

MEDIAPANEL

METHODOLOGICAL DESCRIPTION

VINEX NOBO
MEDIAPANEL
METHODOLOGICAL DESCRIPTION

AMSTERDAM 10-07-2019

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CHAPTER 1

INTRODUCTION

1. INTRODUCTION

Digital audience ratings are an indicator of the size and makeup of the audience for a television and online video. In the Netherlands, online audience ratings are generated in the continuous audience research carried out by Kantar TNS and Kantar Media under contract to Stichting KijkOnderzoek (SKO), the council for Dutch Television Audience Measurement and Verenigde Internet Exploitations (VINEX).

SKO is responsible for the audience research of television and online video in The Netherlands. A subchapter describes the model for measuring and reporting Online Video. The Video Integration Model (SKO VIM). VINEX is responsible for audience measurement for digital media (traffic) for both web and app. A subchapter describes the model for measuring and reporting of online traffic (NOBO research model).

On July 9, 2014 VINEX and PMA and SKO signed a letter of intent for cooperation that should lead to a jointly managed online audience measurement for the benefit of the Dutch market. On May 6th 2015 the agreement was signed between VINEX and SKO for the so called Nederlands Bereik Onderzoek (NOBO) should be the standard for digital audience measurement. The jointly project aims to have a standard research in the market come to measure all forms of online media consumption based on a panel of 5.000 individuals and the census data for traffic of websites, apps and digital content. The extension of the panel also includes a new meter system for non-tagged measurement.

This document is a description of the audience research methodology. It has been prepared for clients who use the results of the audience research and other interested parties. This chapter provides a brief description of the organisations responsible for the audience research in the Netherlands, including an overview of important elements in the different set ups.

Chapter 2 discusses the Media Standard Survey, which provides a basis for the audience research. The research methodology is described in Chapter 3 and 4.

In compiling this methodological description, we attempted to describe and summarise the methodological information of relevance to users of audience research results derived from the MediaPanel. However, given the complexity and the speed of adaptation required by the continually changing technological and demographic setting in which the methodology is used, we cannot guarantee an absolutely complete and up-to-date description at all times. Regularly, the diverse methods applied in the

research are critically evaluated, and when necessary, adjusted or improved. This methodological description of the audience research has been updated through January 1st, 2017.

For information concerning changes in 2016 or other questions concerning the audience research, please contact Stichting KijkOnderzoek (info@kijkonderzoek.nl) or Vinex (info@vinex.nl).

The methodological description of the VIM Model and the census measurement projects for video are published separately. They are available at the SKO site under the different projects. The methods used to tag video and to determine broadcast times and classify programmes and spots on TV are discussed in the following documents: https://www.kijkonderzoek.nl/images/OTV_Methods/20160503_SKO_OTV_Methods_2016.pdf and https://www.kijkonderzoek.nl/images/Methodologische_documenten_ENGELS/2016/2016_0112_Online_Commercials_methodological_description.pdf.

These are available at:

<https://kijkonderzoek.nl/over-online-tv-video> and <https://www.kijkonderzoek.nl/over-online-commercials>.

The methods for Data integration are discussed in: <https://kijkonderzoek.nl/data-integratie>. The raw data and reporting are described in <https://kijkonderzoek.nl/rapportages-en-brochures-online-panel>

At the Vinex site, you can find more information on NOBO (Nederlands Online Bereik Onderzoek) <http://www.vinex.nl/nobo/meer-over-nobo/>.

1.1. STICHTING KIJKONDERZOEK

Stichting KijkOnderzoek (SKO), the council for Dutch Television Audience Measurement is a market-wide organisation in which all parties that are directly involved in the sale and purchase of commercial broadcast time are represented. These include SPOT (the organisation for the promotion and optimisation of television advertising), Publieke Omroep (Dutch Public Broadcasting), BVA/Bond van Adverteerders (the Association of Dutch advertisers) and Platform Media-Adviesbureaus (PMA, the media agencies platform), under an independent chairman. The SKO Board is responsible for the organisation, form and content of the television audience research. A Technical Commission provides advice on the content and method of research. The television audience measurement in The Netherlands is organised in a Joint Industry Committee (JIC). This formal organisation is increasingly seen as the model for the modern organisation of audience research. Decision-making in SKO is based on consensus.

SKO was established in 2000 for the purpose of:

- conducting (continuous) audience research on television broadcasts for the benefit of the public and commercial broadcasters and interested parties including broadcasting associations, advertisers and media bureaus involved in television (and Internet) advertising;
- managing the rights over the audience research data its publication.

SKO's strength is that it can act on behalf of all relevant parties in the media market to conduct the unique research on audience behaviour in The Netherlands. This audience research is accepted as the benchmark in the market; an acceptance based on the active involvement in the research by all the relevant parties in the market, including broadcasters, advertisers and media bureaus. In the past, this was not always the case. Advertisers, in particular, had little or no involvement in the audience research, despite the fact that they are, after all, the principal focus of the commercial strategies of both public and commercial broadcasters. Through the participation of all interested parties in SKO, a generally accepted, statistical "gold standard" has been created as a basis for a scientifically accurate, valid, reliable and relevant determination of audience behaviour. The audience research is highly valued because of its verifiability and transparency, as evidenced by this methodological description.

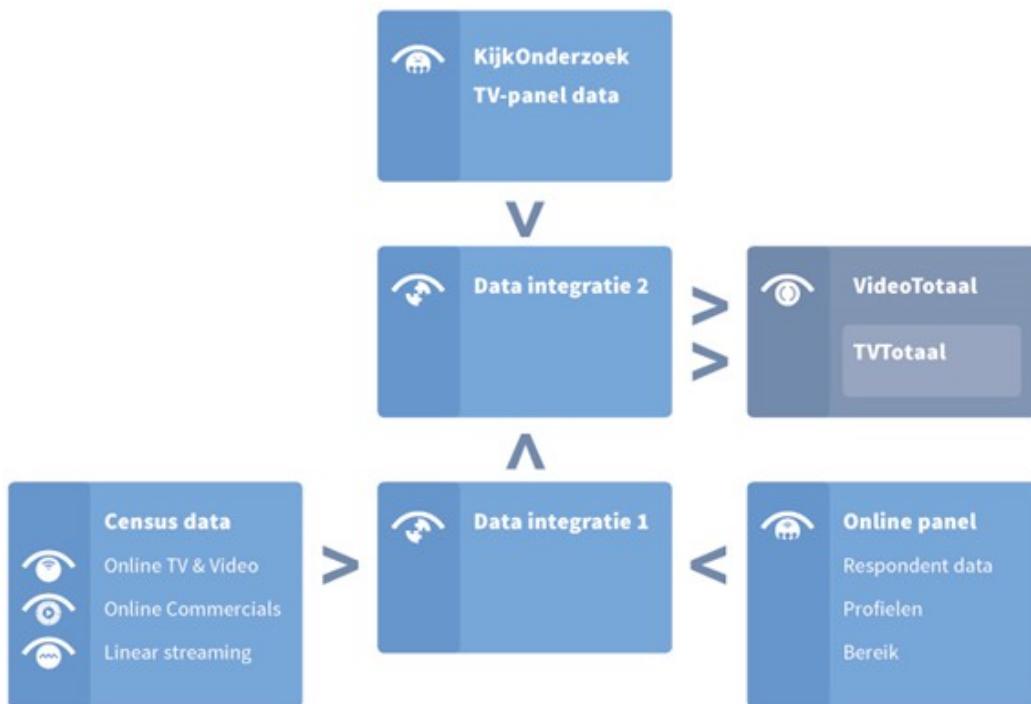
SKO VIM

In 2013, SKO revealed its strategy for the period between 2013 and 2017. The new strategy is a result of audiences' changing viewing behaviour, caused by the increasing penetration of online devices. An increasing number of people in The Netherlands own a laptop, tablet or smartphone and use these devices to view audiovisual content. Such content not only consists of TV programmes or clips of TV programmes, but also of non-TV video streams. In the face of these developments, SKO decided to expand its activities to include all kinds of video content on all kinds of devices. Measuring viewing behaviour with regards to online content and online commercials should enable SKO to broaden the scope of its ratings research and to draw conclusions from the data with regards to the audience's total viewing behaviour. SKO calls this the 'Video Total'.

Back in October 2012, the SKO Board asked its Technical Committee to draw up a plan for the reliable measuring and reporting of (online) video use. In 2013, this initiative resulted in an effort to develop a platform independent video measuring scheme. This scheme should allow us to measure all video content (including live broadcasts and delayed viewing content) on every possible device, such as TV screens, laptops, PC's, tablets, smart phones, game consoles and Connected TV's. In other words: every kind of video content one can think of will be incorporated in the SKO researchers' measuring efforts.

SKO includes both programme content and video advertising. As a result, the Video Total has end to end relevance for the TV and online video chain: for programme and content producers, media bureaus, advertisers and operators. One thing is clear: there is no such thing as one simple total solution. Viewing behaviour across the different kinds of TV and video is too diverse, requiring us to integrate different kinds of data sources. That's why SKO has developed the SKO Video Data Integration Model (SKO-VIM). Figure 1 offers a schematic representation of the SKO-VIM video measuring strategy. The model consists of a number of core elements that are described below.

FIGURE 1: SKO VIDEO DATA INTEGRATION MODEL (SKO-VIM)



1.1.1 CENSUS DATA:

We need to measure the number of times video content is accessed by the end consumer and the total amount of minutes viewed. This needs to be done as closely as possible to the viewing location, i.e. from within the content players used by the audience. SKO identifies three different video census projects:

- * linear streaming (e.g. live streams of UPC, ZIGGO, KPN et cetera)
- * online TV&Video project
- * online commercials.

In each of these projects, SKO wants to register actual viewing behaviour as close to the user as possible.

1.1.2 ONLINE PANEL MEASUREMENT:

Census data does not offer information on user profiles and unique reach. That's why it is necessary to measure the behaviour of actual persons. This involves the measuring of video behaviour through a high quality online panel, including each of the three video components: linear streaming, online TV&Video and online commercials.

1.1.3 TELEVISION AUDIENCE MEASUREMENT TAM:

This is the existing Television Audience Measurement. Of course, TAM will retain a central role in our model. Our goal is to integrate online data with the TAM-based TV data.

1.1.4 DATA INTEGRATION - 1:

in order to create a reliable online video currency, we have to combine online panel and census data. This is the first step towards data integration.

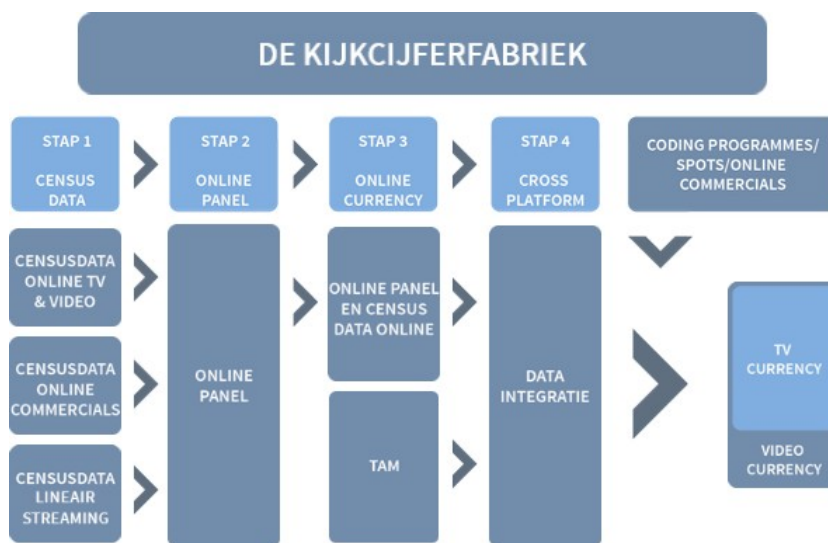
1.1.5 DATA INTEGRATION - 2:

Next, the offline data (television; TAM) and online data must be integrated, in order to create a platform independent video currency (the Video Total). This is the second step towards data integration.

Output: The eventual output will be twofold: a video currency and a TV currency.

The SKO Video Data Integration Model is translated into a Ratings Factory model (see Figure 2).

FIGURE 2. THE RATINGS FACTORY (IN DUTCH: KIJKCIJFERFABRIEK)



SKO strongly believes in a reliable and independent market standard that offers an objective, representative overview of the online video market. Such a standard is only possible through close collaboration with other online video parties that are not affiliated with SKO. Parties such as Sanoma, On top of that, SKO is currently discussing the possibilities with other parties and is actively approaching online parties to work together in online video projects.

On July 8 2014 SKO appointed Kantar Media and Kantar TNS as suppliers of integrated cross platform ratings. Kantar TNS /Kantar Media started setting up an online panel for online video audience measurement on all available devices. The resulting panel-data will be linked to census data for 'Online TV and Video', 'Online Commercials' and 'Linear Streaming'. SKO has already contracted suppliers that will provide these census sources. The goal was to manage to go from 1 January 2015 with at least 3.000 persons reporting.

