Information Commissioner's Office

Call for evidence:

Age Appropriate Design Code

Start date:27 June 2018
End date: 19 September 2018

Introduction

The Information Commissioner (the Commissioner) is calling for evidence and views on the Age Appropriate Design Code (the Code).

The Code is a requirement of the Data Protection Act 2018 (the Act). The Act supports and supplements the implementation of the EU General Data Protection Regulation (the GDPR).

The Code will provide guidance on the design standards that the Commissioner will expect providers of online 'Information Society Services' (ISS), which process personal data and are likely to be accessed by children, to meet. Once it has been published, the Commissioner will be required to take account of any provisions of the Code she considers to be relevant when exercising her regulatory functions. The courts and tribunals will also be required to take account of any provisions they consider to be relevant in proceedings brought before them. The Code may be submitted as evidence in court proceedings.

Further guidance on how the GDPR applies to children's personal data can be found in our guidance Children and the GDPR. It will be useful to read this before responding to the call for evidence, to understand what is already required by the GDPR and what the ICO currently recommends as best practice. In drafting the Code, the ICO may consider suggestions that reinforce the specific requirements of the GDPR, or its overarching requirement that children merit special protection, but will disregard any suggestions that fall below this standard.

The Commissioner will be responsible for drafting the Code. The Act provides that the Commissioner must consult with relevant stakeholders when preparing the Code, and submit it to the Secretary of State for Parliamentary approval within 18 months of 25 May 2018. She will publish the Code once it has been approved by Parliament.

This call for evidence is the first stage of the consultation process. The Commissioner seeks evidence and views on the development stages of childhood and age-appropriate design standards for ISS. The Commissioner is particularly interested in evidence based submissions provided by: bodies representing the views of children or parents; child development experts; providers of online services likely to be accessed by children, and trade associations representing such providers. She appreciates that different stakeholders will have different and particular areas of expertise. The Commissioner welcomes responses that are limited to specific areas of interest or expertise and only address questions within these areas, as well as those that address every question asked. She is not seeking submissions from individual children or parents

in this call for evidence as she intends to engage with these stakeholder groups via other dedicated and specifically tailored means.

The Commissioner will use the evidence gathered to inform further work in developing the content of the Code.

The scope of the Code

The Act affords the Commissioner discretion to set such standards of age appropriate design as she considers to be desirable, having regard to the best interests of children, and to provide such guidance as she considers appropriate.

In exercising this discretion the Act requires the Commissioner to have regard to the fact that children have different needs at different ages, and to the United Kingdom's obligations under the United Nations Convention on the Rights of the Child.

During Parliamentary debate the Government committed to supporting the Commissioner in her development of the Code by providing her with a list of 'minimum standards to be taken into account when designing it.' The Commissioner will have regard to this list both in this call for evidence, and when exercising her discretion to develop such standards as she considers to be desirable

In developing the Code the Commissioner will also take into account that the scope and purpose of the Act, and her role in this respect, is limited to making provision for the processing of personal data.

Responses to this call for evidence must be submitted by 19 September 2018. You can submit your response in one of the following ways:

Online

Download this document and email to:
childrenandtheGDPR@ICO.org.uk

Print off this document and post to:
Age Appropriate Design Code call for evidence
Engagement Department
Information Commissioner's Office
Wycliffe House
Water Lane
Wilmslow
Cheshire SK9 5AF

If you would like further information on the call for evidence please telephone 0303 123 1113 and ask to speak to the Engagement Department about the Age Appropriate Design Code or email childrenandtheGDPR@ICO.org.uk

Privacy statement

For this call for evidence we will publish responses received from organisations but will remove any personal data before publication. We will not publish responses from individuals. For more information about what we do with personal data please see our privacy notice.

Please provide us with your views and evidence in the following areas:

Development needs of children at different ages

The Act requires the Commissioner to take account of the development needs of children at different ages when drafting the Code.

The Commissioner proposes to use their age ranges set out in the report Digital Childhood – addressing childhood development milestones in the Digital Environment as a starting point in this respect. This report draws upon a number of sources including findings of the United Kingdom Council for Child Internet Safety (UKCCIS) Evidence Group in its literature review of Children's online activities risks and safety.

