aggregation function box in Figure 4, respectively.

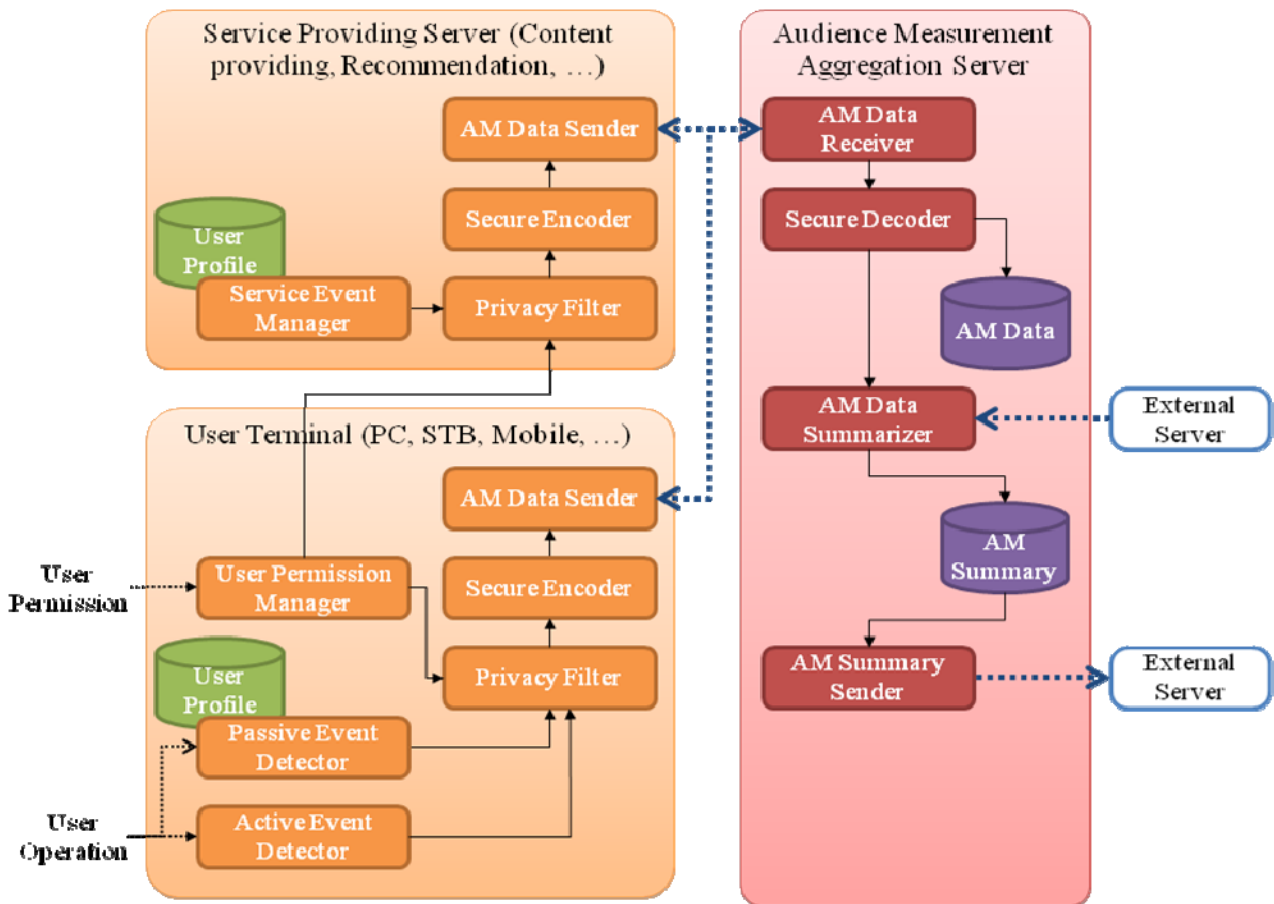


Figure 5: Detailed diagram of audience measurement function

In the User terminal illustrated in Figure 5, the "Passive Event Detector" gathers application events, which are received from the user unconsciously, such as the user operations (turn on/off, channel changes, etc) and the user presence (implicit login process). The "Active Event Detector" collects application events which are received from the user consciously, such as the user interactive operations (polling and voting), the user's active presence (explicit login process), and the user's current situation (feeling, atmosphere, etc.). Each user can create his/her own permission policy through the "User Permission Manager" function and gathered information (e.g. user profile, application events, and user presence) is filtered according to the permission.

