



14/EN
WP 229

COOKIE SWEEP COMBINED ANALYSIS – REPORT

Adopted on 3 February 2015

This Working Party was set up under Article 29 of Directive 95/46/EC. It is an independent European advisory body on data protection and privacy. Its tasks are described in Article 30 of Directive 95/46/EC and Article 15 of Directive 2002/58/EC.

The secretariat is provided by Directorate C (Fundamental Rights and Union Citizenship) of the European Commission, Directorate-General for Justice and Consumers, B-1049 Brussels, Belgium, Office No MO-59 02/013.

Website: http://ec.europa.eu/justice/data-protection/index_en.htm

1. Executive summary

The Article 29 Working Party in partnership with national regulators with responsibility for enforcing Article 5(3) of the ePrivacy Directive 2002/58/EC, as amended by 2009/136/EC, conducted a sweep of up to 478 websites in the e-commerce, media and public sectors across 8 member states.

The sweep highlighted differences in the use of cookies across different target sectors and between the individual member states. The sweep also highlighted areas for improvement including a few cookies with duration periods of up nearly 8000 years. This is in contrast to an average duration of 1 to 2 years.

The sweep however also showed that 70% of the 16555 cookies recorded were third-party cookies. It was also shown that more than half of the third-party cookies were set by just 25 third-party domains.

The sweep also showed that a notification banner was a popular method of informing website visitors regarding the use of cookies in addition to a link in the header or footer to more information. However, there are still a number of sites which do not provide sufficient notification that cookies are being set, do not seek consent from the user, or provide a sufficient quality of cookie information to website visitors.

2. Introduction

In order to assess the current state of steps taken by website operators to ensure compliance with Article 5(3) of Directive 2002/58/EC, as amended by 2009/136/EC, the Article 29 Working Party (WP29) proposed to conduct a sweep of websites used by to European citizens.

The sweep aimed to inform WP29 of the current usage of cookies and likely state of compliance with Article 5(3) across the EU in a range of specific sectors and areas of highest concern in order to inform policy engagement, discussions with stakeholders and provide a basis for any coordinated enforcement activity that may be required.

The sweep included both Data Protection Authorities and other National Regulators which have the responsibilities for enforcing Article 5(3) of the ePrivacy Directive.

3. Sweep participants

The following organisations took part in the cookie sweep:

- Czech Republic – Úřad pro ochranu osobních údajů
- Denmark – Erhvervsstyrelsen
- France – Commission nationale de l'informatique et des libertés
- Greece – Hellenic Data Protection Authority
- Netherlands – Authority for Consumers & Markets
- Slovenia – Informacijski pooblaščenec Republike Slovenije
- Spain – Agencia Española de Protección de Datos
- United Kingdom – Information Commissioner's Office

4. Methodology

The cookie sweep comprised of two stages. The first was a statistical review of cookies used by websites and their technical properties. The second comprised of a more in-depth manual review of cookie information and consent mechanisms.

In this sweep all cookies were counted and considered equally. Those cookies which qualify for a valid exemption for the consent requirement were not specifically identified. Whilst these cookies will be in the minority the requirement for information about their usage will remain.

4.1. Target sites

Target sectors were selected as those which were considered by the WP29 to present the greatest data protection and privacy risks to EU citizens. The target sectors chosen were media, e-commerce and the public sector.

Target web sites were selected as amongst the 250 most frequently visited¹ by individuals within each member state taking part in the sweep. In order to remove potential duplication, websites of organisations which were not firmly established within a member state taking part in the sweep were suggested to be excluded.

Where possible the same target site list was used for both the automated and manual sweep although slight differences were experienced (such as one site redirecting to another already included within the target site list or resource limitations reduced the level of detail an investigator could devote to the sweep).

4.2. Automated sweep

A Python script interfacing with Selenium Python bindings² was written by the UK's Information Commissioner's Office and circulated to sweep participants. The sweep script was run from a new installation of Ubuntu 12.04 LTS. A new user profile with the default settings of the Firefox web browser³ was used for each URL visit. Cookies were extracted using a slightly modified version of the "Get all Cookies in XML"⁴ Firefox extension and saved to a log file for later analysis.