1.2. VINEX

In 2004, a group of publishers and saleshouses in the Netherlands undertook to commission a new study for the measurement of Internet Audience. For this STIR was founded, an association for the promotion of internet advertising with the objective to achieve an equal status within the range of media for media planning. The combination of Nedstat and Intomart GfK designed the new survey, the Webmeter™.

In 2009, STIR has been transformed into JIC STIR, a joint industry body with the sole objective to carry out the survey in a valid and reliable way. Partners in JIC STIR are the advertisers' Association (BVA), the media agencies (PMA) and the internet publishers (VINEX, previously STIR).

Per June 2013 JIC STIR stopped its activities and VINEX continued as a publisher's network, providing the market with a brand new survey called DDMM as from November the 12th 2013.

Nowadays VINEX has become an organization of 20 leading Dutch online publishers. Vinex objective still is to provide the Dutch market with qualitative, reliable audience measurement for digital media and for this the new research NOBO (Dutch Online Audience Measurement) is launched in November 2016.

The Vinex Board is responsible for the organisation, form and content of the research. A Technical Commission provides advice on the content and method of research.

One of the key elements in the research design of NOBO is an online panel – that is managed in partnership with SKO. The cooperation of SKO and Vinex has lead to an extended online panel, which also includes a new meter system for non-tagged measurement.

NOBO

The so called Nederlands Bereik Onderzoek (NOBO) should be the standard for digital audience measurement. The research design is unique and NOBO is able to report both PC/laptop, tablets and mobile. The new online planning standard will report the total brand audience of both web and app.

The project is based on these basic elements or so called building blocks:

1.2.1 CENSUS DATA:

we need to measure the number of times digital media are being used by the end consumer and the amount of time that is spent. For this purpose participating publishers tag their websites and apps (tagged measurement).

1.2.2 ONLINE PANEL MEASUREMENT:

Census data does not offer information on user profiles and unique reach. That's why it is necessary to measure the behaviour of actual persons. This involves the measuring of online behaviour (traffic) through a high quality online panel. Since not all

publishers can or will implement tagging to their titles, a part of the online panel is also equipped with Wakoopa technology to measure those titles (non tagged measurement). The behaviour of this representative subsample of 2000 panel members is projected towards the whole panel via imputation.

1.2.3 DATA INTEGRATION:

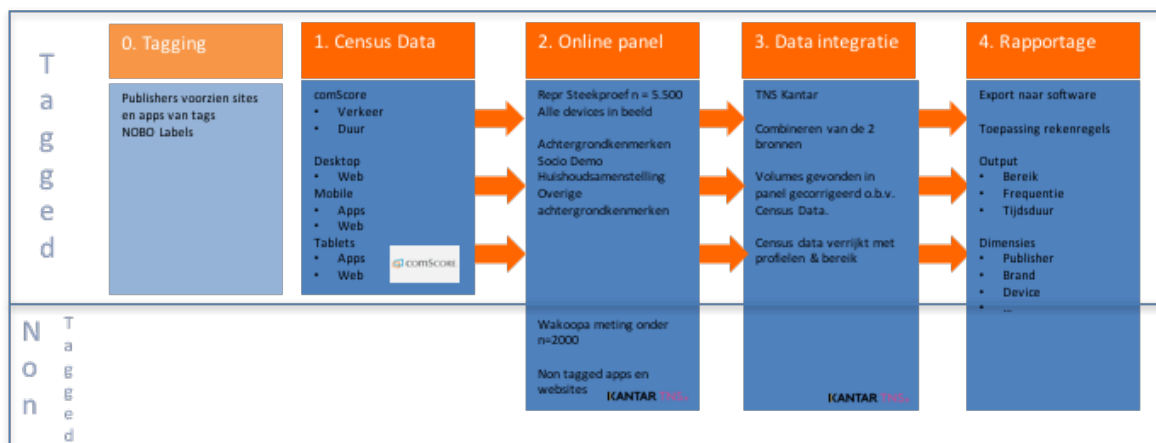
in order to create a reliable online traffic currency, we have to combine online panel and census data. This is called data integration.

1.2.4 OUTPUT:

THE output consists of standard metrics on digital media in terms of reach, frequency and time spent.

Below the NOBO process is represented:

FIGURE 3. NOBO PROCESS



CHAPTER 2

MEDIA STANDARD SURVEY

2. MEDIA STANDARD SURVEY

The MOA Golden Standard (MOA GS), developed by the Dutch market research organisation, is used by all audience measurement services as the norm for their questionnaire, weighting and recruitment. However, not all relevant (weighting) variables for audience measurement populations are available within this standard (e.g. the penetration of computers and internet in Dutch households and individuals). The Media Standaard Survey (MSS) is important because it allows obtaining common universes for all the media audience measurements, both at the household and the individual level, for all the variables needed for weighting which are not available in the MOA Golden Standard. If necessary, the MSS can be used as an alternative to the MOA GS to calculate the universes in the online video, television, radio, print and internet audience measurement services.

The MSS aims to obtain reliable and stable universes based on the Dutch population for recruitment, weighting and control of the media audience measurements.

Important goals are:

Standardisation of questionnaires and weighting norms, regarding socio demographic variables, audiovisual equipment in households, internet penetration, media imperatives and other variables used as population sources.

Alternative sources of universes in cases where MOA GS norms are not available.

Measurement of market trends to evaluate the media audience measurements of online video, television, radio, print and internet. These may be used as future weighting or recruitment variables (e.g. digital television or internet radio penetration).

The regular provision of addresses for the recruitment of new households to the television audience panel. The research may be carried out so that a sufficient number of respondents can be found to recruit and maintain a representative panel for SKO.

The universes obtained from the MSS represent private households in The Netherlands as well as individuals of 13 years and older.

Kantar TNS executes the common MSS since 2011. The contract was renewed in 2013 for the period 2014-2016.

The methodology of the MSS is further described in this chapter.

2.1 THE UNIVERSE

The universe for the MSS includes:

1. Households: the household universe consists of all private households in The Netherlands. Students living in collective housing but with their own room are also included in the household universe.
2. Individuals: this universe consists of all persons of 13 years of age and older living in private households in The Netherlands.

Group housing, institutions, nursing homes, companies, governmental organisations and persons without a fixed address, such as families living on barges or in mobile homes are excluded from the research population.

The composition of the universe of the Media Standard Survey is based on the annual MOA Golden Standard data. The Golden Standard is a calibration tool for national and regional sampling in The Netherlands. This is a tool developed by the Market Research Association (MarktOnderzoekAssociatie -MOA) in collaboration with the National Statistics Agency (Centraal Bureau voor de Statistiek). Prior to 2006, the universe was based on the MiniCensus conducted by GfK Netherlands, which was adjusted on the Monday of week 27 in accordance with CBS trend figures.

2.2 SAMPLING AND QUOTAS

The MSS forms the basis for recruitment, weighting and audit of the media audience measurement. These audience measurements are vital to the media industry; they are at the base of the trading currencies for trade associations such as advertisers, agencies, and broadcasters. MSS is therefore subject to high sample quality requirements. Results should not be biased due to over- or underrepresentation in the sample of particular groups with specific response patterns. This is usually defined as a “representative sample”. This is a somewhat ambiguous term that is mostly used (by sampling theory professionals) for specific variables. Large samples for generic use are, as a rule, expected to be self-weighting. That means that every research unit has the same probability to be selected. MSS meets both criteria: specific representativity requirements and generic self-weighting of the sample. Kantar TNS works together with Prof. Dr. Dirk Sikkels (Sixtat) to select the MSS sample.

The MSS sample is obtained through a two-stage sampling procedure. In the first stage, a sample of Dutch municipalities is drawn, and in the second stage, households are sampled within these municipalities. In the first stage, municipalities are ranked according to size.

For the selection within the municipalities, MSS uses TNT's postal delivery point database, which contains all private residential addresses in The Netherlands.

To select households within the municipalities, additional estimates of educational

levels and the age of the heads of households are used. These have proven to be good predictors of media behaviour. Within the municipalities, all individual addresses are sorted by these two variables; as a result, the sample is representative for these sorting variables as well.

Within the households, the next-birthday method is applied to create a sample of individuals. This method is validated and appears to be the most effective (O'Rourke and Blair, 1983; Salmon & Spicer Nichols, 1983). Although all households are sampled with an equal selection probability, individuals do not have an equal sampling probability. After the sample of households has been drawn, individuals within a one-person household have a probability of 1 (or 100%) to be included in the person sample, an individual in a two-person household has a $\frac{1}{2}$ (or 50%) probability to be drawn and this decreases further, as the household becomes larger. To account for this, sampling weights are assigned to the persons selected. Weights are proportional to the number of individuals aged 13 years and above within the households. An individual in a three-person household (based on the number of persons aged 13 years and above) will, in reality, represent 3 persons.

The household sample of the MSS is drawn up once a year, based on a systematic sampling procedure of municipalities and all private households in The Netherlands provided by TNT's postal database and Experian. Every quarter, all sampled addresses are improved with name and telephone numbers information provided by Experian. By doing so, Kantar TNS works with the most up to date information. EDM conducts an extra improvement of the telephone number data. Their aim is to provide a telephone number for each selected address.

2.3 REPRESENTATIVITY

The households and persons in the samples of the Media Standard Survey are representative of all private households in The Netherlands and all persons of 13 years of age and above within these households. To this end, the following variables have been established:

Household-level	Person-level
Age of head of the household	Age
	Sex
Educational level head of the household	Educational level
Household size	Household size
Household composition	Position in household
Social status head of the household	Social status head of the household
	Nielsen region
Province	Cebuco region

2.4 SAMPLE SIZE

In the MSS the following numbers of respondents are surveyed yearly:

- The household survey consists of net $N = 6.000$ households. The head of the household (male/female) is interviewed, or his/her partner. The head of the household is the person aged 15 years or over who contributes most to the household income.
- The individual level sample consists additionally of a net sample of $N = 5.100$ persons aged 13 years and older.

2.5 QUESTIONNAIRE AND FIELDWORK

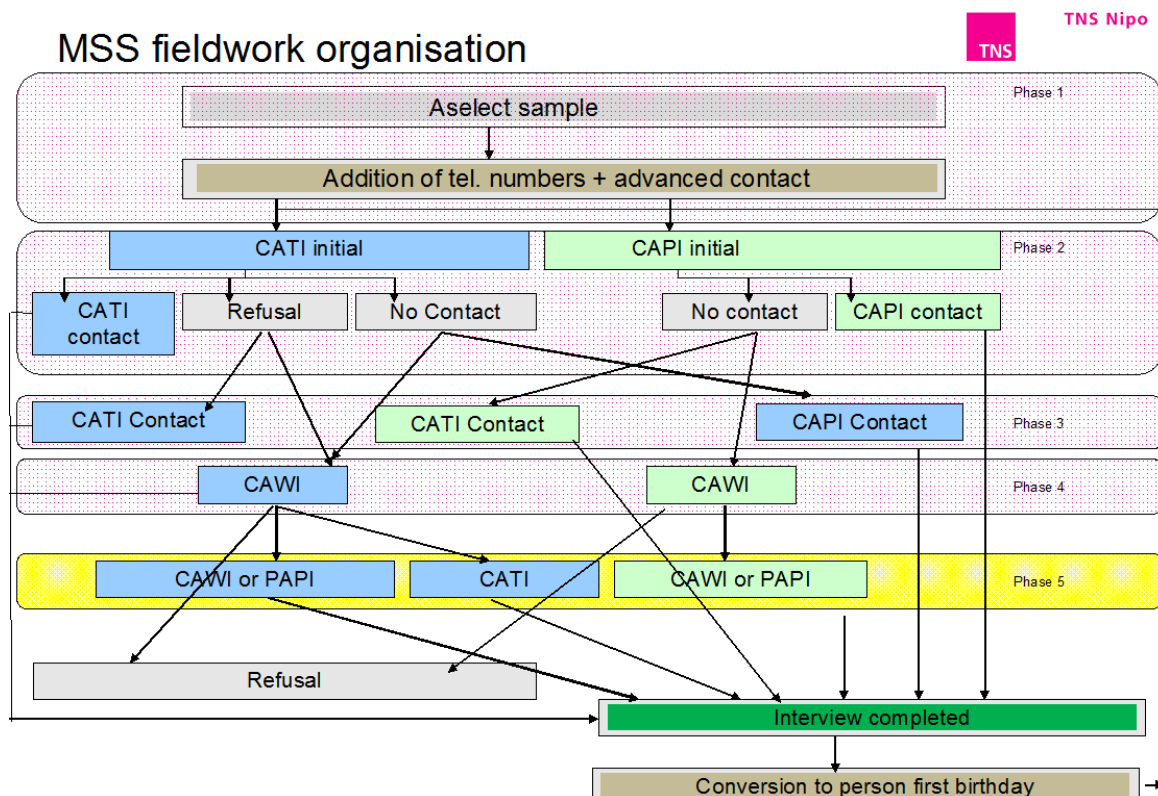
The questionnaire of the MSS includes questions regarding the presence of media equipment in the household and the media use of households and persons (selected according to the date of their next birthday). The questionnaire also includes questions on social and demographic characteristics of the household and the household members.