At the service providing server, the "Service Event Manager" gathers information regarding the service delivery event associated with a specific user. It will be filtered by the "Privacy Filter" which is created by a corresponding user. Then the audience measurement data will be encrypted by the "Secure Encoder" and sent to the Audience Measurement aggregation server through the I/F A in Figure 4.

At the Audience Measurement aggregation server, the received measurement information is decrypted and stored in the database as *raw* audience measurement data. In addition, it will be analyzed by the "AM Data Summarizer", which summarizes the statistics of the measurement information and generates the audience measurement summary. The audience measurement summary will then be transferred from "AM Summary Sender" to the cross-service/platform aggregator through the I/F C in Figure 4.

6.3.7 Service examples with the Personalized Service Platform

As shown in Figure 4, the Personalized Service Platform is applicable to many types of services. In this clause, its functionality is explained by using two examples, target advertising and VoD content recommendation.

6.3.7.1 Target advertising service

In target advertising, "Ad policy" is registered to the Personalized Service Platform prior to the service. "Ad policy" includes:

- Properties of user or region targeted by the advertisement
- TV programs property to insert the advertisement
- Service period of the advertisement
- Time slots for the advertisement
- Maximum number of ad display

When the service providing function requires an ad decision, it sends a "Target Ad Request" including the following information to the Personalized Service Platform:

- End user terminal ID
- TV program ID

Based on the "Target Ad Request", the Personalized Service Platform acquires user properties, TV program metadata, and Ad policy. User properties may include, but not limited to, audience measurement information and user information such as user preference and behaviour records stored in the user DBs, which can be located inside the platform or provided from outside the platform. After that, the Personalized Service Platform decides the best ad by using this information and informs it to the service provider function as the "Ad decision".

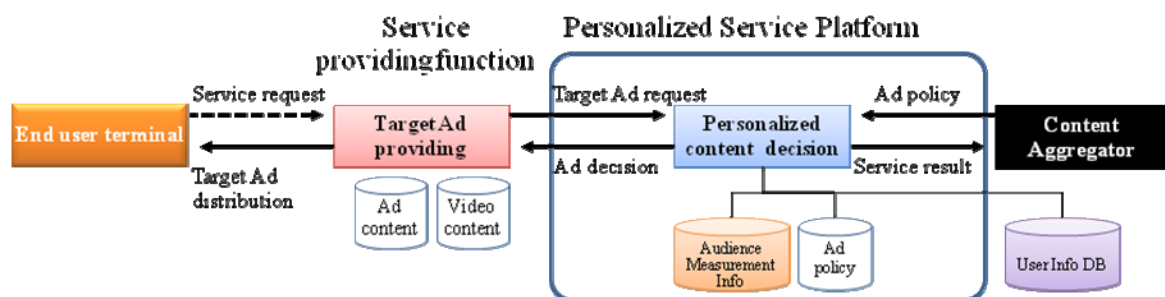


Figure 6: Target advertising service over the Personalized Service Platform

6.3.7.2 VoD recommendation service

In content recommendation service, content metadata is registered to the Personalized Service Platform prior to the service. In the VoD recommendation case, metadata may include:

- Genre of the program
- Target age of the program
- Actor/actress of the program

When recommendation is required (e.g. When the user accesses the VoD menu.), the Service providing function sends a "Recommendation request" to the Personalized Service Platform. The Recommendation request may include:

- Content type for recommendation
- Number of recommended content
- User ID

The Personalized Service Platform acquires user properties and decides the recommended content. Regarding the content decision, not only static information (e.g. Program metadata, User's profile, etc.), but also more dynamic information such as the user's rating information, user's history, are used. The result is informed as the "Recommendation response" and displayed to the user.