The curated list of URLs for the home page of the target sites was passed to the automated sweep script. Cookies set only on the first page visited (or if redirected by the target site) were saved for analysis. No further website crawling was conducted.

4.3. Manual sweep

This comprised of a manual visit to the URL of the target site in order to record the steps taken by the site to inform users that cookies were in use and steps taken to obtain consent.

¹ As reported by <http://www.alexa.com>

² <http://docs.seleniumhq.org/>

³ i.e. accept all cookies, DNT unset and JavaScript enabled

⁴ <https://addons.mozilla.org/en-US/firefox/addon/get-all-cookies-in-xml/>

Features such as the notification mechanism used, visibility and quality of further cookies information provided and the type of tool used to allow a user to express consent was recorded.

The manual sweep in itself is not an assessment of compliance and the lack of a particular compliance feature would not necessarily show cause for concern as the purpose of recording these features is to inform regarding the landscape of steps taken towards compliance.

Furthermore, an assessment of the accuracy of cookie information or the effectiveness of a particular user control tool was out of scope of the sweep.

5. Results

5.1. Automated sweep

This section focuses on the results of the automated sweep. It should therefore be regarded simply as a statement of the number of cookies set by the target sites and their technical properties.

5.1.1. Number of sites by country and sector

A total of 478 sites were swept by 8 member states between 15-19 September 2014.

Country	e-commerce	Media	Public	Total
CZ	24	16	9	49
DK	24	21	10	55
ES	32	24	9	65
FR	42	36	5	95
GR	14	11	4	29
NL	20	37	2	59
SI	19	12	11	42
UK	60	17	7	84
Total				478

Table 1: A breakdown of sites visited during the automated sweep by each participant

5.1.2. Cookies set by country and sector

A total of 16555 cookies were set by all 478 sites. This gives an average of 34.6 cookies per site.

Country	e-commerce	Media	Public	Total
CZ	475	707	86	1268
DK	499	1582	117	2198
ES	933	1420	51	2404
FR	1286	2642	194	4238
GR	228	174	12	414
NL	517	1561	11	2089
SI	153	64	16	233
UK	2250	1413	48	3711
Total				16555

Table 2: A breakdown of the cookies set by websites during the automated sweep

The table below shows the average number of cookies set by each sector type per country.

Country	e-commerce	Media	Public	Mean
CZ	19.8	44.2	9.6	25.9
DK	20.8	75.3	11.7	40.0
ES	29.2	59.2	5.7	37.0
FR	30.6	73.3	38.8	n/a
GR	16.3	15.8	3.0	14.3
NL	25.9	42.2	5.5	35.4
SI	8.1	5.3	1.5	5.5
UK	37.5	83.1	6.9	44.2
Mean	23.5	49.8	10.3	28.9

Table 3: The average number of cookies set by websites within each sector and country which participated within the automated sweep

5.1.3. Total first party and third party cookies by country

A total of 4901 first-party cookies and 11654 third-party cookies were set across the 478 sites. This gives an average of 10.3 first-party cookies and 24.4 third-party cookies per site.

Country	First-party	Third-party	Total
CZ	447	821	1268
DK	512	1686	2198
ES	664	1740	2404
FR	1056	3182	4238
GR	218	169	414
NL	607	1482	2089
SI	152	81	233
UK	1245	2466	3711
Total	4901	11654	16555

Table 4: A breakdown of cookies set by websites according to party and country

Country	First-party	Third-party	Total
CZ	35.25%	64.75%	100.00%
DK	23.29%	76.71%	100.00%
ES	27.62%	72.38%	100.00%
FR	24.92%	75.08%	100.00%
GR	52.66%	47.34%	100.00%
NL	29.06%	70.94%	100.00%
SI	65.24%	34.76%	100.00%
UK	33.55%	66.45%	100.00%
Total	29.60%	70.39%	100.00%

Table 5: The ratio of first and third party cookies set by sites according to the country participating in the sweep



Figure 1: The ratio of first and third party cookies set by sites according to the country participating in the sweep

5.1.4. Total session and persistent cookies by country

A total of 2302 session cookies and 14253 persistent cookies were set across the 478 sites. This gives an average of 4.8 session cookies and 29.8 persistent third-party cookies per site.

