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INFORMATION NOTE

AUDITEL'S AUDIENCE DATA MEASUREMENT ON DIGITAL DEVICES

(In compliance with the obligations imposed by the Communications Regulatory Authority within the implementation measures for the acquisition, processing and management of information requested by the framework act on the measurement of audience indexes and communication media distribution indexes: resolution 130/06/CSP, art. 6, published on the Italian Official Gazette 174 of 26/06/2006).

General data of the company conducting the survey

In accordance with the resolutions n. 85/06/CSP and n. 130/06/CSP, the subject in charge of conducting the surveys on audience indexes on digital devices in Italy is the company Auditel S.r.l.

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Methodology and measurement method

The Auditel census system to measure audience of video contents (editorial and advertising) on digital devices second by second, and device by device, detects viewings at home and out of home, on Smart TV, Tablet, PC, Smartphone, Set-Top-Box, Mini-Set-Top-Box and Game Console, enabled for viewing via IP protocol, thanks to the SDK technology (an analytical marker).

Auditel has installed SDK tags directly on the players digital clients broadcast their contents from. And following principles of maximum inclusivity and non discrimination, Auditel ensures free access to the digital census system thanks to pricing policies which take into consideration also the small size players' needs. Moreover, Auditel adopts verification protocols of the measurement phases, as better detailed later on, in order to be in control of the principal steps of the survey activity.

Thanks to a series of development steps, already planned, the Auditel solution will allow to match the data of the traditional sample system with the data of the digital census system, and create the so-called Total Audience, that is the integration of the traditional TV audience with the digital device audience, by means of univocal and homogenous metrics, which will be made available with both digital and traditional TV standards. At the moment, the metrics used to measure audience on digital devices cannot be added to those of traditional TV, but they can only be used side by side.

Moreover, the digital census system has been conceived to dynamically feed a library, that is a univocal registry of the video contents broadcast on the detected platforms (including ads). In fact, according to the Auditel solution, each video (in the long run including ads) carries a series of information (to simplify, a label) that easily allows its identification.

The Auditel system ensures maximum inclusivity to any subject. The choice may be subject to a trial period (when data are produced but not published) at the end of which it's possible to decide whether to sign a one-year contract or not.

The technology used for the census data collection

In order to carry out the survey, Auditel has chosen comScore B.V. (a limited company based in Amsterdam – The Netherlands - Herikerbergweg 280, 1101 CT) as an external provider of the technological components necessary to collect, process and distribute digital audience data. In particular, the agreement with comScore, which may involve also other subcontractors, provides both the SDK tracking software license and the service and the infrastructure to produce the data to be distributed on the market.

The SDK is installed on internet viewing platforms, that is on websites and on mobile apps for Smart TVs, Tablets, PCs, Smartphones, Set-Top-Boxes, Mini-Set-Top-Boxes and Game Consoles, in order to allow the measurement on a census basis, that is the measurement of the events (play, pause, fast forward, stop, etc.) of all the users of the players on which the SDK has been integrated through the collection of information regarding both the devices on which videos are viewed and the identifying parameters of the same contents (including ads), in compliance with the privacy regulations (as better specified later on). The collected data are used for the sole purpose of detecting the activities of a single application on a single device, without identifying the device itself.

This methodology can also be applied to all the OTT (Over the Top TV) devices relevant for content distribution. The technology applied allows to collect information about the viewing events to the precise second provided that the SDK has been installed in the player according to the specifications provided by Auditel.

The chart below shows an example of data collected and produced by the SDK.