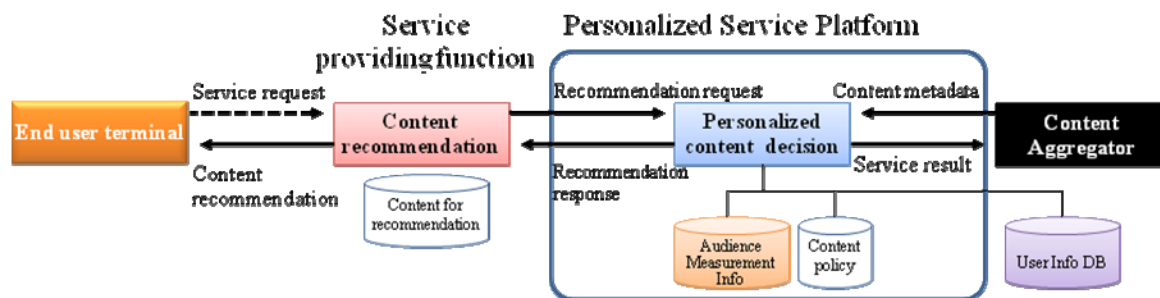


Figure 7: VoD recommendation service over the Personalized Service Platform

6.4 China

6.4.1 Audience Measurement in China

6.4.1.1 Guidelines for Television Audience Measurement

Global Guidelines for Television Audience Measurement (GGTAM) is an international standard in audience measurement industry. CSM (CVSC-Sofres Media Research Co., Ltd.) purchased the copyright of GGTAM and translated it for delivering it to its customers. This guideline defines which methods should be used in audience measurement, which methods should be publicized and which are not. Based on GGTAM, CSM issued a guideline-China Guidelines for Television Audience Measurement (CGTAM).

In 1998, this guideline has passed the ISO 9000 [i.6] examination. It is expected that most audience measurements should be taken following this guideline.

6.4.2 Methods of audience measurement

The methods used in China are very similar to U.S case. CGTAM defined the methods as diary and personal viewership recording equipment.

6.4.3 The audience research history and current state

In China, there were 2 major audience research companies in the past China market: CSM (CVSC-Sofres Media Research Co., Ltd.) and AGB Nielsen Media Research (AGB Nielsen), and some other small companies as well. For technical and strategic reasons AGB Nielsen, in early 2009, has formally withdrawn from the China market and is removing the people-meter (viewership recording equipment) from 14 000 Chinese families.

Before 2009, CSM had an 85 % market share in China. In 2007, it became a unique audience research provider in Hong Kong. It is said that the CSM audience research network had covered 1,2 billion users in the whole of China. CSM applies two measurement methods: measurement equipment and diary record. It is notable that, besides the research in urban area, the research carried out at most province-levels also takes the countryside into account. Currently many advertisement companies and famous enterprises become the CSM customers and they are provided a variety of audience data services regularly.

Meanwhile, AGB Nielsen had 10 % to 15 % of the market share in China. Although it had less market share, it developed rapidly in the audience research service, even impacted the CSM's strategy. As its measurement method, AGB Nielsen used personal viewership recording equipment (people-meter), which was installed into sample families, to collect the information during the whole collecting process. Therefore AGB Nielsen had more research cost than CSM.

In China, CSM and AGB Nielsen both have the foreign investment background. This is a special reason for entering into Chinese market. It will be mentioned later.

In CSM, CVSC stands by the government so that CSM has more official background. The benefit is: it is easier to be harmonized with the traditional Chinese nature. But the weakness is: the data from CSM might not be easily trusted by other local TV hosts (which could be local government). The reason is that they might think the data is modified more than others in order to be a benefit to CCTV (China Central TV).

As to AGB Nielsen, it is almost a pure foreign investment company. Here is the "almost" because, in China, the completely pure foreign-background company is not allowed to enter into the Chinese market. So the benefit is: most customers will feel that the data from AGB Nielsen is more objective and fair. But the disadvantage is: Chinese government will think it knows little about Chinese market. Therefore the localization is not enough so that it would not be trusted by the government.

Audience research plays 3 roles: one is for TV service, another is for advertisement service and the other is for program producing. For TV service, it helps a TV station to sell advertisement, purchase program, arrange time and select topic more efficiently, edit and schedule program more suitable for the audience viewing habits, and program purchase will have an efficient plan.

In the early days, CSM had 60 % of its income from its ad company. But today, it has 70 % of its income from TV and only 30 % from ad service. AGB Nielsen was different. The reason is that AGB Nielsen belongs to WPP and WPP is the number 2 advertisement enterprise, AGB Nielsen had intended to provide service for advertisement companies.

There is a different viewpoint from the media distribution industry. In China, media is a public service and it should serve mostly people. If the Chinese audience research companies and media are major servers for advertisement, the entertainment program will be full of the TV ads and will deviate from the original role of serving the public.

Before 2009, many media companies selected both CSM and AGB Nielsen to make measurements at the same time, such as Shanghai East TV, Beijing TV, etc. The benefit is that station managers can easily compare the two sets of data, but the disadvantage is also obvious: For example, for the same program, if it has high rating from CSM but has low performance from AGB Nielsen data or vice versa. Therefore the use of the rating for the program will be difficult for the management of the TV station to evaluate.

6.4.4 Audience research market prospects in China

6.4.4.1 The challenge from digital TV development

In the recent years, digital TV has developed rapidly and the State Administration SARFT plans to use digital signals instead of all the analog signals after 2015.