Fieldwork for the MSS is carried out on a continuous basis using a multi-instrument approach, combining fieldwork done face-to-face, by telephone, online, or by paper questionnaires.

An introductory letter is sent by mail to every selected person in the gross household sample. The letter is written in Dutch, and includes summaries in English, Turkish and Moroccan-Arabic. The letter is addressed to the head of the household. In order to do that, the TNT postal delivery point database is used. The addresses on this file are addressed to the head of the household.

The first contact with the respondent always takes place through an interviewer. In this way, the interviewers can check whether the respondent actually is the head of the household or his/her partner. In the first attempt, all respondents are contacted through CATI (Computer Assisted Telephone Interviewing) or CAPI (Computer Assisted Personal Interviewing), depending on whether a telephone number is available. CAWI (Computer Assisted Web Interviewing) is used as a response-enhancing method.

FIGURE 4: FLOWCHART MSS FIELDWORK METHOD



Addresses with an available telephone number are contacted by telephone. If there is no answer, the telephone number will be called again a maximum of 25 times on various days of the week and times a day. If there is still no contact, these addresses are visited by an interviewer for a face-to-face interview (CAPI).

These addresses are approached a maximum of three times. If there is still no contact, a letter including a link to the online questionnaire, and a paper version of the questionnaire is sent to the household's address or left behind.

The three fieldwork techniques CATI, CAPI and CAWI are applied by Kantar TNS to obtain previously agreed response percentages. To obtain the highest response possible is important given the nature of the survey: researching the composition of the universe for media audience measurement.

Conversion to the person questionnaire, addressed to the person in the household having celebrating his/her birthday first, is conducted as efficiently as possible, preferably through the same fieldwork technique as used to interview the head of the household or his/her partner. However, the respondent is free to use the interview method he/she prefers. In cases where the head of the household and the first person in the household having a birthday are the same person, the household and person questionnaires follow each other, so the respondent doesn't notice he/she answers two questionnaires.

2.6 RESPONSE ENHANCING MEASURES

A high level of response is required in order to ensure the representativity of the MSS. A large number of measures designed to enhance response have been adopted in order to achieve a minimum response of 60% on household level and 85% on a personal level. The following measures are adopted:

- *An introductory letter is sent by mail to every selected person in the sample.*
- *€5 is sent to each household in the sample together with the introductory letter.*
- *All contact attempts are distributed as efficiently as possible among days, day-parts and time-slots to improve the contact probabilities.*
- *Households who initially declined to participate are contacted again after a while.*
- *A telephone card is sent with the CAPI introductory letter, so respondents can choose for a telephone interview if they wish so.*
- *When calling on the household in person, if no one is home, a card is left behind with the request to contact Kantar TNS (by e-mail, telephone, or by mail).*
- *A specific website about the research (www.tns-nipo.com/mediaonderzoek) and an online helpdesk (mediaonderzoek@tns-nipo.com) is available for respondents during the fieldwork. The helpdesk can also be used for general questions regarding the research. This helpdesk can also be reached via a toll-free telephone number.*
- *Kantar TNS uses preferably bilingual interviewers.*
- *When questioning immigrant households, the interviewer may ask other household members for help when the respondent does not speak Dutch. Other household members can help translating the answers.*

2.7 IMMIGRANT POPULATION

An immigrant household is defined based on the:

- Country of birth of the mother of the principal breadwinner;
- Country of birth of the father of the principal breadwinner.

Because the universe of the MSS is based on all addresses in The Netherlands in the TNT postal delivery point database, the immigrant population has an equal chance to be sampled. However, in order to minimise non-response among the immigrant population group, special attention is given to the recruitment of these immigrant households:

1. When necessary, using a bilingual researcher for telephone and face-to-face interviews;
2. A supplementary sheet with multi-language text is included with the introductory letter, announcing the survey and explaining its purpose to non-Dutch speaking persons;
3. When questioning immigrant households, the interviewer may ask other household members for help when the respondent does not speak Dutch. Other household members may help translating the answers.

2.8 REPORTING

Data from MSS is reported to SKO and the NLO, NOM, and since 2015 Vinex partners in a two weekly fieldwork report, and a quarterly dataset. Every (half) year, Kantar TNS delivers a complete report to the partners of SKO, in which the results are described for a number of target groups. Reported results are weighted according to the annual MOA GS data so that the results are representative for the Dutch population of 13 years and older.

As of 2011, the MSS-partners publish an overall annual summary of the MSS-results. In this summary, medium-specific information and media-imperatives are reported by target group and medium type.

CHAPTER 3

THE MEDIAPANEL

3. THE MEDIAPANEL

The viewing data is gathered on a daily basis from a panel of at least 5,000 individuals within households, whose members aged six years and over have agreed (or have their elders' consent) to participate in the research. This is the so called MediaPanel. This section describes the criteria used to select the households for the MediaPanel and the method by which they are recruited to take part in the research. Additionally, the methods used by Kantar TNS to maintain contact with the panel members are discussed.

3.1. POPULATION AND REPRESENTATIVITY OF THE MEDIAPANEL

The population of the MediaPanel is the Dutch population 6+.

To ensure that the daily panel size of 5,000 persons is not put at risk, a buffer of extra individuals is maintained in the sample. For this we have an overage of 30%. The gross sample of the MediaPanel consists of 3,250 households and 6,500 persons.

3.1.1 ONLINE MEDIAPANEL

The online panel consists of a nationally representative sample of individuals with internet access. This internet population is defined as:

- Usage of devices that connect to the internet (in home or out of home), or
- Ownership of devices, or
- Devices with Internet access at home, or
- Access to the internet at home.

Where devices included are only desktops, laptops, tablets and smartphones.

3.1.2 NON INTERNET POPULATION

The reports from the MediaPanel are based on the total Dutch population of 6 years and older. In order to include individuals with non-internet access in the reporting of the MediaPanel, a number of 'fictive' households are added to the sample to represent the non-internet homes. This is done to ensure that the basis for the results reflects the whole 6+ population. The number and characteristics of the "no internet" homes to be added are determined on the basis of the yearly figures of the most recent Media Standard Survey.

The variable 'internet population or not' is one of the weighting rims for the total sample and it is treated like the other rims. For more information, see the section on weighting.

3.2. TNS NIPOBASE

All MediaPanel members are recruited from members of TNS NIPObase. This is a database of over 200,000 respondents who regularly participate in Kantar TNS surveys. Of these respondents Kantar TNS has a large number of variables already available such as response behavior and socio demographics. These respondents can be accessed through all accepted fieldwork instruments.

Active panel management, including rules on frequency survey delivery, active communication with panel members and a participation-based reward scheme (no prize draws) contribute to an average response rate of 70%.

The online panel, currently 127,000 persons strong (in 58,000 households) is eligible for the standard recruitment of the MediaPanel.

All new members of TNS NIPObase complete an entry questionnaire with all Golden Standard questions. Once a year members are actively asked to update these questions, and they are also asked to do so on a more regular basis through the panel portal. In this way, we ensure that Gold Standard demographics are updated at least once a year. If panel members do not update their profile they will become 'inactive', with a risk of being excluded from the NIPObase.

3.2.1. RECRUITMENT METHODS

Panel recruitment uses one of three methods, with the goal being to reduce recruitment effect. There is, for example, no opportunity to self-register.

- Through traditional offline data collection (70%)
- Bought addresses (especially for difficult target groups) (20%)
- Snowballing - mainly for difficult target groups (10%).

This method is only currently used in our NIPObase to recruit very difficult target groups. Snowballing is not self-registration but current panel members may nominate a new panel member. Kantar TNS can (and does) accept or reject these new potential panel members. Snowballing is **not used** in the recruitment of new members to TNS NIPObase destined for participation in the MediaPanel.

3.2.2. ADDITIONAL SAMPLE FOR THE MEDIAPANEL

The recruitment of new TNS NIPObase panel members for the MediaPanel is comparable to the standard recruitment methods used for TNS NIPObase, excluding snowballing.

Two main methods are used and we will not be using the snowball recruitment method:

1. Recruit from traditional random sampling studies (mostly telephone and face to face interviewing). We ask these respondents if they are willing to participate in future research. This pool of 'warm sample' can partly solve the difficult to recruit households
2. Specific recruitment based on lists from address providers like Experian, Cendris and Airmiles.

3.2.3. EXCLUSIONS TO OTHER SURVEYS

Participants in the MediaPanel do not get:

- surveys that are directly related to media research,
- surveys in which Kantar TNS ask them to visit a specific website,
- 'third party surveys', as Kantar TNS only have partly control over the content of these surveys,

3.3. SELECTION OF HOUSEHOLDS

Most of the sample criteria used in the set-up of the MediaPanel is available in the TNS NIPObase. Based on this match, Kantar TNS is able to understand the feasibility for the MediaPanel recruitment within the panel and the recruitment needs outside of the current TNS NIPObase sample source.

Kantar TNS uses a stepwise recruitment process (which is described in the next paragraph).

All TNS NIPObase panel members are screened against a list of exclusions – including working in certain areas and using promo sites.

The recruitment is based on having access to a majority of the 6+ persons within a household. A household focus is desirable for several reasons:

- It gives easier access to recruitment of children,
- There are shared devices in households, so cooperation of other household members is necessary for multi user devices,
- It increases commitment (family pressure),
- It mirrors the current TAM practice,
- It's a more efficient recruitment approach.

3.3.1. RECRUITMENT MATRIX

In order to realize a representative panel we combine use of a recruitment matrix and specific weighting procedures. The recruitment of the panel is based on a panel matrix setting targets for how many panel members we want in each cell.

Criteria for cell matrix variables:

Census data is available (MOA Golden Standard, MSS and TNS NIPObase)

Stability through the years

Simplicity (less cells / preferably evenly spread)

Explanatory of online video viewing and internet use (for online video viewing on fixed and mobile devices and internet use at home and out of home)

The necessity to use variables that are useful for the weighting scheme to come as close as possible to the one used for TAM and with acceptable results in terms of weight efficiency.

A number of analyses were conducted to decide on the specific cell matrix variables to be used in the first recruitment phases:

Chaid segmentation, from this Chaid-analyses we can see which variables relate strongly to online video viewing and internet use and which we should include in the cell matrix.

Stability test, the variables were run through a stability test; the years 2011-2012-2013 were placed next to each other to see how the differences through the years are (or not).

These analyses resulted in the cell matrix as stated in figure 5.

FIGURE 5: VARIABLES INCLUDED IN THE CELL MATRIX (RECRUITMENT MATRIX)

Gender/age (12)	Family life cycle (6)
male 6-12 years	Alleenstaanden <35
male 13-19 years	Alleenstaanden 35+
male 20-34 years	Volw. hh, verantwoord. huish <35
male 35-49 years	Volw. hh, verantwoord. huish >= 35
male 50-64 years	Huish. jongste kind <12
male 65+ years	Huish. jongste kind 13-17
female 6-12 years	
female 13-19 years	
female 20-34 years	Working status (2)
female 35-49 years	Yes
female 50-64 years	No
female 65+ years	
Education (4)	Devices (absolute number of internet devices in household)
No education/primary school	Desktop PC
Lower (VMBO)	Laptops
Medium (MAVO/MBO)	Tablet
Higher (HAVO/VWO/HBO/WO)	Smartphone
Nielsen (5)	OS per device (absolute number of OS in households)
Three big cities	Tablet / iOS
Rest West	Tablet / Android
North	Tablet other (out of scope)
East	Smartphone / iOS
South	Smartphone / Android
	Smartphone other (out of scope)
Householdsize (5)	Usage promo websites
1 person	Member
2 persons	No member
3 persons	
4 persons	
5 persons or more	

The basis for sampling is on a household level as stated above. Kantar TNS selects households based on such criteria in order to get to a representative sample on a 6+ individual's level. The sample matrix is defined on a 6+ individual's sample. The required size of each cell in the matrix is determined using the Media Standard Survey, weighted for MOA Golden Standard.

The standard values of the population from MSS 2014 and Q2015 were used in initial recruitment phases. Since July 2015, MSS survey analyses of first half year 2015 are used to determinate the population standards. The cell matrix reference populations are updated with the MOA Golden Standard every year device for most variables, internet access per devices is based on MSS populations updated every half year.

3.3.2. MIP INTERNET CLASSIFICATION

To monitor the panel composition of the MediaPanel we use the classification of internet usage from MSS: Low / Medium / High. Based on Full Year data MSS, this classification is revised at the end of each year. MIP Internet classification is no weighting variable, but is used to monitor the panel composition.

At start of recruitment (Oct 2014) the 2013 FY MIP Internet classification was used. From week 27, 2016 this classification will be updated to the last available update from the MSS, 2015 FY MIP Internet. The next update is scheduled every year in week 27, using the last year FY MIP Internet classification.