Content	Device	App / Web	Viewing Mode	Type of content (content or ad)	Time (CEST time zone)	Event/Action
AD AUDI A4	iPhone (iOS 10.2)	web (Safari 10.0)	VoD stream	ad	12:13:56.370	play
AD AUDI A4	iPhone (iOS 10.2)	web (Safari 10.0)	VoD stream	ad	12:14:06.352	end
AD BT TELECOM	iPhone (iOS 10.2)	web (Safari 10.0)	VoD stream	ad	12:14:09.484	play
AD BT TELECOM	iPhone (iOS 10.2)	web (Safari 10.0)	VoD stream	ad	12:14:29.407	end
EASTENDERS S1E5478	iPhone (iOS 10.2)	web (Safari 10.0)	VoD stream	content	12:14:30.295	play
EASTENDERS S1E5478	iPhone (iOS 10.2)	web (Safari 10.0)	VoD stream	content	12:15:28.573	pause (seek)
EASTENDERS S1E5478	iPhone (iOS 10.2)	web (Safari 10.0)	VoD stream	content	12:15:29.488	play (continue)
EASTENDERS S1E5478	iPhone (iOS 10.2)	web (Safari 10.0)	VoD stream	content	12:16:29.707	pause (seek)
EASTENDERS S1E5478	iPhone (iOS 10.2)	app (bbc i.Player)	VoD stream	content	12:16:29.759	play (continue)
EASTENDERS S1E5478	iPhone (iOS 10.2)	app (bbc i.Player)	VoD stream	content	12:17:26.383	pause
BBC 1	PC (Mac OS 10.12)	web (Safari 10.0)	live stream		12:18:37.920	play
BBC 1	PC (Mac OS 10.12)	web (Safari 10.0)	live stream		12:19:37.920	end
HOMELAND / ALT TRUTH	PC (Mac OS 10.12)	web (Safari 10.0)	VoD stream	content	12:19:59.056	play
HOMELAND / ALT TRUTH	PC (Mac OS 10.12)	web (Safari 10.0)	VoD stream	content	12:20:25.297	end
AD COCA COLA	PC (Mac OS 10.12)	web (Safari 10.0)	VoD stream	ad	12:20:25.377	play
AD COCA COLA	PC (Mac OS 10.12)	web (Safari 10.0)	VoD stream	ad	12:20:40.619	end
AD VODAFONE	PC (Mac OS 10.12)	web (Safari 10.0)	VoD stream	ad	12:20:44.882	play
AD VODAFONE	PC (Mac OS 10.12)	web (Safari 10.0)	VoD stream	ad	12:22:04.503	pause
HOUSE OF CARDS	PC (Mac OS 10.12)	web (Safari 10.0)	VoD stream	content	12:22:05.061	play
HOUSE OF CARDS	PC (Mac OS 10.12)	web (Safari 10.0)	VoD stream	content	12:23:14.972	pause

During the SDK integration phase, Auditel provides all its clients with support in order to guarantee that the implementation is carried out in a correct and univocal way. Once the SDK integration is completed, Auditel certifies the correct implementation in order to guarantee that all the players are measured with the same quality standard. The verification process does not finish with the first certification. Auditel keeps on monitoring the correct implementation so that the quality standard is maintained over time, also, for instance, any time the client updates its video broadcasting platforms. In this way, Auditel guarantees homogeneous and steady quality among its clients and, over time, of the data produced.

The following chart shows the different steps leading to putting a player into production (that is when the related audience data are actually collected and produced) and Auditel's role in each step.
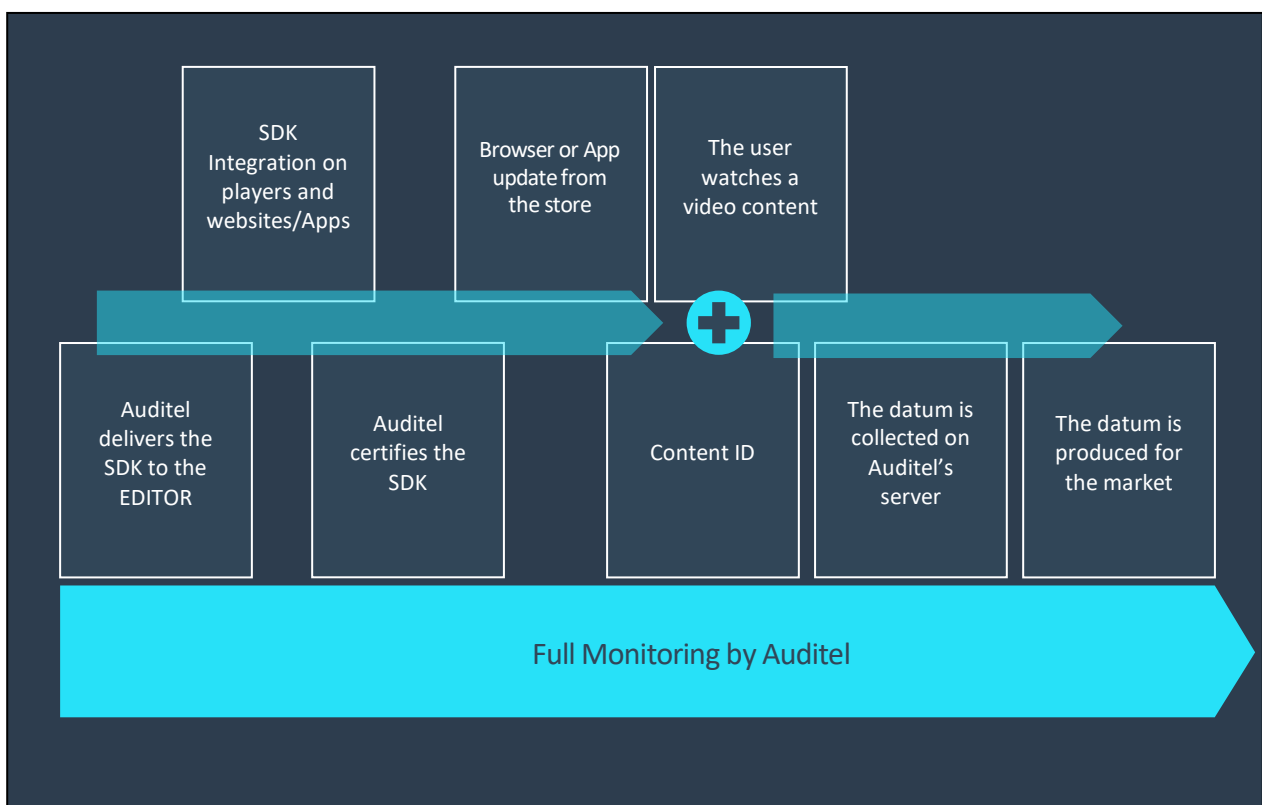
Survey object