The proposed age ranges are as follows:

3-5
6-9
10-12
13-15
16-17

Q1. In terms of setting design standards for the processing of children's personal data by providers of ISS (online services), how appropriate you consider the above age brackets would be (delete as appropriate):

Not at all appropriate
Not really appropriate
Quite appropriate
Very appropriate

Q1A. Please provide any views or evidence on how appropriate you consider the above age brackets would be in setting design standards for the processing of children's personal data by providers of ISS (online services),

We believe that the above age brackets are appropriate. However, we also believe that infants 0-3 should be included in the list. This is especially true if we consider the new data environments that are emerging with the developments of new home technologies and AI Virtual assistants. Home Hubs threaten to socialise kids to divulge their data from the moment of birth, which is one reason design code in the home must create safeguards across all ages. In Further Evidence, we present a report titled *Home Life*

Data and Children's Privacy' written by Dr Barassi (Department of Media, Communications and Cultural Studies, Goldsmiths, University - British Academy Project Child | Data| Citizen) co-signed by Gus Hosein (Executive Director, Privacy International, London, UK) and supported by Jeff Chester (Executive Director, Center for Digital Democracy, Washington D.C., U.S.A.).

Q2. Please provide any views or evidence you have on children's development needs, in an online context in each or any of the above age brackets.

One of the prerequisites to meeting children's needs – across different age brackets - is to ensure that the content and technologies that children have access to are age-appropriate. The development of home automation technologies is challenging this prerequisite. As the report below will show, the new home automation technologies are creating a situation whereby children interact with voice operated virtual assistants (and their services) that are not *designed for or targeted at* them. These new data environments challenge some of the effectiveness of regulations such as COPPA or the GDPR, and do not guarantee that age-appropriate needs are met.

The United Nations Convention on the Rights of the Child

The Data Protection Act 2018 requires the Commissioner to take account of the UK's obligations under the UN Convention on the Rights of the Child when drafting the Code.

Q3. Please provide any views or evidence you have on how the Convention might apply in the context of setting design standards for the processing of children's personal data by providers of ISS (online services)

The setting of design standards for processing children's personal data is an important step towards protecting children's privacy and abiding to the article 16 of the CRC. However, one of the challenges that the ICO will face in setting these standards is represented by the fact that children's personal data flows are incredibly complex because they are too often intertwined with adults' personal data. This is particularly true if we consider the new data environments created by home automation, as the report below will show.

Aspects of design

The Government has provided the Commissioner with a list of areas which it proposes she should take into account when drafting the Code.

These are as follows:

- **default privacy settings,**
- **data minimisation standards,**
- **the presentation and language of terms and conditions and privacy notices,**
- **uses of geolocation technology,**
- **automated and semi-automated profiling,**
- **transparency of paid-for activity such as product placement and marketing,**
- **the sharing and resale of data,**
- **the strategies used to encourage extended user engagement,**
- **user reporting and resolution processes and systems,**
- **the ability to understand and activate a child's right to erasure, rectification and restriction,**
- **the ability to access advice from independent, specialist advocates on all data rights, and**
- **any other aspect of design that the commissioner considers relevant.**

Q4. Please provide any views or evidence you think the Commissioner should take into account when explaining the meaning and coverage of these terms in the code.

In explaining the meaning and coverage of automated and semi-automated profiling the Commissioner should take into account the complexity of children's data flows, and should consider how children's profiles can be aggregated with adult's profiles. To address this complexity, in the below report, we introduce the concept of **home life data** (Barassi, 2018).

Q5. Please provide any views or evidence you have on the following:

Q5A. about the opportunities and challenges you think might arise in setting design standards for the processing of children's personal data by providers of ISS (online services), in each or any of the above areas.

One of the challenges that the ICO will face in setting design standards for the processing of children's personal data is represented by the fact that children's data flows are extraordinarily complex. **Home life data** is of course a vivid example of this complexity. As the report below will show, the data of children that is being collected by home hub technologies is not only personal (individual) data but it is household data, family data, biometric data, highly-contextual data and messy data. We recommend

that in setting the design standards for the processing of children's personal data in the home, the ICO considers the complexity of home life data.

Q5B. about how the ICO, working with relevant stakeholders, might use the opportunities presented and positively address any challenges you have identified.

We believe that the ICO should support further research or an independent review into the impacts of home life data on children and youth. We also believe that home life data should be considered in the GDPR framework for children's youth.

Q5C. about what design standards might be appropriate (ie where the bar should be set) in each or any of the above areas and for each or any of the proposed age brackets.

n.a.

Q5D. examples of ISS design you consider to be good practice.

n.a.

Q5E. about any additional areas, not included in the list above that you think should be the subject of a design standard.