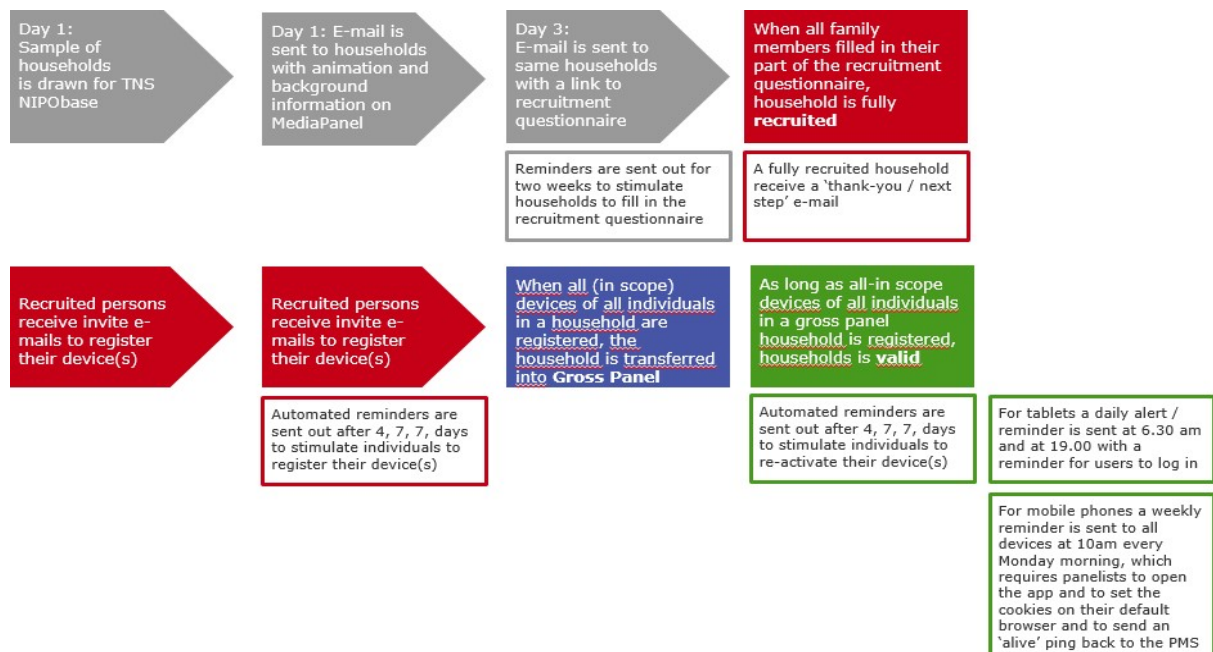
FIGURE 6: MIP INTERNET CLASSIFICATION 2013 AND 2015

MIP Internet 2013		MIP Internet 2015
Laag (0-180 minuten)		Laag (0-240 minuten)
Midden (181-660 minuten)		Midden (241-840 minuten)
Hoog (661 minuten of meer)		Hoog (841 minuten of meer)

3.4. RECRUITMENT STEPS PANEL MEMBERS

The recruitment process is conducted online through the TNS NIPObase. A stepwise recruitment process is used. The main process is used in the flowchart in figure 7.

FIGURE 7: FLOW CHART FROM SAMPLE TILL VALID INDIVIDUALS



The recruitment follows the steps listed below:

- Sample of households is drawn from TNS NIPObase

- An e-mail is sent to those households with an animation and background information about MediaPanel
- After one or two days an e-mail with a link to the recruitment questionnaire is sent to those households
- During fieldwork a number of reminder of reminders are sent to households when questionnaire is not (completely) filled in
- In the beginning of the household questionnaire, an opt in procedure is included. The gatekeeper is asked whether the whole household wants to participate in MP
- After a positive opt in, the gatekeeper* fills in in the questionnaire with household information. The Recruitment questionnaire starts with questions for gatekeeper and after that all family members fill in an individual part. In the individual part of the questionnaire, every member gets the opt in possibility too
- When all family members have filled in their part of the recruitment questionnaire (the individual questionnaire), a household is fully recruited
- A fully recruited household receive 'thank-you / next step-mail'
- From next day, household can address the MediaPanel portal where information about devices can be adjusted
- Recruited persons receive invite e-mails to register their devices. Panellists receive one email per device

*The gatekeeper is the person in the TNS NIPObase household who is the main contact for Kantar TNS, usually the head of household / housewife.

FIGURE 8: EXAMPLE OF INVITE E-MAIL TO REGISTER A DEVICE



3.4.1. DEVICE REGISTRATION

Recruited persons receive invite e-mails to register their devices. For each recruited device the main user receives one e-mail to register that device:

- Desktop / laptop: panel member install the start page on every used browser
- iOS and Android mobile devices: panel members install the MediaPanel app on every device using a given registration code

In the invite e-mail panel members are directed to the MediaPanel website where they can find documentation and instruction videos to register their device(s). When sent a reminder e-mail to validate / re-register the link to this video is included.

3.5. QUESTIONNAIRES

All new members of TNS NIPObase complete an entry questionnaire with all Gold Standard questions. Once a year members are asked to update these questions (and they can also do this on a more regular basis through the panel portal). In this way, it is ensured that Gold Standard variables are updated at least once a year. If panel members do not update their profile they are put on '*inactive*' status, with a risk of being excluded from the panel.

3.5.1 RECRUITMENT AND BACKGROUND QUESTIONNAIRES

The recruitment questionnaire consists of a household part which is filled in by the gatekeeper and an individual part which is filled in by every member of the household. The method for conducting the recruitment questionnaire is online. The length of this recruitment questionnaire is on average 29 minutes.

The recruitment questionnaire consists of:

- Golden standard information (demographics) - to be checked / updated from this point on through NIPObase portal
- Device information - to be checked / updated from this point on through MediaPanel portal
- Other information, such as questions on internet usage, media imperatives, personal details to be checked / updated in the recurrence basic questionnaire

Next to the recruitment questionnaire there is a so-called background questionnaire including additional questions on online viewing and internet site traffic, online transactions and business, job orientation and life style questions.

Every year in April, the panel members are served a questionnaire through which we get an update of both:

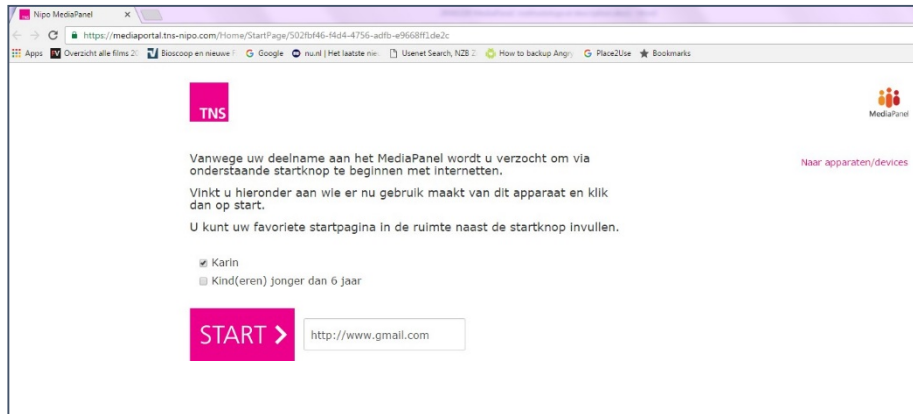
- the 'other information' of the recruitment questionnaire (as stated above)
- the background questionnaire.

3.6. PANEL PORTAL

Once all individuals in the household have completed the recruitment questionnaire, all device information is accessible from the MediaPanel portal, members can access the day after their recruitment.

On this portal, panelists can adjust device information: delete and or add a device / change device information / usage of devices. This adjusted information triggers the Panel Management System IPMS to send new registration e-mails if necessary.

FIGURE 9: MEDIAPANEL PORTAL



3.7. COMPENSATION AND INCENTIVES

MediaPanel members receive Nipoints with which they can buy gifts. After each month the incentive is paid for all devices registered. Every six months we pay a bonus month per device if all devices in the household are still registered.

3.7.1. SPECIFIC INCENTIVES 13-19 YEAR OLDS

In the last recruitment waves the 13-19 year olds got a one off incentive (€ 10 H&M / Mediamarkt voucher) when they registered for the MediaPanel.

Since week 47, instant gratification is in place. 13-19 years get a text message on Tuesday morning related to pressing the app on Monday morning.

Every Wednesday we pick one lucky winner who pressed the app to send a 20€ voucher (H&M / Mediamarkt). This gratification will be evaluated in February 2017.

3.8. HELPDESK

The MediaPanel members can raise questions / issues with the helpdesk. In all documentation (installation e-mail / app information / on MediaPanel portal) the existence and ways to reach the helpdesk is mentioned. The helpdesk can be reached by phone (020- 5225 355) or by e-mail via mediapanel@tns-nipo.com.

The helpdesk is attainable by phone:

- Monday – Friday from 15:00 – 20.00
- Saturday from 9:00-13.00.

The helpdesk members answer incoming e-mails and phone calls during these working hours. They also make outbound calls and e-mails to panel members.

On Monday – Friday the helpdesk is located at Kantar TNS office. On Saturday the helpdesk is manned from home. On Saturday the phone calls are being transferred to a mobile phone which is in possession of the officiating helpdesk member.

3.9. TERMINATING PANEL MEMBERSHIP

Households may voluntarily withdraw from the panel; Kantar TNS may also terminate a household's panel membership. In order to guarantee the quality of the data, daily validation checks are run on the log-on behavior of the panel members. If there is a problem with the log-on behavior of a panel member, the household is contacted to discuss the possible problem and their participation in the research. If the unsatisfactory behavior continues despite repeated discussions, the entire household will be dropped from the panel.

CHAPTER 4

DATA COLLECTION, VALIDATION AND PANEL MANAGEMENT

4 DATA COLLECTION, VALIDATION AND PANEL MANAGEMENT

4.1 PANELIST IDENTIFICATION

Registration and respondent identification is achieved by two tools:

1. A Web portal made the “home page” of each respondent that will have three purposes:
 - Initial Registration of the respondent and his devices
 - Refreshing the identifiers each time the homepage is opened.
 - Allow for the panel member to identify himself at the beginning of each “surfing session”.
2. A mobile application that is installed on the iOS and Android devices of the panel member that will also facilitate the initial registration as well as the ongoing identification of the panel member. NB. In order to maximize participation, we assumed that smartphones are single user devices and therefore require no panel member identification.

FIGURE 10: MEDIAPANEL MOBILE APPLICATION



4.2. DATA COLLECTION – CENSUS MEASUREMENT

The measurement in the MediaPanel relies on the availability of census data measurements provided by SKO or VINEX accredited third parties. Census data sources play a critical role in the measurement system and it is from within the subsequent data set that identification and extraction of panellists' behaviour takes place.

Census data incorporated in the measurement within the MediaPanel consists of three of sources, classified according to type of content: Online TV and Video census data (OTV), Online Video Commercials data and Web traffic data. Different the third-party data analytics suppliers are involved in the provision of these sources of census data.