While video content (available on an installed player which is part of the survey) is being viewed, the SDK collects and produces a series of information - related to the content, the time of the event, the events (play, pause, fast forward, stop, etc.), the type of web browser or mobile app employed by the user and the device – which allows Auditel to collect on a census basis the viewing behaviors regarding each video played, as better detailed later on.

Measured devices and platforms

We measure video content viewing via web browser or mobile app on a wide range of devices, as follows:

- Smartphone;

- Tablet;

- Smart TV;

- Game Console;

- Connected devices (i.e. Google Chrome Cast, Apple TV, etc.).

The same level of detailed measurement is provided independently from the device or the distribution platform.

Types of measured contents

The SDK integration allows to detect different types of videos played, which can be divided into three main categories, as described below.

- Viewings of linear channels, that means channels broadcast continuously, either all day long or for only a part of the day (both online versions of traditional TV channels and online only channels organized in a similar way). Linear channels contain a series of video contents which can be interrupted by static ads (fixed ads same for all viewers, as on traditional TV) or dynamic ads. The video content or fixed ad nature of linear channels can be deduced by specific logs provided by the companies that certify them and/or released by each editor. Linear channels, as it happens on traditional TV, can be viewed live, i.e. at the same time of the program broadcasting, net from the technical distribution delay; or time-shifted, in case of pause, rewind or viewing of a prerecorded linear content, when allowed by the platform.

- On-demand content viewing, that means content free from a linear log the user can choose from a catalogue and watch at any time. Also these on-demand contents can be divided according to their content type:

- Full Contents, namely TV contents taken in their entirety, usually without the original ads.

- Parts of Original Content also called Clips, namely parts of TV contents.

- Extra Contents, namely contents, usually short-lived, associated with a Full Content but (differently than a Clip) not extracted from the Full Content itself.

Moreover, on-demand contents can be classified according to the Content Distribution Model as follows:

- Exclusive Online, namely not available on traditional TV;

- TV Online, namely available also on traditional TV;

- Digital First, namely available on line for a short period of time, before broadcasting on traditional TV.

- Dynamic ads viewing that can be customized for a single or groups of users. They are commonly called X-Roll and comprise:

- Pre-Roll, inserted before an on-demand content or when a linear channel viewing is started;

- Mid-Roll, inserted during the viewing of an on-demand content or a linear channel;

- Post-Roll, inserted at the end of an on-demand content.

Types of measured events

The SDK allows the collection of a series of events which characterize the user's content viewing behavior. The following chart shows a list of the events collected and processed to produce the final datum, at the moment. This list is likely to vary over time or to be integrated according to the project development.

Auditel

List of the events	
Type of event	**Description**
Play button	The event of starting or restarting a video. The event can occur on the user's demand or by auto-play.
Restart button	The video has just finished and starts again from the beginning. This event can occur automatically or on the user's demand.
Pause button	The video playing is paused.
Seeking	Surfing within the video content.
Early interruption of the content	The video is stopped by quitting the page, closing the browser or application, etc.
Home button press (only mobile devices)	The app or the website are put in the background.
Sleep button press (only mobile devices)	The device is put in stand-by mode.
Buffering	In case the connection is not fast enough, the video playing is interrupted waiting for the upload of the part of the video not played yet.
Editorial and advertising content blend	Interruption and restart of the editorial content due to the beginning and the end of an ad.