CZ reports the highest ratio of persistent to session cookies with other member states usage of session cookies being within the range 10-20% of all cookies.

Country	Session	Persistent	Total
CZ	124	1144	1268
DK	237	1961	2198
ES	402	2002	2404
FR	519	3719	4238
GR	73	341	414
NL	287	1802	2089
SI	46	187	233
UK	614	3097	3711
Total	2302	14253	16555

Table 6: A breakdown of session and persistent cookies set by websites during the automated sweep

Country	Session	Persistent	Total
CZ	9.78%	90.22%	100.00%
DK	10.78%	89.22%	100.00%
ES	16.72%	83.28%	100.00%
FR	12.25%	87.75%	100.00%
GR	17.63%	82.37%	100.00%
NL	13.74%	86.26%	100.00%
SI	19.74%	80.26%	100.00%
UK	16.55%	83.45%	100.00%
Total	13.91%	86.09%	100.00%

Table 7: The ratio of session to persistent cookies set by websites during the automated sweep

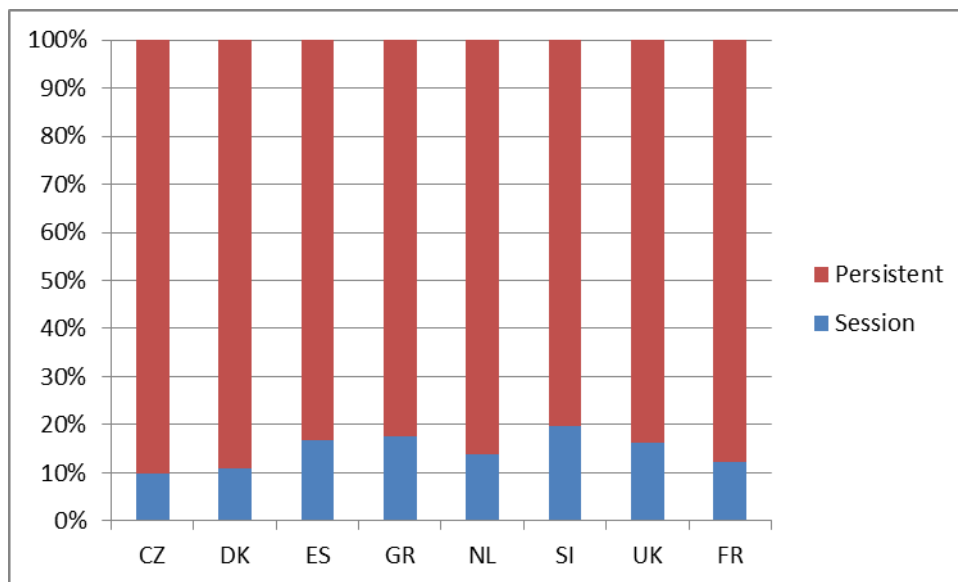


Figure 2: The ratio of session to persistent cookies set by websites during the automated sweep

5.1.5. Total first party and third party cookies by sector

Media websites showed a more prevalent use of third-party cookies as compared to the public and e-commerce. Public sites showed the most prevalent use of first-party cookies.