FIGURE 11: SKO-DATA FLOW: VIEWING, COMMERCIALS, TARGETS, META DATA

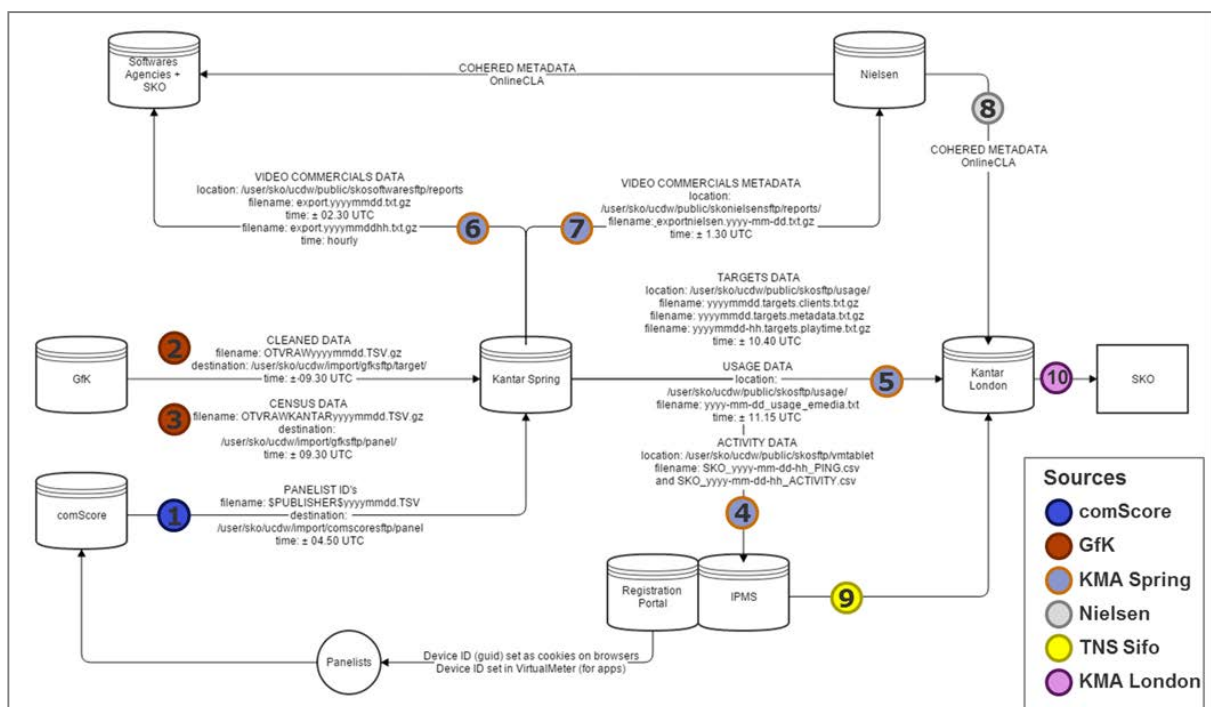
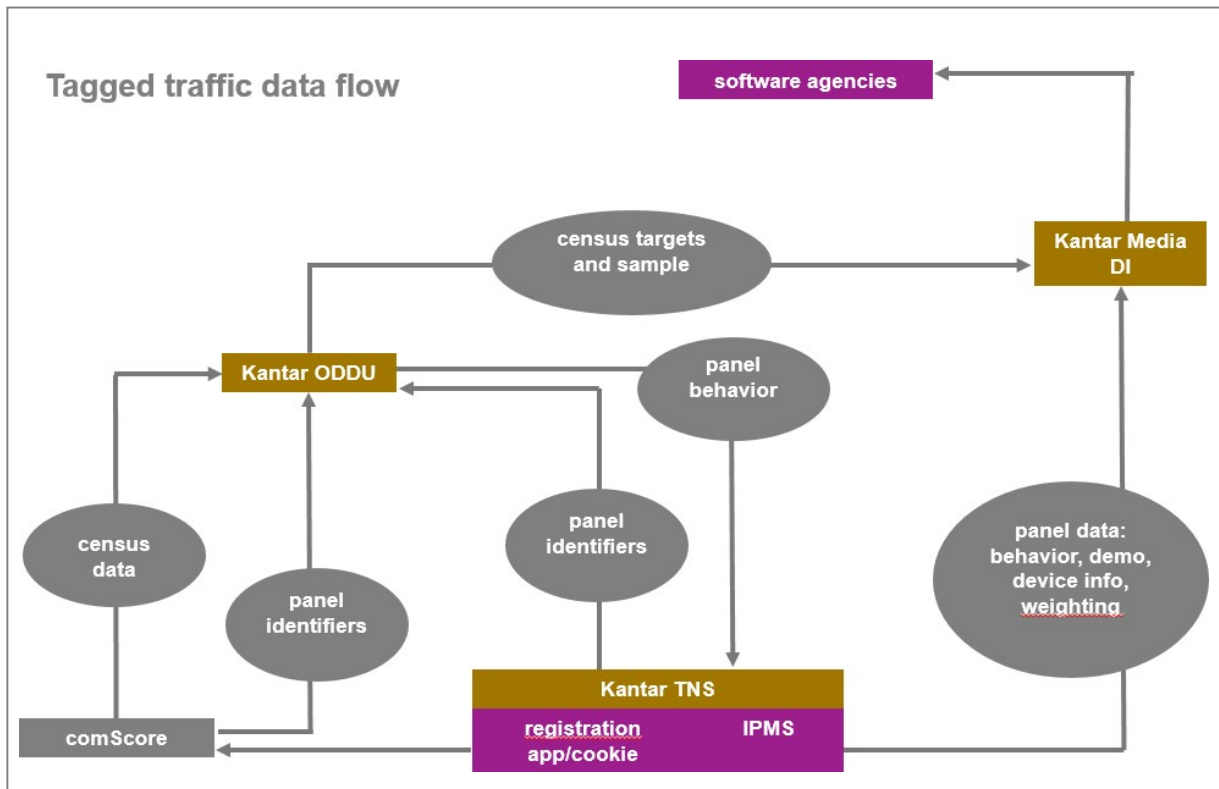


FIGURE 12: VINEX-DATA FLOW: VIEWING, TARGETS, META DATA / TAGGED TRAFFIC

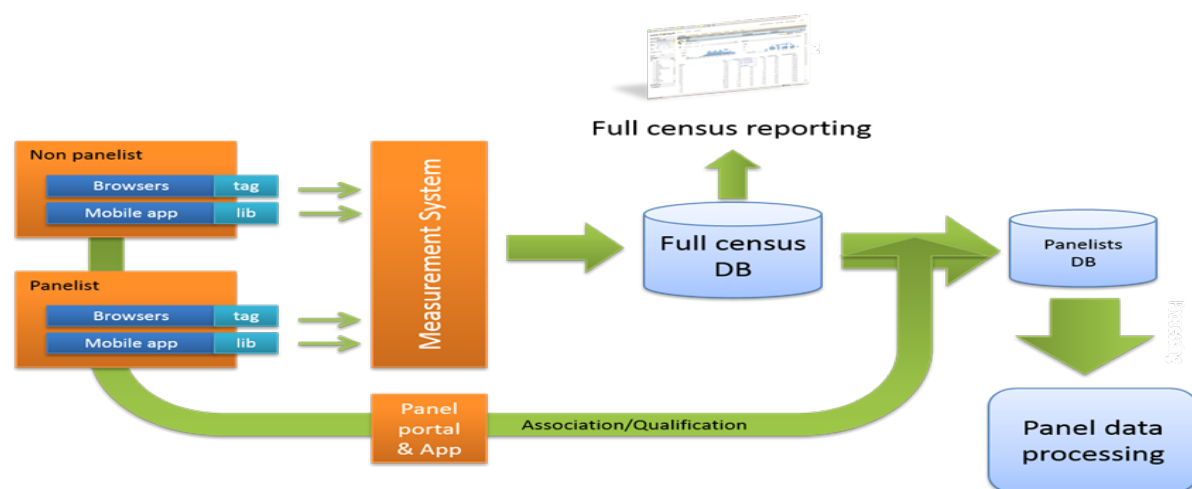


For identification purposes, all third parties provide Kantar Media with data for each of the identifiers that have been seen daily on the panel Web portal or within the panellist mobile application.

Each supplier tag is set in the panel web portal. The tag meets the following requirements:

- The tag must set/read a third party cookie or other feasible and persistent/lasting means of cross-site identification of users.
- This identifier must be the same for the panel web portal or panel mobile app as it is for the tag used to facilitate the measurement of the census data (this is the usage on the publishers' site and players that are being measured by third party).
- The third party must provide Kantar developers with sufficient support to allow for the integration of their tag/library into the panellist application or web portal.
- As for web players, the tag/library must provide a device-specific identifier that is valid both for the panel app as well as for any implementations in publishers' sites.
- In the case of native mobile players the party must provide information to the Kantar "panel app" about the identifier that is used by the library/SDK that is integrated into the clients' apps. Those identifiers are primarily the Identifier for Advertisers (IDFA) / Identifier for Vendors IDFA in iOS, self-generated local and app specific identifier and the Android ID for Android tablets and smartphones. The third party SDK must be able to expose its local identifier via a public method that allows Kantar SDK to read this identifier in the census data. This identifier is a hexadecimal string of 16 or less bytes and has been hashed and truncated.

FIGURE 13: PANELIST VIEWING IDENTIFICATION IN CENSUS



Each day, the transfer of identifiers is provided through a secure ftp protocol. Kantar has built a database table of panelists coming from measurement providers. Every day, Kantar connects panelists with third parties UID in order to determine which panelist saw a specific stream, programme, commercial or website.

OTV, Online Commercials and web traffic census data in its totality is also imported daily by Kantar Media, Importing OTV data for the purposes of extracting the panelist usage data and using the census data for data modeling. See section on adding demographics to panel viewing (section 4.8).

4.2.1. SECOND BROWSER MEASUREMENT

From week 27, 2016 second browser measurement is added to the measurement. It is possible to change the app on mobile phones and tablets to set cookies on more than one browser. For the second browser, this will launch the cookies in 2nd browsers where they exist on Android phones and tablets. This will be limited to Chrome and the Android browser.

From week 27 2016, panel members with Android phones and tables will be asked to de-install the current MediaPanel app and re-install the MediaPanel through the Google Play store. In this new app, the second browser measurement is already included.

4.2.2. MEASUREMENT OF NON-TAGGED SITES

For measuring non-tagged sites Wakoopa's solution is used. Wakoopa supplies passive metering software (the 'Tracker') that panelists will activate on their equipment in such a way that the details of their online behavior are measured and recorded. This measurement includes tracking of visited websites, search terms and applications used.

The Wakoopa Tracker is deployed to approx. 2,000 panel individuals. The Tracker is user-centric, every device has a unique ID and is connected to a unique Household number in the panel.

Wakoopa software

Wakoopa offers a branded metering solution to Kantar TNS / Kantar Media to deploy on its panel. Clear instructions are provided to all panelists as part of the standard installation process on all device types. For privacy protection reasons, all panelists can pause, quit or uninstall the Tracker at any time. The measurement stops until

resumed by the system in this case of pausing or until the participant re-installs the meter on their device.

Devices and systems supported

Desktop Tracker

The Wakoopa desktop Tracker is installed on devices of the participants and runs in the background. The Tracker measures visited URLs, including secure connections (HTTPS). The tracker has capabilities on both Windows and Mac and on all major browsers on these Operating Systems. Those include Microsoft Edge, Internet Explorer, Google Chrome and Firefox for Windows and Safari and Google Chrome for Mac.

Mobile Tracker

Wakoopa supports the following operating systems on mobile:

- Android (versions 2.3 and up)
- iOS (versions 6.1 and up)

Both solutions are integrated into the Kantar Virtual Meter and branded as such to ensure the best user experience and highest installation rates. More information about the technical details of measurement on different operating systems is available to stakeholders.

Both solutions track visited URLs and the apps that have been used.

On paragraph the following paragraphs you can find an overview of the capabilities of the Wakoopa solutions. A detailed specification of the full suite of Wakoopa solutions and calculation rules being applied in this project is available in a separate 'Wakoopa-NOBO' attachment.

This attachment covers:

- a full technical specification for URL tracking on PC and Laptop
- a full technical specification for URL tracking and App measurement on mobile devices
- a description of any known limitations

Desktop and mobile measurement specifications

The approach to data measurement is the same for all devices and systems. Basic principles are:

1. Device must be active.

2. The process (app or browser) that is being measured is running on the foreground and is the activated process.
3. Measurement starts when the process becomes active or moves to the foreground.
4. Measurement stops when the process stops, moves to the background or when the device stops being active.

The focus on the active processes allows to minimize the amount of data and makes reporting more efficient. This means that the data that is being reported always reflects the actual online behavior and not background processes of a device.

Data storage

All collected data is encrypted and sent to Wakoopa via https; Amazon Web Services (AWS) are used for hosting. All meta-data on apps is stored in a separate database for security purposes.

Data processing

To transform the collected data into actionable information Wakoopa stores and processes its data on Amazon Web Services. The usage data is exported to S3 so it can be processed overnight; data processing starts at 02:00 CET every day.

Data export

After the processing is finished, all data is made available to Kantar TNS and Kantar Media via an API. This means that usually all exports are available next morning before 09.00, but exact timings depend on the amount of information that needs to be processed.

Whitelist and reporting lists

Whitelist

As part of the non-tagged element of the traffic measurement solution Kantar Media deploys (using Wakoopa technology) it is required to apply a Whitelist. This whitelist limits the reporting of sites using this methodology to only those sites not measured by the tag based solution. With this it is possible to include in the measurement and reporting:

- sites and apps where owners will not allow tagging of their sites or tagging is not possible,
- sites and apps that are of major interest, but not owned by participants.

As the Wakoopa measurement is only deployed on a subset of the MediaPanel (with a target of 2,000 individuals) there is an imputation to perform to retain the integrity of the full respondent data base and reporting. A full description of this imputation process is available to our participants. The imputation process is being evaluated every quarter.

To aid this imputation Kantar Media collects recall measures of website usage for sites that are included on the whitelist in our yearly panel (update/background) questionnaire. The update in the questionnaire is conducted twice a year.

The whitelist will be reviewed regularly by SKO and VINEX. This review is made based on the URLs with the highest volumes of visits in the previous period and new (relevant) media and video sites or apps. Kantar Media will supply Wakoopa data for this.

Reporting lists

Two outputs are generated from the untagged Wakoopa measurement. One for VINEX, reporting website and app traffic, and one for SKO, focussing on video. The reporting lists are used to determine which sites and apps are part of the output data files. In both reporting outputs, fansites, reditects, non-existing and fake sites are filtered out.

For VINEX the NOBO files contain website and app traffic. The untagged data is available from reporting date June 26th 2017. The reporting contains daily non tagged measurements between 00:00 and 24:00 hours. NOBO files contain reach and frequency of visit for all sites and apps reported. Specific reporting rules are described in the VINEX document Mandatory Calculation and Reporting rules, that is published at www.vinex.nl.