Putting this events together allows the measurement of the time actually spent viewing content and constitutes one of the basic characteristics of the Auditel solution, which considers only the contents that have been viewed for at least 0.3 seconds and therefore classified as Legitimate Streams (LS) according to the Auditel metrics.
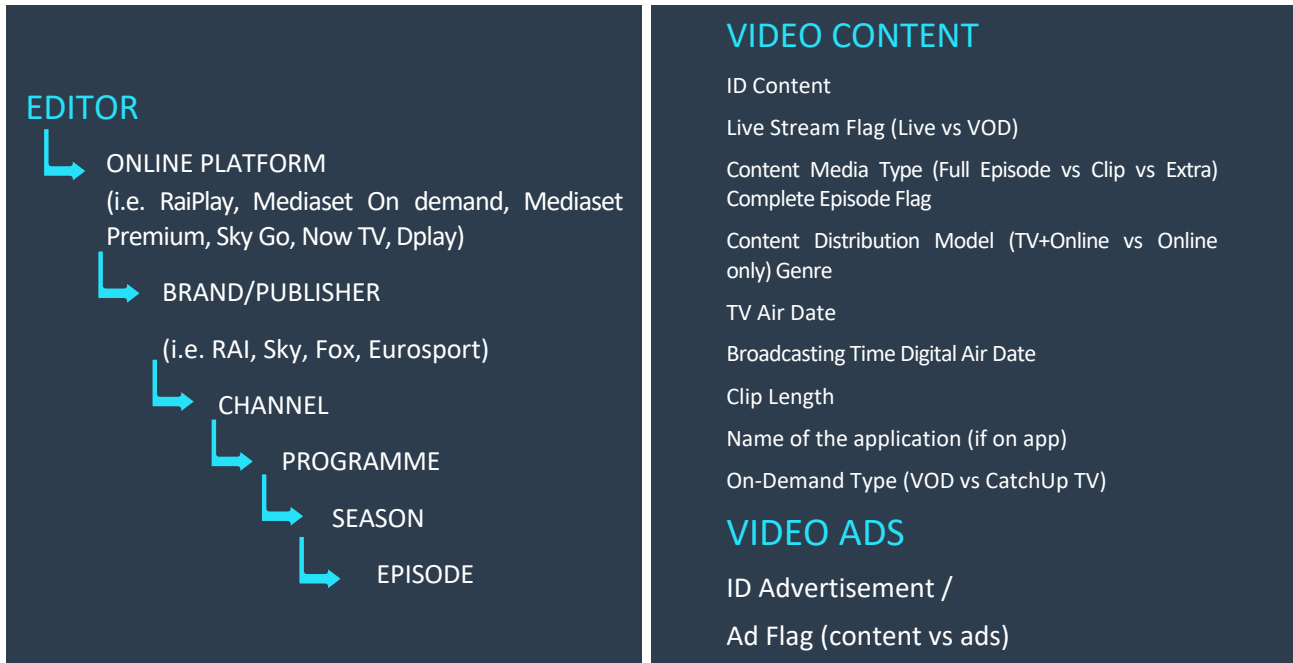
The chart below shows an example of viewing behavior which the events collected by the SDK correspond to.
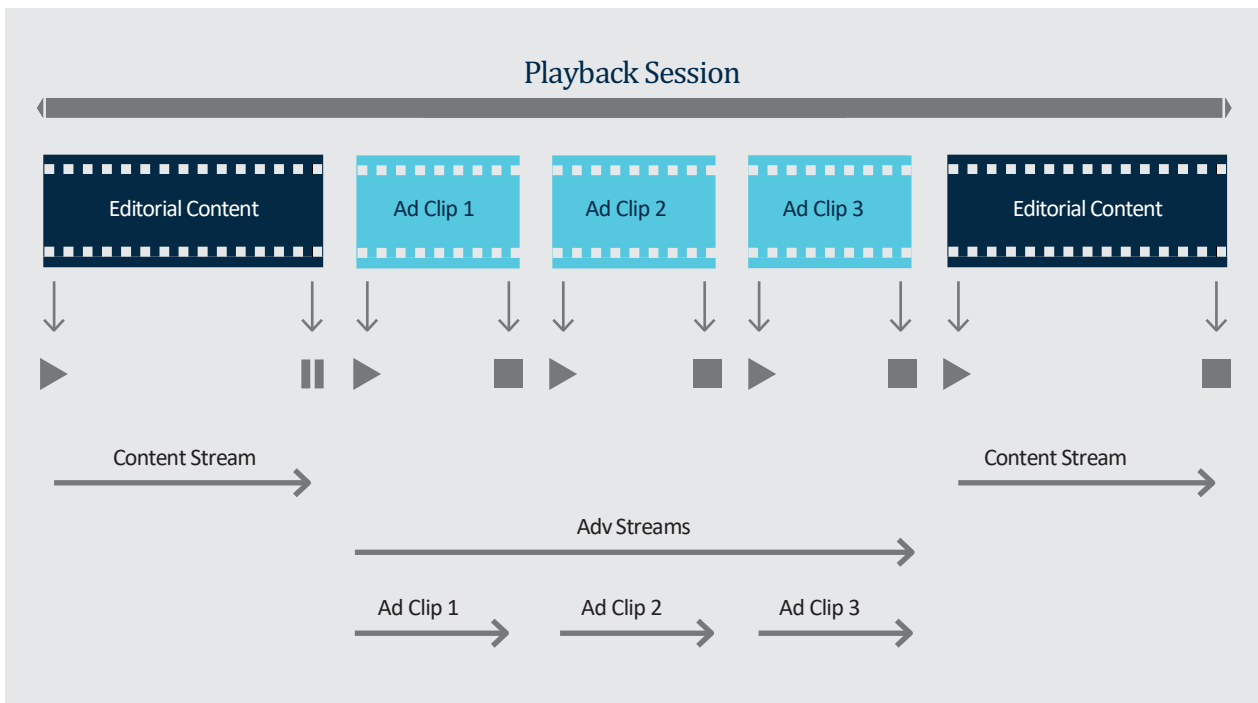
Metadata