Sector	First-party	Third-party	Total
e-commerce	2160	2895	5055
Media	1457	5464	6921
Public	228	113	341
Total	3845	8472	12317

Table 8: A breakdown of first and third party cookies by sector set by sites during the automated sweep

Sector	First-party	Third-party	Total
e-commerce	42.73%	57.27%	100.00%
Media	21.05%	78.95%	100.00%
Public	66.86%	33.14%	100.00%
Total	31.22%	68.78%	100.00%

Table 9: The ratio of first and third party cookies by sector set by sites during the automated sweep

5.1.6. Total session and persistent cookies by sector

Media sites showed the most prevalent use of persistent cookies as compared to the public and e-commerce. Public sites showed the most prevalent use of session cookies.

Sector	Session cookie	Persistent cookie	Total
e-commerce	964	4091	5055
Media	719	6202	6921
Public	100	241	341
Total	1783	10534	12317

Table 10: A breakdown of session and persistent cookies by sector set by sites during the automated sweep

Sector	Session cookie	Persistent cookie	Total
e-commerce	19.07%	80.93%	100.00%
Media	10.39%	89.61%	100.00%
Public	29.33%	70.67%	100.00%
Total	14.48%	85.52%	100.00%

Table 11: The ratio of session and persistent cookies by sector set by sites during the automated sweep

5.1.7. Cookie usage by site

5.1.7.1. Sites setting more than 100 cookies

22 sites set more than 100 cookies (both first and third-party).

Site country	Site sector	First-party	Third-party	Total
DK	media	12	247	259
UK	media	23	202	225
CZ	media	16	190	206
DK	media	13	186	199
DK	media	9	189	198
ES	e-commerce	30	168	198
UK	media	10	154	164
UK	e-commerce	28	120	148
UK	media	20	121	141
ES	media	8	131	139
DK	media	17	122	139
NL	media	9	129	138
DK	media	14	124	138
UK	media	15	122	137
UK	media	15	121	136
UK	e-commerce	38	87	125
UK	e-commerce	31	93	124
UK	e-commerce	17	103	120
ES	media	14	104	118
UK	media	22	82	104
DK	e-commerce	19	84	103
ES	media	16	85	101

Table 12: A list of those sites which set more than 100 cookies during the automated sweep

Of these sites, all provided at least a link in the header or footer to further cookie information. 9 provided a permanent banner, 3 used a banner which disappeared on the next user click and 5 provided a banner which disappeared after a set period of time.

5.1.7.2. Sites setting only first party cookies

74 sites set only first party cookies (session and persistent).

Country	e-commerce	Media	Public	Total
CZ	3		5	8
DK	4		7	11
ES	7		4	11
FR	7			7
GR	2		4	6
NL	3	1	2	6
SI	9	1	11	21
UK	8		3	11
Total	43	2	36	81

Table 13: A summary of sites which set only first party cookies during the automated sweep

5.1.7.3. Sites setting only session cookies

15 sites set only session cookies (first and third-party).

Site country	Site sector	Number of session cookies
CZ	Public	1
NL	Public	1
DK	Public	1
SI	Media	1
SI	Public	1
SI	Public	2
DK	Public	1
SI	Public	1
UK	e-Commerce	8
SI	Public	2
SI	Public	1
SI	Public	2
SI	Public	1
SI	Public	1
SI	Public	1

Table 14: A summary of sites which set only session cookies during the automated sweep

5.1.8. Cookie duration

5.1.8.1. Duration of first-party cookies

3 first-party cookies were set by 3 sites with a duration of 7985 years (expiry 31/12/9999 23:59).

Country	Sector	Expires
UK	media	31/12/9999 23:59
DK	media	31/12/9999 23:59
DK	e-commerce	31/12/9999 23:59

Table 15: A summary of the cookies set by sites with the expiry of 31 December 9999

17 first-party cookies were set by 15 different sites with a duration >100 years.