The second output report for SKO is limited to those websites where video content is distributed and in URLs and apps with a majority of video content available.

The SKO Output non tagged file day's scope follows the viewing files, that is 02:00 to 26:00 hours.

As the scope of the day reported and the selection of URLs is not comparable, it is not possible to report video viewing (reach or duration) straightforward from the VINEX website traffic file.

4.3 VALIDATION

The validation system identifies valid panel members on a daily basis with validation working on three levels from devices/ browsers, individuals and households.

- Devices are validated at a browser/app level by usage, time since last cookie was set and page events.
- Individuals are identified by periods of non-usage of their devices.
- Households again are identified by validation of the individuals within the household.

The overnight validation rules applied for the MediaPanel are hierarchical on 4 levels, from browsers/apps, devices, individuals and households.

4.3.1 VALIDATION OF BROWSERS/APPS

Browsers are validated by traffic usage or by a heartbeat from the home page. For browsers with a claimed weekly usage the browser is checked for traffic in the last 21 days while a browser with a claimed monthly usage is checked for traffic for the last 35 days. These parameters are configurable by device type.

Apps are validated by heartbeats from the App being reported to the system every day that the device is turned on (only one ping per day the device is on). Apps will be considered valid if a heartbeat has been seen within the last 21 (configurable) days. The overnight validation flags each browser and App as either valid or invalid as a basis for further processing.

4.3.2 VALIDATION OF DEVICES

Devices are validated by the validation status flag of each of the browsers and Apps on the device.

- The system should have configurable rules and allow for at least the following options:
 - The device is valid if ANY of the browsers or Apps are valid
 - The device is valid if at least 1 browser and 1 App is valid (if applicable)
 - The device is valid if the MAIN browser or App is valid
 - The device is valid if ALL browsers and Apps are valid

The device is also considered valid if there is a holiday/broken flag within the last 14 days (the panel member has defined a period of non-usage of the device).

The overnight validation flags each device as either valid or invalid as a basis for further processing.

Only in the case of the untagged Wakoopa measurement an extra rule applies. All traffic measurement in IOS smartphone devices is considered invalid. Wakoopa is developing a new measurement approach to be used for these devices. Until then IOS Smartphones is considered a missing device are handled in the Missing Device Imputation process that is described in 4.6.

4.3.3 VALIDATION OF INDIVIDUALS

Individuals are validated by the validation status flag of each of the devices the panel member is using and by calculating the sum of claimed usage for these valid devices. The SKO validation rules allow the inclusion of individuals with at least 80 % (configurable) of the panel member's claimed internet usage.

Please note that multi user devices do not require usage from each of the panel members to be considered valid, usage from one panel member will be sufficient to accept the device is active in the measurement. Hence a valid device will be considered valid for all users of the device.

Invalid devices are handled by the MDI system that imputes viewing data from other valid devices/panelists via a fusion methodology. This means that invalid devices that receive data through the MDI system should be included in the calculation of claimed usage for the panel member. However, each panel member needs to have at least one (configurable) valid device before MDI, in order to be included as a recipient in the fusion and to get the device coverage calculated. (See section on MDI later in the document). The overnight validation flags each individual as either valid or invalid as a basis for further processing.

4.3.4 VALIDATION OF HOUSEHOLDS

At the last stage the system should check the validation status flag for each of the individuals in the household.

The system has configurable rules but is configured as follows: The household is valid if ALL individuals in the household are valid.

There is currently an exception to this that allows us to include valid individuals aged 6-34 in homes where not all other individuals are valid.

4.3.5 STATUS REPORTING

The IPMS prompts automated reminders to both the panel liaison team and also panel member where required. These reminders are driven by a series of status codes, derived from data produced by the panel members. These status codes generate a range of email reminders to panelists to correct or validate behaviour outside of set parameters.

1. Successfully registered devices and therefore individuals and households (in tab)
2. Devices awaiting registration (and subsequent individual and homes)
3. Validation of reported devices (within extreme behaviour usage tolerance)
4. Uncovered viewing (individual not identified on multi-user device)
5. Withholding status codes for device, individual, household.

4.3.6 STATUS CODES

There are a series of codes for each of the layers:

- Browsers/app
 - Valid device
 - Rejected no heartbeat/homepage
- Device
 - Valid Device
 - Rejected no app/heartbeat
- Individual
 - Valid Person
 - Rejected one device (MDI)
 - Rejected all devices
 - Rejected extreme viewing
 - Rejected Uncovered
- Household
 - Valid Household
 - Rejected individuals therefore whole household

The household validation (exclusion) is driven by device and individual validation. A household will be excluded if any individual in the household is excluded. In that regard this is no different to an individual panel apart from the fact that when an individual is excluded all members of the home are also excluded. There is currently an exception to this that allows us to include valid individuals aged 13-34 in homes where not all other individuals are valid. This is the hybrid validation (details below).

4.3.7 HYBRID VALIDATION

Within the MediaPanel a system of hybrid validation rules have been set up to improve the panel composition. This relaxation is limited to panel members 13-24 (males and females) and males 25-34 years. This means that all panellists are in-tab in a household that is valid (includes by MDI), OR that the individuals' are valid in non-valid homes (out of gross panel) if they are between 13-34 years (as described above). This hybrid validation is however capped allowing only 10% of the sample comes from this looser in-tab validation.

There is a hierarchy applied (see below) when adding panellists from the hybrid validation this is designed to maximize the panel composition:

- 1: All 20-24 years
- 2: Females 13-19 years
- 3: Males 13-19 years
- 4: Males 25-34 years.

These rules determine the final number of the daily reporting panel size.

4.3.8. UNDER SIX VIEWING

From week 27, 2016 the measurement identifies viewing of children under 6 (on desktops / laptops / tablets). An additional button is added to the start page (desktops / laptops) and the tablet apps to allow viewing by under 6s to be identified. This is then filtered out of the reported data.

Panel members with Android phones and tables were asked to de-install the current MediaPanel app and re-install the MediaPanel through the Google Play store. In this new app for Android tablets, the under six viewing button is included.

The start page on desktops / laptops is also changed to have this extra button from week 27 2016. For iOS tablet the app is changed by means of the regular weekly update.

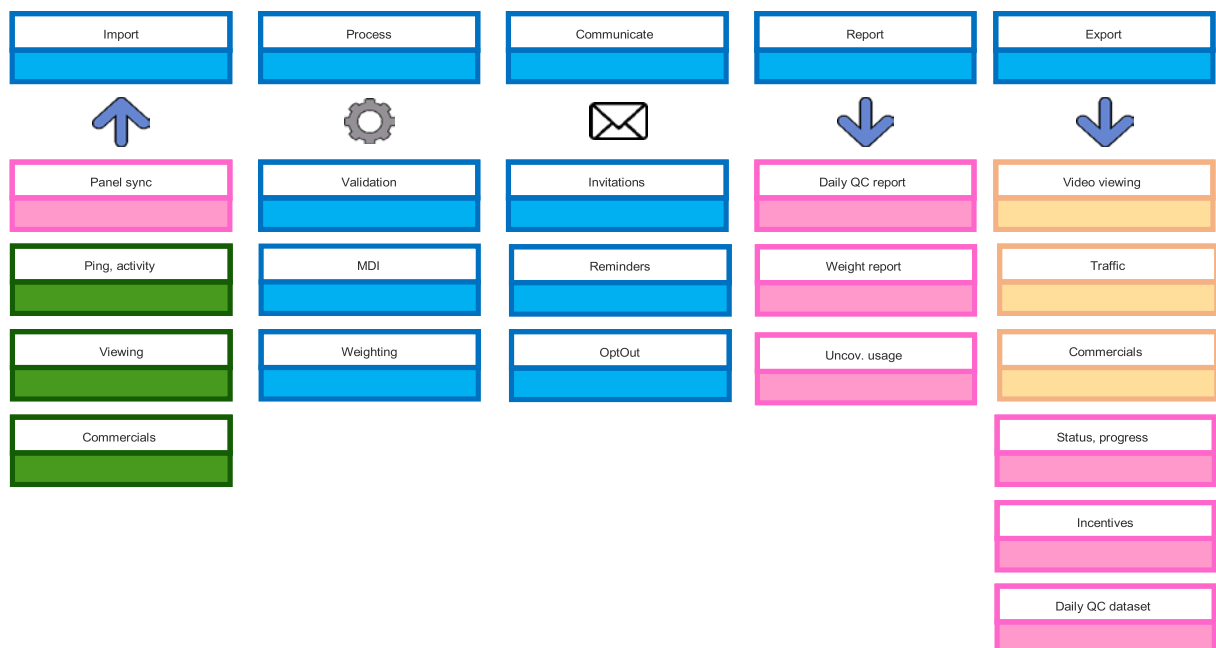
4.4 PANEL MANAGEMENT AND THE IPMS (INTERNET PANEL MANAGEMENT SYSTEM)

To manage the panel you need a panel management system and team to undertake a series of tasks. Below is an overview of the tasks undertaken and the processes that drive the tasks. The import into the system of behavioural data from the measurement and registration is the basis for panel management. As outlined the system imports:

- Video viewing
- Commercials
- Traffic
- Activity (who is using the device now) from VirtualMeter panel App and start page
- Ping (regular alive signals) from VM and Wakoopa
- Holidays
- Repairs

This information feeds the validation, MDI and weighting processes required to turn the input panel data into reporting data.

FIGURE 14: OVERVIEW IPMS PROCESSES



To create panel viewing data the system must identify and attribute the following to the input data:

- Households
- Several users, several devices
- Multiple browsers per device
- Apps
- Coverage per device
- Usage frequency per browser
- Shared devices
- Co-viewing
- Cookies set in different domains
- Virtual Meter registered
- Wakoopa registered

The following elements are fed back to the panel management team to action or intervene with panelists to either make them valid or improve compliance

- Status reporting per browser, including validity status, timestamps etc
- Incentives
- Manual work orders
- Daily reports
- Quality report
- Weights
- Uncovered viewing

Daily quality reporting

A daily quality control report is produced by the panel management system. This gives us a clear over view of the validation process and reports on the number of households in both the gross and net panel. It also then breaks this down through the various validation stages from browsers, to devices, individuals and finally to households. The report also includes an overview of the correspondence with the panel members. This includes reminders to register, invitations to new panel members and subsequent follow ups. Finally the report shows the panel activity in terms of panel viewing, commercial viewing, activity statements (from the panel members), and pings. These are the inputs to the system.

4.5 BUSINESS RULES AROUND REMINDERS

The panel management system has an automated system for contacting panel members to prompt them to take some actions. The start with an automated invitation sent to the main user of each device and actually sent to that device. After the invitation a series of reminders are sent if the device has not been registered, this will eventually end with direct contact from the panel management team if required. In addition to this we have a series of contacts related to validation. If a device has not been seen or contacted our system for a period automated contact with the panelists is triggered to check on the panelists' device usage. There are also automated thresholds for extreme viewing behavior and uncovered viewing. Below are the rules for contact as they relate to validation and missing traffic.

FIGURE 15: BUSINESS RULES MEDIAPANEL

Reminder	Distribution	DeviceTypes	NoOfTemplates *	NoOfReminders **	Intervals	Rule
DeviceRegistration	Email	Laptop, Desktop	2	5	4,7,7,7	Check : - DeviceType - LoginType - Derived Attribute BrowserListNoCookieEstablishTime
DeviceVMRGRegistration	VMRG / Email	Smartphone, Tablet	1	3	4,7	Check : - DeviceType - OutOfScope - VirtualMeterInstalled - DaysWithTraffic
MissingTraffic	Email	Laptop, Desktop, Smartphone, Tablet	1	4	4,7,7	Check : - DeviceType - LoginType - KeyValue LastSeen - AbsenceCalendar (IsActive) - UsageFrequency
* NoOf texts used for emails, if 1 the same text is sent every reminder, if 2 then the reminder text is different from the invitation text.						
** Total number of possible reminders including first wave						

NOTIFICATIONS AND REMINDERS – MOBILES AND TABLETS

For mobile phones a weekly reminder is sent to all devices at 10am every Monday morning. Panelists are required to open the app and this will set the cookies on their default browser and also send an 'alive' ping back to the panel management system. This is the only compliance requirement for mobile phones.

For tablets we currently have a light touch pre-defined notification schedule for reminders and notifications as outlined below. This will be adjusted in terms of the frequency and timing of notifications in the beginning of 2017.

FIGURE 16: NOTIFICATIONS ON TABLETS

CURRENT NOTIFICATION SCHEDULE

- 06.30 "Please remember to login"
- 11.30 "Remember to log in all users."
- 19.00 "Remember to log in all users."

NEW NOTIFICATION SCHEDULE

- 06.00 "Please remember to login"
- 12.00 "Remember to log in all users."
- 16.00 "Remember to log in all users."
- 20.00 "Remember to log in all users."