During video content streaming (available on an installed player participant to the survey), the SDK also collects a series of information related to the content viewed on web browser or mobile app by the device, namely a series of information (the so-called metadata), defined and classified by Auditel, which describe the viewed content, such as, for instance, the name of the program, the episode, the advertising campaign, the channel, etc. In order to identify each video content, Auditel requires the participant to the survey to correctly metatag it, namely to provide Auditel with the above mentioned information. The diagram below shows an example of a possible metatagging of an on-demand content.

EDITOR

↳ ONLINE PLATFORM
(i.e. RaiPlay, Mediaset On demand, Mediaset Premium, Sky Go, Now TV, Dplay)

  ↳ BRAND/PUBLISHER
  (i.e. RAI, Sky, Fox, Eurosport)

    ↳ CHANNEL

      ↳ PROGRAMME

        ↳ SEASON

          ↳ EPISODE

VIDEO CONTENT

ID Content

Live Stream Flag (Live vs VOD)

Content Media Type (Full Episode vs Clip vs Extra)
Complete Episode Flag

Content Distribution Model (TV+Online vs Online only) Genre

TV Air Date

Broadcasting Time Digital Air Date

Clip Length

Name of the application (if on app)

On-Demand Type (VOD vs CatchUp TV)

VIDEO ADS

ID Advertisement /

Ad Flag (content vs ads)

SDK installation process

As previously described, data collection occurs through the integration of the SDK in the players part of the collection perimeter. The integration complies with a series of procedures and verification tools employed by Auditel to guarantee correct implementation of the technology on the basis of univocal standards.

Before the installation process begins, Auditel maps the players to be integrated and their technical characteristics.

In addition to this initial mapping, the following information is collected:

- the players to be detected and those that will be detected in the future;

- mapping of the different content management systems (CMSs, namely Content Management Systems) and of their capability to supply the players (and thus the SDK) with all the descriptive parameters of the content specified by Auditel;

- estimated release time to put into production the players that integrate the SDK.

Once the tagging process is completed, Auditel begins the player certification process.

Player certification process

The certification process requires Auditel to execute functional tests in order to verify the correct implementation of the SDK and the correct evaluation of the metadata related to the recorded content.

This means that:

- technically, all the events (play, stop, pause, quit, etc.) are correctly measured;

- all the necessary metadata are correctly valued in accordance with the technical specifications defined by Auditel in the specific procedure.