Country	Sector	Expires	Duration (years ⁵)
UK	media	31/12/9999 23:59	7991
DK	media	31/12/9999 23:59	7991
DK	e-commerce	31/12/9999 23:59	7991
UK	e-commerce	12/08/4752 11:43	2740
ES	media	23/01/3014 07:55	1000
ES	media	23/01/3014 08:05	1000
ES	media	23/01/3014 07:55	1000
UK	e-commerce	30/01/2836 11:50	822
UK	e-commerce	07/02/2585 19:42	571
UK	media	21/09/2462 11:40	448
UK	media	21/09/2462 11:40	448
ES	media	09/05/2246 07:58	232
ES	media	09/05/2246 08:04	232
GR	media	11/08/2164 03:49	150
GR	media	11/08/2164 03:49	150
UK	e-commerce	16/09/2114 00:00	100
CZ	e-commerce	24/08/2114 08:36	100

Table 16: A summary of the first-party cookies set by sites in the automated sweep with a duration of greater than 100 years

⁵ 1 year calculated as 365 days

The average duration of first-party persistent cookies was 14.34 years. Excluding cookies with duration >100 years, this reduces to 2.05 years.

Only 1 of these sites displayed no cookie information at all. Seven sites displayed a link in just the header or footer with the remaining sites opting to use a notification banner to inform users (4 permanent, 6 temporary).

5.1.8.2. Duration of third-party cookies

27 third-party cookies were set by 15 different first-party sites (5 third-party sites) with a duration >68 years. 243 (2%) third-party cookies were set with a duration >10 years.

Country	Sector	Duration (years ⁶)
FR	media	7985
FR	media	2738
ES	media	100
FR	media	100
FR	media	100
CZ	e-commerce	99
CZ	media	68
CZ	media	68
DK	e-commerce	68
DK	e-commerce	68
DK	media	68
DK	media	68
ES	media	68
FR	media	68
FR	media	68
FR	media	68
FR	media	68
FR	media	68
FR	media	68
FR	media	68
FR	media	68
FR	media	68
NL	media	68
UK	e-commerce	68
UK	media	68
UK	media	68
UK	media	68
UK	media	68
UK	media	68
UK	media	68

Table 17: A summary of the third-party cookies set by sites in the automate sweep with a duration of 68 years

The average duration of third-party persistent cookies was 1.77 years. Excluding cookies with duration >68 years, this reduces to 1.33 years.

⁶ 1 year calculated as 365 days

Only 1 of these sites displayed no cookie information at all. Four provided only a link in the header or footer with the remainder opting to use a banner to information users. Four sites used a permanent banner, 3 a temporary banner which disappeared on the next user click and 2 used a timed banner.

5.1.8.3. Distribution of first and third party cookies by duration

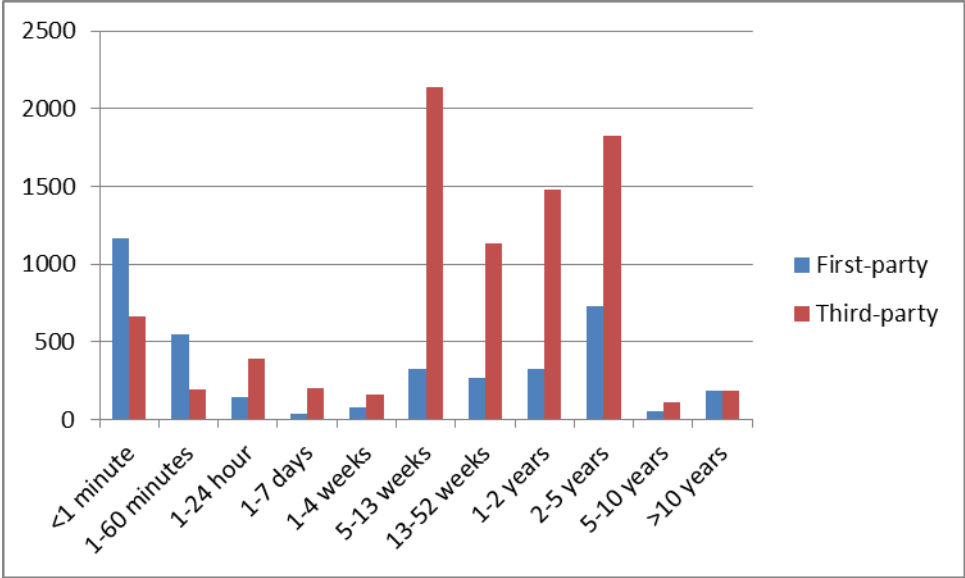


Figure 3: A summary of the duration of cookies set by all sites in the automated sweep

5.1.9. Third-parties

415 domains set 8472 third-party cookies across the 478 sites swept.