4.6 MISSING DEVICE IMPUTATION (MDI)

To meet the growing challenge of measuring more and more devices people use to access internet, a useful feature has been developed that allows inclusion of households/individuals in the reporting panel even if there may be a missing device. We validate (allow in reporting panel) all persons with a valid main browser on devices that cover at least 80% of their claimed internet usage – and an algorithm is deployed to impute viewing for missing devices.

The "Missing device attribution model" is a solution for fusing internet usage data to claimed, non-active devices in the panel from a device deemed similar, that is active and valid. The attribution is based on a fusion model working within the internet panel on a daily basis. The concept of the model is to fuse data from measured/active devices to similar devices claimed to be used for internet which are non-active in the measurement.

Below we describe the background and implementation of missing device imputation (MDI) within the internet panel management system (IPMS). Missing devices are caused by the following two types of scenarios:

- invalid devices
- out of scope devices
- technically in-scope (IS)
- technically out-of-scope (OOS)

VALIDATION RULES

Outlined below are the rules to be applied to determine when an individual is eligible for the application of the missing device imputation model (MDI). These rules are entirely configurable and changeable. They are currently set as outlined below. The rules were designed to allow individuals and subsequently households to remain in the reporting panel if 'in-scope' devices accounting for a small amount of behavior are not currently being measured in the system. We have also applied the mdi model to those devices that are 'out of scope' of the measurement system.

- OOS = OUT-OF-SCOPE
- IS = IN-SCOPE

Rule 1:

Only panelists with 100% valid devices will be considered valid.

Rule 2:

Panelists with 80% or more of their internet coverage measured on valid devices will be MDI:ed if they can reach 100% by imputing up to 2 is devices.

Rule 3:

Where an individual only has an OOS device(s) or an OOS device(s) that accounts for more than 20% of their internet usage => the individual will be excluded from the panel and we will then re-base the household and apply the validation rules as if this individual did not exist, therefore other individuals in that household who are valid will be able to stay in the panel.

Browser Validation

There is an option of applying a number of sets of rules for browser validation, currently the SKO rule is applied as defined below, however any of the below rules may be applied. These are all configurable within the IPMS.

RULES	MEANING
SKO	The device is valid if one of the MAIN browsers is valid.
ANY	The device is valid if ANY of the browsers or Apps are valid. Someone has used a browser someone marked as MAIN. If user A says Firefox
MAIN	is MAIN the device is also valid if user B uses Firefox.
ALL	The device is valid if ALL browsers and Apps are valid.

HANDLING OUT-OF-SCOPE DEVICES

There are a number of exclusions for 'out of scope' devices, all of these fall under two categories:

1. A device is out of scope if the device is not owned by the panellists but is owned by their employer and they do not permit the installation of any measurement systems on their devices. These devices may be technically in-scope.
2. Devices technically out of scope; these are devices that exist within the home but fall outside the current scope of the measurement system.

For the 'work' devices that are out of scope these can fall under any category of measurement, pc, laptop, tablet or smartphone.

In the interests of simplicity the most straightforward way of defining technically out of scope devices is to outline what is in scope. Below is the current definition of what is currently measured in the system

- All IOS devices using version 5 of the operating system (OS) or higher. The 1st generation iPad 1 is also out of scope.
- All major Android devices using OS 3.0 (Honeycomb) and above.
- Windows/MAC, PCs and laptops

All other devices are currently out of scope these include windows tablets and smartphones, Blackberry (RIM) and Linux. The current panel reporting outlines the number of out of scope devices

Currently we are applying the standard validation rules to out of scope devices. The rule for invalid devices is that a minimum of 80% of an individual's internet usage must be covered by measured devices. Devices accounting for 20% or less of an individual's internet usage will be imputed.

Where there are out of scope devices accounting for more than 80% of an individual's internet usage we are removing those panelists from the reporting panel. Other members of this panelist's household are allowed to remain within the panel as long as all the remaining household members are meeting the validation rules.

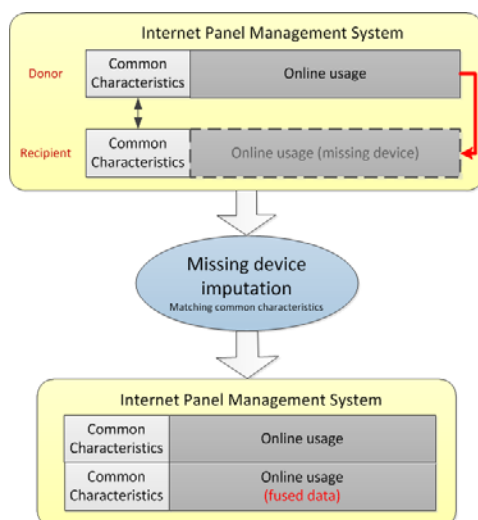
A number of out of scope devices will never be imputed, due to that fact that they are less capable of allowing their users to effectively view video content. On this basis we are not allowing blackberry (RIM) devices as part of the MDI solution for online video.

FUSION PROCESS

The main objective of MDI is to impute the 'missing' devices, including both invalid and out-of-scope devices. The following diagram shows the overall process of the fusion. After fusion, the result will be a comprehensive online panel dataset, including all the devices with the online viewing usage being known. MDI process is based on device level (and within that by browser), which are our main fusion points. In other words, the highest matching level is based on the device profile, not the individual demographic profiles.

Bear in mind that even though getting the device (and browser) matching correct is very important; it remains a fusion where penalties are given to everything (and then choose the best overall). And even though it is at individual level, matching on individual characteristics such as gender and age is probably very important (whereas individual viewing although potentially useful is much less important).

FIGURE 17: MDI FUSION PROCESS



FUSION HOOKS

Fusion hooks can be classified as device, browser and individual level characteristics. For device, type of device (desktop; laptops; smartphone; tablets), access location (home; work/school; mobile) and claimed Internet usage (light; medium; heavy) are used. Claimed Internet usage can be used because the fusion is applied within the same panel.

Browser characteristics are type of browser (Google chrome; IE; Firefox;) and whether the browser is the main browser (Main browser (yes; no).

Individual characteristics taken into account are:

- Gender by age band
- Work status (full-time; part-time; student; none of above)
- Education (school & below; high school; undergraduate; postgraduate)
- Number of desktop (0; 1; 2; 3 & above)
- Number of laptop (0; 1; 2; 3 & above)
- Number of mobile (0; 1; 2; 3 & above)
- Number of tablet (0; 1; 2; 3 & above)
- Observed Internet usage (light; medium; heavy)

INHERITANCE:

- Inheritance of the previous day (been selected; not been selected)
- Inheritance of the same day in the previous week (been selected; not been selected)
- Inheritance of the previous 7 days (been selected; not been selected)
- Inheritance of the previous 28 days (been selected; not been selected)
- **Donor usage** (*incremental penalty for exceeding target donor usage*)

VIEWING LEVEL

In terms of viewing or traffic levels, the most important is to get the browser usage (daily, multi days per week, weekly, monthly and so on) right, where actual viewing or traffic obviously cannot be used. Due to the features of MDI, there are some out-of-scope devices which mean real viewing behaviour will never be captured. Hence claimed usage for the device will be used as one of the fusion hooks. Also, it is important to have like-for-like fusion hook from donor and recipient, therefore a mix of actual and claimed usage will not be considered.

However, the profile of the device does include the individual who owns that device. So as well as matching on the device profile, the individual demographic profile (such as gender, age, work status, viewing level and so on) will also be considered. Even though the actual viewing of the individual would be considered, this will be a much lower priority (i.e. very low penalty) in the fusion process.

IOS IMPUTATION

iOS Smartphones are considered as invalid devices for the Wakoopa non tagged measurement.

Kantar TNS is applying an imputation model to the iOS smartphones which will reliably replace the missing measurement. An extensive analysis identified a strong and stable relationship between Android and iOS smartphone usage across a variety of brands websites and apps. The data has been validated for tagged websites and with external benchmarks

The imputation of behavior for IOS Smartphones is integrated into the MDI process, using the same fusion models and hooks. These are outlined in 4.6 and 4.10. A more thorough description of both processes is available for our participants.

The outcome is evaluated with the regular QI reports for MDI and by evaluating the outcomes for missing device imputation on tagged sites.

4.7 WEIGHTING

4.7.1 PROCEDURE WEIGHTING MEDIAPANEL

Panel results will be weighted to the total population in the Netherlands. To correct for variations between the composition of the net reporting panel and the universe estimates generated from the Media Standard Survey (MSS) in the Netherlands, a daily weighting procedure will be applied. The procedure, known as rim weighting, is described in paragraph 4.7.6.

4.7.2 POPULATION

The panel aims to represent the Dutch population 6+. Fictive households are added to the sample to represent the “non-internet-population” homes. This is done to ensure that the basis for the results reflects the whole 6+ population. The number and characteristics of the non-internet population homes to be added are determined on the basis of figures of the most recent Media Standard Survey.

The variable ‘internet population or not’ is one of the weighting rims for the total sample and will be treated like the other rims. The procedure of including non-internet population consists of two steps:

- Step 1: The rim ‘internet population or not’ is part of the weighting scheme
- Step 2: Adding in dummy records of non-internet-population persons in sample

Dummy records are taken randomly from the non-internet-population records from MSS to the proportion of the non-internet-population

Using MSS as source for the dummy records guarantees we include realistic records

The Internet population is defined as:

- Usage of devices that connect to the internet (in home or out of home), or
- Ownership of devices, or

- Devices with Internet access at home, or
- Access to the internet at home.
- Where devices included are only desktops, laptops, tablets and smartphones.

4.7.3 WEIGHTING – 6-12 YEAR OLDS

Up until July 2015 it was not possible to use population figures from the MSS to determine the online universe for 6-12 year olds. During this period, figures for this group were derived from population reference tables created by CBS Statistics Netherlands (the so-called Golden Standard) but as of July 2015 the necessary weighted info of all individual children in all households questioned in the MSS survey became available. It is possible to extract the universe projections for 6-12 year olds from MSS. The only exception to this is education for 6-12 year olds, because no question about education of the children is available from MSS. For 6-12 year old ideal figures for education are still derived from the Golden Standard.

For 6-12 year olds the number of children in households with internet access at home and children who use the internet as the internet population is selected. This number is divided by the total number of children in households in MSS (number of children 6-12 with access at home OR using internet/total number of children 6-12 = 100% from MSS 2015 Q1 and Q2)

The total 6+ universe is generated by adding the 13+ population numbers to the 6-12 population numbers.

4.7.4 WEIGHTING VARIABLES

Figure 18 provides an overview of the variables used for weighting.

To correct for lower smartphone penetration level in MediaPanel than in MSS (population), the weighting scheme is adjusted from week 27 2019.

- The household variable on smartphone is removed
- A personal variable (combination of age and smartphone usage) is added

FIGURE 18: VARIABLES INCLUDED IN THE WEIGHTING

OneOrMoreSmartphonesAvailableForAccess	HouseholdSize	AgeSegment2	TVInHousehold
Yes	1Person	6-8	Yes
No	2Persons	9-12	No
OneOrMoreLaptopsAvailableForAccess	3Persons	13-19	
Yes	4Persons	20-24	SocialClassByHHsize
No	5PersonOrMore	25-34	AB1_1
OneOrMoreDesktopsAvailableForAccess		35-49	AB1_2
Yes	Education4	50-64	AB1_3
No	Low	65+	AB1_4
OneOrMoreTabletsAvailableForAccess	Medium		AB1_5
Yes	High	GenderAndAgeGroup	B2CD_1
No	NoEducation	Male06To12	B2CD_2
		Male13To19	B2CD_3
HouseholdPosition	TVRegion	Male20To34	B2CD_4
MainEarnerLessThan35HouseholdSize1	Groningen	Male35To49	B2CD_5
MainEarnerMoreThan35HouseholdSize1	Friesland	Male50To64	
MainEarnerLessThan35HouseholdSizeMoreThan1	Drenthe	Male65Plus	AgeSmartphone2
MainEarnerMoreThan35HouseholdSizeMoreThan1	Overijssel	Female06To12	6-12
PartnerOfMainEarnerLessThan35	Gelderland	Female13To19	13-49 smartphone user
PartnerOfMainEarnerMoreThan35	Utrecht	Female20To34	50-64 smartphone user
ChildMoreThan6OrOther	NorthHollandGreatAmsterdam	Female35To49	65+ smartphone user
	NorthHollandExcludeGreatAmsterdam	Female50To64	13-49 no smartphone user
SocialClass2016	SouthHollandWest	Female65Plus	50-64 no smartphone user
ClassA	SouthHollandRijnmond		65+ no smartphone user
ClassB1	Zeeland		
ClassB2	NorthBrabant		
ClassC	Limburg		
ClassD	Flevoland		

4.7.5 SOURCE / POPULATION VARIABLES

The universe projection is constructed from MSS (weighted to last available CBS Golden Standard). There are 2 updates a year: Monday week 01 and Monday week 27, based on rolling available MSS quarterly data. With this we use the most recent MSS data from the last 4 quarters, and use the most recent ideals for weighting.