The tests are carried out on a series of devices which represent those usually available to the users (in particular on a sufficiently wide variety of devices as to represent the composition of the Italian market and thus guarantee maximum coverage). If the tests prove positive, Auditel certifies the player, puts it into production and, then, publishes the audience data.

Compliance with the privacy regulations

Thanks to the installation of the SKD on the websites and the apps of the editors participant to the digital census system, Auditel collects information on how viewers use the sites and/or apps in order to collect and aggregate the video contents viewed. The information collected and processed by the SDK allow to obtain data on the viewing behaviors of the users (for instance, they collect the contents viewed, the viewing times, the type of device as well as the geographical area of reference), but they don't reveal the users' identities or their demographic characteristics. As a matter of fact, the mechanisms employed by Auditel, when it produces and collects data by means of the SDK, reduce the risk of user identification (as related, for example, to the users' IP addresses). For this reason, the data collection by means of the SKD does not require the user's consent, who, nonetheless, can prohibit the use of their personal data at any time according to privacy policy of the measured editors and of Auditel (please find Auditel's privacy policy on our website www.auditel.it).

Auditel uses the collected information within the range of its audience measurement activity, in order to carry out analysis and statistics on the type and number of video content viewings and on the number of clicks on one or more video contents during surfing.

In the process of collecting and processing data, Auditel may collaborate with third parties, located both in the EU or outside the EU, to carry out technical or organizational activities (for instance, IT services and support to the management of decommissioning options) and, where necessary, Auditel will appoint them as responsible for data treatment in compliance with the regulations. As for the third parties located outside the EU, Auditel adopts, through its suppliers, the measures required by the privacy regulations in order to protect the users' data at best, such as the compliance with the Privacy Shield for transfers to the USA.
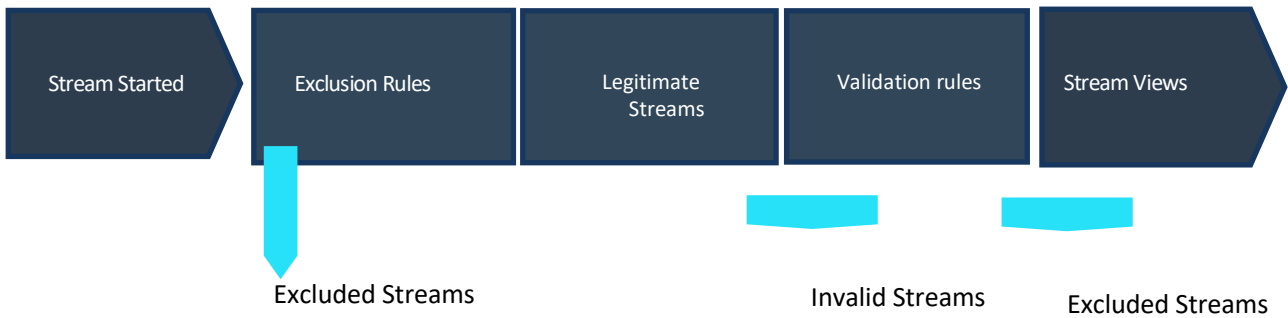
Data collection and audience data production

All data collected and produced by the SDK undergo a series of processing steps which allow, among others, to delete the portion of invalid data (for example the data generated by web bot traffic) and thus produce data for further processing.

This flow consists of two main stages:

- exclusion of invalid data;

- validation.

The following charts show these steps and their descriptions.

Stream Started	Exclusion Rules	Legitimate Streams	Validation rules	Stream Views

Excluded Streams   Invalid Streams   Excluded Streams

Step	Step Description
Stream Started	**Stream started.** All the events (on a census basis) generated when a video stream is started on a digital device.
Exclusion Rules	**Exclusion Rules.** Namely, all the Auditel rules which exclude the inadequate data, such as those generated by web bot traffic. In particular, referring to the exclusion of web bot traffic, the employed technology allows to identify, filter and remove both generic and sophisticated bot traffic (namely, the traffic generated by the background calls which do not require malware on the device, such as Spiders, Domain Laundering, Ad Injector)
Excluded Streams	**Excluded Streams.** The streams excluded according to the exclusion rules.
Legitimate Streams	**Legitimate Streams.** The streams started and not excluded by the exclusion rules.
Validation Rules	**Validation Rules.** Namely, all the rules that must be complied with to consider a video as actually viewed on a device. These rules are based on qualitative features (for example the minimum viewing time).
Invalid Streams	**Invalid Streams.** The streams excluded according to the validation rules. The metrics calculation process will not take these streams into consideration.
Stream View	**Stream Views.** The Strems started that have passed the validation step.
Digital Metrics	**Digital Metrics.** The processing of digital data by means of

	metrics similar to those already used by the digital market.
TV Metrics	**TV Metrics.** The processing of digital data by means of metrics similar to those already used by the TV market.