This is an advantage aspect of AGB Nielsen technology because they have much experience of digital signals measurement. One measurement technology that AGB Nielsen used is audio monitoring, i.e. compare with TV audio signal: an equipment is connected to the TV audio output and a computer records the sound. Then it compares the sound with the TV program to determine which program the sample user is watching.

But CSM intends to cooperate with the Network Company (or network provider), from which it is able to acquire the SA code of the Set-top-box. The SA code is a service id. As the digital channel has a special digital code, when the signal is transferred into TV set, it is regarded as unique. CSM therefore knows which program the end-user is watching after it got SA code from Network Company. Currently, CSM has deployed digital TV audience measurement within 20 cities and now it is testing the PPMTM for future plan.

As AGB Nielsen withdraws from the Chinese market, it currently leaves CSM is the only enterprise that holds the most market share in the audience measurement industry. That causes a situation of concern. It causes worries about whether the market will step back to being a monopoly and whether the validity of the audience measurement data may become more suspect. A strong competitor is expected to emerge from the market and the benefit is obvious. Because the establishment and development for an audience measurement company requires a large amount of funds, however, a competitor who can compete against CSM might not appear in a very short time. Since audience measurement is regarded as a market activity, establishing a non-profit 3rd audience measurement organization is not possible.

The validity of audience measurement should be audited by an independent audit organization (e.g. ISO agent) every year. But the implementation of such an organization has many problems: e.g. its method of auditing is not standardized yet, and decisions such as who will pay the audit charge have not been made.

7 Initial needs for an audience measurement system

In the preceding discussion distinctly different technical methods of audience measurement, beyond the original rather simple diary method, were noted. For example:

- 1) electronically, through the use of personal portable meters worn by individuals, relevant to TV or radio audiences, or
- 2) by software, through utilization of measurements from server log files, relevant to internet audiences.

Considering these variations of measurement technology, regulatory factors, and the multiplicity of choices of platforms and transmission means that users may select to receive audio or video information with:

- What common technical or functional requirements for audience measurement equipments or systems can be deduced?
- Are the requirements the same from the perspective of the Client (individual of the audience) or the Measurement Agency (MA)?

Some answers to these questions are attempted below but, as the present document is the very first version and the complexity of the situation in the area studied did not allow to ensure a consistent and more stable set of information, the present conclusions should be seen as a first tentative of provisional identification of needs.

Three fundamental needs are:

- **Privacy:** A salient universal requirement is privacy for the client and the protection of personally identifiable information. This requirement is usually incorporated in law or by regulatory requirement.
- **Legal:** The equipment and system for making audience measurement need to be designed and operated in conformance with appropriate laws and regulations pertaining to audience measurement. Such laws and regulations may differ in different localities.
- **Safe:** The use of the equipment should cause no harm to the client or its environment.
- **Non disturbance of the service observed:** The use of the AM system should not interfere with the service performance or essential characteristics.

Some common requirements of both the client and the measurement agency include:

- **Security of information:** A corollary to privacy is that the data need to be secure in the data base as well as during collection and transmission.
- **Honest:** The system should prevent loaded or intentional distortion of data collected.
- **Accuracy:** This has two aspects. Both the recorded information and the audience sample protocol are expected to be accurate so as to obtain an authentic representation of audience demography and program choice.
- **Tamper proof:** Adjunct to privacy, information security, honesty and accuracy is that monitoring devices and the measurement system as a whole should be tamper proof.
- **Ease of implementation and use (Passive system):** Generally a client will not be expected to have any more knowledge of the equipment used than how to turn it on and off and the equipment should not be burdensome to the client or its use will be limited. Because the MA normally has sufficient equipment in the field to make statistically valid measurements, and at the same time at cost effective prices, significant attention should be given to the factors of equipment ruggedness, operational simplicity, ease of implementation and use, as well as cost of implementation of a system.

Requirements for equipment-based (non-diary) Audience Measurements may be different as viewed by a client or a Measurement Agency and thus are incompatible or nearly so.

Priority requirements from a client perspective only include:

- Client initiated measurement
- Client privacy
- Recorded information untraceable to client
- Simple client initiation of recording
- Light weight and unburden-some equipment
- No maintenance

Priority requirements from a Measurement Agency perspective include:

- Agency or station initiated measurement (in some cases without client knowledge)
- Information traceable to client
- Low cost
- Ruggedness and reusability
- Low powered equipment

From this listing of requirements, major contention between the Client and the MA may be observed in:

- a) who initiates the measurement; client or MA; and
- b) traceability of information to the client: client, undesired and MA, desired.

Other than by use of a stratagem, these requirements are mutually exclusive and will need attention and decision before designing a measurement system.

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