On average each site swept resulted in 27.6 third-party cookies from 10.7 third party domains.

25 third-party domains set cookies on >30 sites. On average, each third-party domain set 20.4 cookies on each site where it was used as a third-party. These 25 third-party domains set a total of 4542 cookies which represents 53.1% of all third-party cookies.

The major business activity of these third-party domains are involved in third-party advertising.

Site	Count sites	Total number of cookies set
doubleclick.net	213	247
adnxs.com	114	320
scorecardresearch.com	98	198
rubiconproject.com	80	903
yahoo.com	64	167
gemius.pl	61	112
360yield.com	59	282
twitter.com	59	83
turn.com	58	133
adform.net	56	252
mathtag.com	52	177
mookie1.com	52	167
adtech.de	51	124
pubmatic.com	50	176
openx.net	47	49
google.com	46	49
serving-sys.com	44	183
criteo.com	43	140
adformdsp.net	38	77
smartadserver.com	37	153
casalemedia.com	36	213
adscale.de	34	124
atemda.com	33	148
abmr.net	33	33
254a.com	30	32

Table 18: A summary of the third-party domains which set cookies of more than 30 of the sites visited in the automated sweep

5.2. Manual sweep

5.2.1. Zero cookie sites

7 sites were observed during the manual sweep that did not set any cookies. These sites were in CZ (2), ES (1), GR (2) and NL (2).

5.2.2. Number of sites by country and sector

A total of 437 sites were manually inspected by 7 member states between 15-19 September 2014 and the results pooled for analysis. Due to resource constraints not all features of CZ sites were fully inspected.

Country	e-commerce	Media	Public	Total
CZ	24	16	9	49
DK	22	20	10	52
ES	32	24	9	65
FR	49	45	8	102
GR	14	11	4	29
NL	20	37	2	59
UK	58	16	7	81
Total				437

Table 19: A summary of the number of sites inspected during the manual sweep

5.2.3. Notification method⁷

Sector	Modal dialog ⁸	Permanent banner ⁹	Temporary banner ¹⁰	Timed banner ¹¹	Header or Footer ¹²	No notification ¹³
e-commerce	6	51	72	8	155	54
Media	5	63	42	6	131	35
Public	0	13	6	0	28	27
Total	11	127	120	14	201	116

Table 20: A summary of the notification method used by sites in the manual sweep

The most common notification method is to use a type of banner (59%) or with a link in the header or footer (39%), or both.

There were 116 (26%) sites which showed no notification of any kind on the first page visited during the sweep. Of the 116 sites which showed no notification information, 37 were swept

⁷ Notification method is not mutually exclusive (i.e. a site could use both a link in the header/footer and a banner).

⁸ A dialog box which is displayed on screen which the user must read before continuing to the site

⁹ A banner which is displayed until the user clicks within the banner to indicate consent

¹⁰ A banner which is displayed until the user clicks anywhere on the page (e.g. to move to a second page)

¹¹ A banner which is displayed for a set amount of time regardless of the user taking any action

¹² Cookie information is given in a page linked to from header or footer

¹³ No cookie information is given on the site

by the Czech Republic. In total this represented 76% of the sites swept by Czech Republic which did not provide any cookie notification on the first page visited.