Once the invalid parts have been removed, the data are classified according to the geographic area of origin. Auditel has decided to employ a geographic classification based on 3 aggregation levels:

- traffic occurred within Italy;

- traffic occurred outside Italy, but within the EU;

- extra EU traffic.

Data distribution and data file creation for the software houses

Once the data processing phase is completed, the production files are created according to defined aggregation levels, which are made available to the software houses, namely the companies authorized by Auditel to analyze audience data by means of software licenses or statistical reports in favor of Auditel's clients (measured subjects and for the users).

For this purpose, Auditel makes available the following data files to the software houses, on a daily basis:

- a file (5.1.tsv) reporting the aggregated daily audience of the linear channels, divided according to a series of variables (channel, editor, type of device, etc.);

- a file (5.2.tsv) reporting the aggregated daily audience of the on-demand contents, divided according to a series of variables (content ID, channel, editor, type of device, etc.);

- a file (5.3.tsv) specifying the characteristics of each on-demand content, with the content ID and a series of features (content name, channel or reference property, content duration, etc.);

- a file (5.4.tsv) reporting dynamic ads audience at half-an-hour intervals, divided according to a series of variables (pre-roll/mid-roll/post-roll, ad duration, etc.); this file requires a univocal ad code, that will be populated soon;

- a file (5.5. tsv) reporting the minute by minute audience of all the measured contents, namely linear channels, on-demand contents and dynamic ads, with a lower level of details in comparison to the dedicated files (5.2.tsv and 5.4.tsv).

The processing softwares functioning shall comply with the Digital Golden Rule, that is the whole of the rules defined by Auditel to process digital data and to calculate the related metrics, in order to guarantee the maximum uniformity of the analysis results. Among these rules and for transparency reasons, there is also a system to warn users (by means of the Warnings Chart and its related

implementation instructions) of the possible ongoing checks on a part of the produced data or of the existence of discrepancies in the same data due, for example, to problems of metadatation.

Some aggregated data are also published weekly in a document (the so called Auditel Digital Standard) distributed for free and downloadable form Auditel's website.

Digital Metrics

Digital audience data can be analyzed according to the following metrics:

- AMR-D (Average Minute Rating-Device). Average minute digital audience. It is the equivalent of the AMR of the traditional TV but, instead of measuring the number of viewers per average minute, at the moment it calculates the number of devices in the average minute (that certainly means at least one TV-viewer per device). It would not be correct, by now, to add the AMR and the AMR-D together but, without any doubts, it represents the closest datum to the additional audience, or the so called "additional digital audience", a program or a channel can achieve on digital devices.

- LS (Legitimate Stream). This is the metric that will probably become crucial for the decision makers of advertising campaigns. As a matter of fact, the Legitimate Stream measures the volume of editorial and advertising streams broadcast and viewed for at least 300 milliseconds (the technical threshold to be sure that a stream has been actually started) by each device. It is calculated for both linear content viewing (live) and on-demand viewing (VOD).

- TTS (Total Time Spent). It is calculated by adding all the seconds when each device has viewed the editorial and advertising contents of a single channel.

- ASD (Average Stream Duration). It calculates the average duration of a stream.

Consistency of the sample of the survey

Not applicable, because the data are collected on a census basis. Therefore, the survey does not refer at the moment to a specific sample.

Margin of error

The data are collected on a census basis, therefore they are not subject to estimation errors due to the mechanisms of statistical projections. The produced datum may not contain a part – generally small but non measurable – of users who employ tools able to block data collection by third parties. Moreover, it will not contain the part of users who have decided to exercise their rights to objection to the survey, by means of opt-out.

Survey period

The data are produced every day, 365 days per year. Per day, Auditel means the slot of time going from 2.00.00 a.m. to 1.59.59 a.m., even if the possibility of data aggregation according to different time slots is accepted.

Fees to access the survey service

The fee to access the survey service consists of a fixed fee and a variable fee.