Since Monday week 27 2016, the last four available quarters MSS are used.

The update in week 27, 2019 is based on MSS FY 2018 The MSS FY 2018 data are weighted to ideals from GS end 2017 (ideals for 2018).

4.7.6 RIM WEIGHTING

The IPMS has a module designed to determine rim weights for the reporting panel. Panel member weights are applied to validated overnight data (net reporting). The model designed around that used for TAM panels has a model proven to converge well to the defined universes. The rim weighting procedure is an iterative process.

4.7.7 WEIGHT CAPPING

Weight capping is applied to the MediaPanel. This means that at every step in the procedure, any weight exceeding the cap (for instance five or six times the pre-weight) is reduced to the value of the cap.

Currently in the IPMS the caps are set to four times the pre-weight (of 1.0) and four times smaller than the initial pre-weight. It is agreed that in the future when the panel has been running for more time and its composition improves, the weighing cap will be moved towards the ideal set of values 0.3-3.

4.8 ADDING DEMOGRAPHICS TO PANEL VIEWING

Every day the system is required to produce files that contain Online TV viewing or traffic, demographics and weights for transportation to the Data Integration team to process. The census data is sent from comScore to Kantar Media who extract the panelists viewing from within the census measurement. This is done by using cookies for viewing undertaken on browsers on PCs, Laptops, Mobiles and tablets. It is done for app based viewing by using IDFA or GID (AID) for viewing on mobiles and tablets.

For browsers at the start of each session panelists identify themselves as the user. For tablets this is done via the MediaPanel app. The activity statements from the app and

the startpage are ingested by the panel management system and link the device to a specific individual.

We then link the demographic information from the panelists to the viewing statement extracted for the device from the census together based on the activity statement from the app or startpage. This data is then transferred from the panel management system to the data integration system to produce the calibrated data set.

- a. If viewing data is not made available for IPMS an email notification is sent out to the panel team before 13:00 each day.
- b. If the extraction of data for Data Integration fails an email notification is sent out to the panel team before 14:00 each day.

4.8.1. UPDATE DEMOGRAPHICS

For all panel members a large number of demo's are available. Both on device and socio demographic level. The device information can be changed at any time. This daily update (if applicable) is being handled through MediaPanel portal and into IPMS. The Socio demographic variables are only updated once a year. MediaPanel members can and will change their information continuously in NIPObase, but this will not be transferred to IPMS. A yearly update on the Socio- demographics takes place on Monday week 27 (started July 4, 2016).

Three exceptions are:

1. Address and geographical information is updated when the change takes place.
2. People leaving the MediaPanel household.
 - a. Person is removed from the panel management system.
 - b. The demo's for all persons in the household are updated at that moment.
3. People 'entering' the MediaPanel household.
 - a. A questionnaire is sent to the person automatically.
 - b. The person is added to the panel management system once the questionnaire is filled in.
 - c. The demo's for all persons in the household are updated at that moment.

4.9 MEASUREMENT OF NON-TAGGED SITES

For measuring non-tagged sites Wakoopa's solution is used. Wakoopa supplies a passive metering software (the 'Tracker') that panelists will activate on their equipment in such a way that the details of their online behavior are measured and recorded. This measurement includes tracking of visited websites, search terms and applications used.

The Wakoopa Tracker is deployed to approx. 2,000 panel individuals. The Tracker is user-centric, every device has a unique ID and is connected to a unique Household number in the panel.

4.9.1 GENERAL INFORMATION ABOUT WAKOOPA SOFTWARE

Wakoopa offers a branded metering solution to Kantar TNS / Kantar Media to deploy on its panel. Clear instructions are provided to all panelists as part of the standard installation process on all device types. For privacy protection reasons, all panelists can pause, quit or uninstall the Tracker at any time. The measurement stops until resumed by the system in this case of pausing or until the participant re-installs the meter on their device.

4.9.2. DEVICES AND SYSTEMS SUPPORTED

Desktop Tracker

The Wakoopa desktop Tracker is installed on devices of the participants and runs in the background. The Tracker measures visited URLs, including secure connections (HTTPS). The tracker has capabilities on both Windows and Mac and on all major browsers on these Operating Systems. Those include Microsoft Edge, Internet Explorer, Google Chrome and Firefox for Windows and Safari and Google Chrome for Mac.

Mobile Tracker

Wakoopa supports the following operating systems on mobile:

- Android (versions 2.3 and up)
- iOS (versions 6.1 and up)

Both solutions are integrated into the Kantar Virtual Meter and branded as such to ensure the best user experience and highest installation rates. More information about the technical details of measurement on different operating systems can be shared on demand.

Both solutions track visited URLs and the apps that have been used.

On page 43 you can find an overview of the (potential) capabilities of the Wakoopa solutions. A detailed specification of the full suite of Wakoopa solutions being applied in this project is available in a separate 'Wakoopa-NOBO' attachment.

This attachment covers:

- a full technical specification for URL tracking on PC and Laptop
- a full technical specification for URL tracking and App measurement on mobile devices
- a description of any known limitations

4.9.3 DESKTOP AND MOBILE MEASUREMENT SPECIFICATIONS

The approach to data measurement is the same for all devices and systems. Basic principles are:

5. Device must be active.
6. The process (app or browser) that is being measured is running on the foreground and is the activated process.
7. Measurement starts when the process becomes active or moves to the foreground.
8. Measurement stops when the process stops, moves to the background or when the device stops being active.

The focus on the active processes allows to minimize the amount of data and makes reporting more efficient. This means that the data that is being reported always reflects the actual online behavior and not background processes of a device.

A detailed specification of the calculation rules of the full suite of Wakoopa solutions being applied in this project is available in a separate 'Wakoopa-NOBO' attachment.

4.9.4 DATA STORAGE

All collected data is encrypted and sent to Wakoopa via https; Amazon Web Services (AWS) are used for hosting. All meta-data on apps is stored in a separate database for security purposes.

4.9.5 DATA PROCESSING

To transform the collected data into actionable information Wakoopa stores and processes its data on Amazon Web Services. The usage data is exported to S3 so it can be processed overnight; data processing starts at 02:00 CET every day.

4.9.6 DATA EXPORT

After the processing is finished, all data is made available to Kantar TNS and Kantar Media via an API. This means that usually all exports are available next morning before 09.00, but exact timings depend on the amount of information that needs to be processed.

	Windows Mac		iOS Android		iOS Android	
URL Tracking	●	●	●	●	●	●
App Tracking	●	●	●	●	●	●
Search Behaviour	●	●	—	●	—	●
Ad Tracking	●	●	●	●	●	●
Pre-roll Tracking	●	●	—	—	—	—
Ad Visibility	●	●	—	—	—	—
Notifications	●	●	●	●	●	●

Fully commercial ● Beta - In test ● Alpha - Technical feasible ● Not yet explored —

URL Tracking

Automatic tracking of the participant's browser usage through an application that registers the website addresses visited.

App Tracking

Registration of the different apps the participant is using on the device.

Search Behaviour

The different search terms the participants fill in on websites such as Google.

Ad Tracking

Measuring the banner advertisements that are loaded on the websites the participant visits.

Pre-roll Tracking

Tracking of the short commercials that are shown before an online video.

Ad Replacement

We are currently improving the quality of this functionality and it will be available shortly.

Ad Visibility

The percentage a banner ad is visible in the active screen.

Pre-roll Replacement

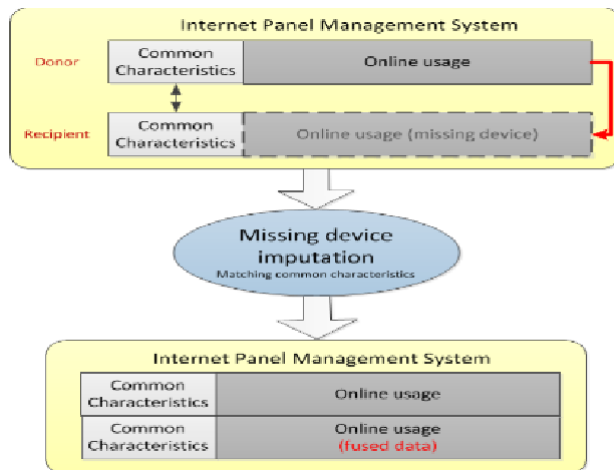
This feature is still in alpha, but it would entail replacing the short commercials before online videos.

Notifications

Giving the participant a pop-up when certain online behavior is detected, or just a general broadcast to participants.

4.10 WAKOOPA IMPUTATION

The main objective is to impute the 'Wakoopa measurement to panelists who have not the non-tagged measurement in their virtual meters, including both valid, invalid devices. The diagram shows the overall process of the fusion.



This imputation is not comparable to MDI where only about 10% gets imputed. Wakoopa imputation is penalty based fusion / imputation system.

There are rules applied to determine when an individual is eligible for the MDI Wakoopa application. Each people could have multiple devices and each device could have multiple browsers. The fusion process is at device level and matching on browsers.

Variables used for the fusion

1. Type of device (Desktop; laptops; smartphone; tablets)
2. Access (home; work/school; mobile)
3. Browser characteristics: Type of browser (google chrome; IE; Firefox;)Main browser (yes; no)
4. Individual characteristics

4.11 DATA DELIVERY

Data files are delivered daily to a sftp server at Nipo ftp.tns-nipo.com.

SAMPLE DATA AND FILE SPECIFICATION

In the folder “/sample” a file specification for the SWO, SET, DEM and CSV files is given, along with a few days of sample data.

DELIVERY SCHEDULE – CALIBRATED PROGRAMMES

Due to the process where program logs are reconciled on a weekly basis the data is delivered with some delay. The schedule is Broadcast day +6 since September 5th 2016. Before this datum, the schedule was Overnight +10.

FIGURE 19: DELIVERY SCHEDULE PROGRAMMES

Broadcast day		Delivery day	
Monday	8th →	Sunday	14th
Tuesday	9th →	Monday	15th
Wednesday	10th →	Tuesday	16th
Thursday	11th →	Wednesday	17th
Friday	12th →	Thursday	18th
Saturday	13th →	Friday	19th
Sunday	14th →	Saturday	20th

- The files will be available for download at 10:00 except for Sundays, when the delivery takes place at 14:00 hours.
- In the event of delays in the reconciliation process data will be delivered as soon as possible. For example, if there is a delay of one day in the reconciliation process we will deliver two days' worth of data.

DELIVERY SCHEDULE – CALIBRATED COMMERCIALS

The commercials do not undergo any reconciliation process similar to the programs and the data is delivered according to this example:

FIGURE 20: DELIVERY SCHEDULE ONLINE COMMERCIALS

Broadcast day		Delivery day	
Monday	8th →	Wednesday	10th
Tuesday	9th →	Thursday	11th
Wednesday	10th →	Friday	12th
Thursday	11th →	Saturday	13th
Friday	12th →	Tuesday	16th
Saturday	13th →	Tuesday	16th
Sunday	14th →	Tuesday	16th

- The schedule is Overnight +1.
- The files will be available for download at 10:00.

DELIVERY SCHEDULE – CALIBRATED TRAFFIC DATA

The traffic data is published since November 1st 2016. Data is available from September 1st 2016. Every Wednesday the data of the week before is published.

From Q1 2017, the data delivery will be daily.

For the daily delivery, the schedule will be Overnight +1. The files will be available for download at 10:00.

Day			Delivery day	
Monday	8th	→	Wednesday	17th
Tuesday	9th	→	Wednesday	17th
Wednesday	10th	→	Wednesday	17th
Thursday	11th	→	Wednesday	17th
Friday	12th	→	Wednesday	17th
Saturday	13th	→	Wednesday	17th
Sunday	14th	→	Wednesday	17th

APPENDIX 1 - TEST PANEL QUALITY CONTROL

In order to validate the measurement system and ensure all panel behavior (video / commercial / traffic) is being captured we have created an ongoing test panel. This a fundamental pillar of our quality control process.

The test panel consists of a full range of in-scope devices including

- Laptops/Desktops (both Mac and Windows)
- Tablets (IOS and Android)
- Smartphones (IOS and Android)

These test devices have the measurement system installed as if they are panel members. Kantar TNS and Kantar use these devices to watch online content (programmes, commercials and traffic) and then check that this behavior is appearing within the panel file as outlined in the measurement description.

Online viewing / traffic is undertaken by Kantar TNS and Kantar testers on SKO certified broadcaster players on a full matrix of devices and browsers. If the content is seen returned successfully over a period of time in the panel file from a device, player, browser or operating system we reduce the frequency of monitoring, however this is increased when new releases of player, browsers or operating systems take place.

If behavior is not seen in the extracted panel data, we then run a series of further QC checks, these are undertaken using sniffer or debugger software (e.g. Charles) to see why the data is not appearing. This software allows Kantar TNS to see the meta-data that is transferred between the device, the player and the measurement system. This meta-data analysis is shared with SKO, the third party census measurement supplier and the broadcaster or publisher so that any issue can be swiftly resolved.



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