Country	e-commerce	Media	Public	Total	% of sites swept
CZ	19	9	9	37	76%
DK	7	3	3	13	25%
ES	2	0	6	8	12%
FR	14	11	7	32	31%
GR	5	2	2	9	31%
NL	2	10	0	12	20%
UK	5	0	0	5	6%
Total	54	35	27	116	26%

Table 21: A summary of the sites, by sector and country, which showed no cookies notification method

Of those sites that did provide a notification it was considered that it was not sufficiently visible, or visibility could be improved in 39% of cases in order for the user to be able to make an informed choice regarding the use of cookies.

5.2.4. Information provided

The cookie information provided on 404 sites was inspected in greater detail. In 173 (57%) cases, it was considered that site provided an appropriate level of information regarding the types of cookies used. Therefore 43% of sites do not provide sufficient information regarding the types or purposes of cookie usage.

The information on 204 (50%) sites inspected requested consent from the user to store cookies. The remaining 200 (50%) use language such as “we use cookies”, “cookies are being set” or similar.

5.2.5. User control

A minority of sites (49 sites, 16%) inspected offered a granular level of control where the user is offered a choice of accepting or declining certain types of cookies. The remaining sites require the user to review the browser settings to control cookie usage.

6. Conclusions

It is important to recall that the results of the both the automated scan and the manual review are not an assessment of cookie compliance but an assessment of the extent of the use of cookies, level of information provided and a review of control mechanisms in place.

The accuracy of information provided was not assessed as part of the manual review nor was the effectiveness of any control mechanism.

Furthermore, a website which does not offer the full range of control mechanisms would not immediately be deemed non-compliant with a national interpretation of Article 5(3).

It is clear from the results that a large number of target sites set at least 1 cookie. Only 7 sites were seen in the manual review which did not set any cookies.

If a user had set their browser controls to not accept third-party cookies and visited the same sites then 70% of the cookies recorded would not have been set (11654/16555).

There is a variation in the use of cookies across websites both within and between sectors and across member states. For example, some e-commerce sites used only first-party cookies and some media sites used high numbers of third-party cookies.

Target sites in Slovenia set consistently fewer cookies in all target sectors. Media sites in Denmark, France and the UK set, on average, a higher number of cookies as compared to others in the same sector. Target sites in Slovenia and Greece also showed usage of a higher proportion of first-party cookies as compared to sites in other member states.

Public sector sites set, on average, the fewest cookies and these contained the highest proportion of first party cookies. Media sites set, on average, the highest number of cookies. Media sites also contained the highest proportion of third-party cookies as compared to other sectors.

It was also shown that some e-commerce and media sites did not use any third-party cookies.

Media sites set the highest proportion of persistent cookies as compared to other sectors. Public sites set a higher proportion of session cookies.

Some first and third party cookies appear to have an extremely long duration. Cookies with an expiry set to 31/12/9999 23:59 (the maximum possible value) could be regarded as not having a reasoned retention schedule defined.

Excluding cookies with a long duration (greater than 100 years) the average duration was between 1 and 2 years. This could be a useful starting point for a discussion regarding an acceptable maximum duration, although the purpose of the cookie will also need to be taken into account.

The distribution of the duration of first party cookies is slightly skewed towards short-duration cookies (less than 60 minutes), when compared with the distribution of third party cookies. Third-party persistent cookies showed a lower average duration as compared to first-party persistent cookies. This might be due to self-regulatory advertising industry guidelines.

Considering the notification and information provided 26% of sites did not provide any notification that cookies were in use, with 75% of these being swept by the Czech Republic. The UK reports a low 6% of sites (all classed as e-commerce) with no cookie notification.

The quality of information provided was variable with more than half (54%) of sites not requesting consent from the user, merely informing that cookies were in use.

Whilst it was encouraging to see that some sites are offering a high degree of user control regarding certain types and categories of cookies, only 16% of sites offered such a tool. The majority relied on browser settings or an opt-out tool provided on a third-party site (a third-party advertising site, for example).

Amongst those sites which set the highest number of cookies most had taken some steps to inform users about the use of cookie through a banner which was either permanent (requiring an active click from the user within the banner to disappear), a banner which disappears on the next user click anywhere on the page or timed to disappear after a certain length of time.