A) **Fixed fee**

The owner of the distribution environment will be charged a fixed fee, according to the following criteria:

- in case the distribution environment of reference and the further distribution environments, operating on the same video player of the distribution environment of reference, produced a total yearly traffic of more than 20,000,000 Legitimate Streams in the previous year:

Object	Description	Fee
Distribution environment of reference	Distribution environment of reference for the first 4 different application technologies	Euro 9,000 for each application technology
	Any further application technology of the same distribution environment of reference	Euro 6,000 for each application technology
Further distribution environments (more than the distribution environment of reference)	Any further distribution environment of the applicant operating on the same video player of the distribution environment of reference (independently from the number of application technologies for each further distribution environment)	Euro 8,000 for each distribution environment up to a maximum of 4 further distribution environments (excluding the distribution environment of reference)
		Euro 1,000 for each further distribution environment exceeding the first 4 ones (excluding the distribution environment of reference)

- in case the distribution environment of reference and the further distribution environments, operating on the same video player of the distribution environment of reference, produced a total yearly traffic of less than 20,000,000 Legitimate Streams in the previous year:

Object	Description	Fee
Distribution environment of reference	Distribution environment of reference for the first 4 different application technologies	Euro 6,000 for each application technology
	Any further application technology of the same distribution environment of reference	Euro 4,000 for each application technology
Further distribution environments (more than the distribution environment of reference)	Any further distribution environment of the applicant operating on the same video player of the distribution environment of reference (independently from the number of application technologies for each further distribution environment)	Euro 5,000 for each distribution environment up to a maximum of 4 further distribution environments (excluding the distribution environment of reference)
		Euro 650 for each further distribution environment exceeding the first 4 ones (excluding the distribution environment of reference)

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- in addition, in case a distribution environment includes distribution in embedding mode, the following fees will be charged:

Object	Description	Fee	
Embedding	Distribution environments of the applicant that include the distribution in embedding mode	Range per n° of yearly embedding sites/apps	Fee per each embedding site/app in the reference range
		Up to 10°	Euro 0
		From 11° to 50°	Euro 600
		From 51° to 100°	Euro 500
		From 101° to 200°	Euro 400
		From 201° to 400°	Euro 300
		Over 401°	Euro 200

In order to determine the fixed amount due:

- distribution environment of reference means the distribution environment employed by a determined video player;

- embedding site/app means any website or app that incorporates a video player in a distribution environment, excluding the free embedding mode;

- Legitimate Stream or LS means the video steams started, net of the exclusion rules set by Auditel;

- Application technologies means the technological architecture within which a video player (i.e. web browser, mobile browser, iOS App, Android App, etc.) is implemented.

B) Variable Fee

Due to the launch of the digital census measurement system, Auditel has determined a forfeit fee for the year 2020 on the basis of the resources Auditel has estimated will be destined to the measurement system, the solar year 2020 (Total year 2020).

The amount due as variable fee for the year 2020 is determined by multiplying the LSE / TTSE share of the applicant for the total year.

The LSE / TTSE share of the applicant is the result of the weighted average of the LSE share of the applicant and the TTSE share of the applicant according to the following formula:

$$\frac{LSE}{TTSE} \; share \; of \; the \; applicant \; = \; \frac{Total \; LSE \; of \; the \; applicant}{Total \; LSE} \times 50\% + \frac{TTSE \; of \; the \; applicant}{Total \; TTSE} \times 50\%$$

In case the applicant reached a total of Legitimate Streams lower than 20,000,000 on all the distribution environments in the measurement in the previous year, the amount due by the applicant as variable fee for the year 2020 will not be in any case higher than Euro 6,000.

For the sole purpose of calculating variable fees:

- "Legitimate Stream" or "LS" is the video streams started net of the exclusion rules set by Auditel;

- "LSE" is the Legitimate Streams net of the advertising Legitimate Streams;

- "Total LSE of the applicant" is the total LSE of the applicant measured and published by Auditel in the period of reference;

- "Total LSE" is the total value of the LSE measured and published by Auditel within the Measurement System in the reference period;

- "LSE share of the applicant" is the percentage ratio between Total LSE of the applicant and Total LSE in the reference period;

- "TTS" is the Total Time Spent;

- "TTSE" is TTS net of TTS on advertising video streams;

- "TTSE of the applicant" is the value of the TTSE metric of the applicant measured and published by Auditel in the reference period.

-   "Total TTSE" is the total value of the TTSE metric measured and published by Auditel within the Measurement System in the reference period;

-   "TTSE share of the applicant" is the percentage ratio between the Total TTSE of the applicant and the Total TTSE in the reference period.