We believe that the ICO should include an additional area on aggregated profiles (e.g. Amazon household profile, see case study below).

Q6. If you would be interested in contributing to future solutions focussed work in developing the content of the code please provide the following information. The Commissioner is particularly interested in hearing from bodies representing the views of children or parents, child development experts and trade associations representing providers of online services likely to be accessed by children, in this respect.

Name [redacted]

Email [redacted]

Brief summary of what you think you could offer: anthropological perspective on the human complexity of datafication and children's privacy.

Further views and evidence

Q7. Please provide any other views or evidence you have that you consider to be relevant to this call for evidence.

'HOME LIFE DATA' AND CHILDREN'S PRIVACY

A report by Dr Veronica Barassi, Department of Media, Communications and Cultural Studies, Goldsmiths University of London/ Principal Investigator on Child | Data | Citizen Project, Funded by the British Academy http://childdatacitizen.com)

Co-signed by Gus Hosein, Executive Director, Privacy International
Supported by Jeff Chester, Executive Director, Center for Digital Democracy

INTRODUCTION

The development and domestication of AI – together with the extension of smart technologies – is rapidly transforming our homes. Powerful new applications and business models are emerging that pose a threat to the privacy of children and their families. Home automation is becoming a rapidly expanding market. A report published in January 2017 by Juniper Research – that specializes in identifying and appraising new high growth market sectors within the digital economy - estimated that smart home hardware and service, which include entertainment, automation, healthcare and connected devices is set to drive revenues from $83 billion in 2017 to $195 billion by 2021. They also estimated that the 'big four' (*Alphabet/Google, Amazon, Apple* and *Samsung*) companies – which at present dominate the smart home market – will further solidify their position, with Amazon securing a leading role (Juniper, 2017). Home Hubs threaten to further socialise kids to divulge their data, which is one reason design code in the home must create safeguards across all ages. By introducing the concept of **home life data** (Barassi, 2018), in this report we wish to draw attention to the fact that the data that is being collected by home hub technologies is not only personal (individual) data but it is household, family and highly-contextual data. Understanding the complexity of home life data makes us appreciate the fact that children's data is too often intertwined with adult profiles. We believe that the ICO should include home automation and home life data in the list of areas to take into consideration when developing age appropriate code.

HOME HUBS: A COMPLEX BUSINESS MODEL

When we think about home automation, we need at first to break down the incredible variety of smart technologies that are entering our homes. The pace of technological transformation, the extensiveness and pervasiveness of the developments in the Internet of Things makes it incredibly difficult to have a comprehensive overview. Yet broadly speaking (and at the time of writing) home automation is enabled by different sets of technologies, which include:

- *artificial intelligence devices* (e.g. virtual assistants, robots that act as home assistants; artificial intelligence toys, etc.);
- *entertainment devices* (e.g. smart TVs, whole house wireless music systems; video games, etc.)
- *home appliances* (e.g. smart fridges; smart toilets; smart washing machines etc.)
- *security technologies* (e.g. smart locks; surveillance cameras; alarms, which can detect intruders and are equipped with special sensors to detect floods, fires etc.)
- *energy and utilities monitoring and measuring tools* (i.e. meters that monitor water and energy consumption, etc.)
- *lighting monitoring devices* (e.g. smart bulbs and switches that can be controlled at a distance, etc.)
- specific *solution devices* (e.g. devices that offer different specific solutions, such as support with recycling or intercom solutions, etc.).

One of the challenges that businesses are facing at the moment relates to the fact that in order to build a truly automated home all the different technologies need to communicate with one another (Zuckerberg, 2016). It is for this reason that, in the last few years, we have seen the emergence of a new *business model* developed by the so called Big Four of Home Automation (Amazon, Google, Apple and Samsung) for home automation and domestication of artificial intelligence, which we will refer here as **'home hubs'**.

The business model of home hubs is quite complex and is structured (broadly speaking and again at the time of writing) by four different dimensions:

- The first dimension is of course the *AI virtual voice assistant* (Amazon Alexa, Google Assistant, Apple Siri, and Samsung Bixby). Virtual assistants are usually operated by home speakers (however as mentioned by Prof. Leah Lievrouw, UCLA, in a joint interview on data and privacy with Dr. Barassi in 2018, these are not only 'speakers' but also recording technologies). Virtual assistants can be integrated into a variety of home technologies (as we shall see below, and especially if companies have an open platform model). The AI assistants operate through voice recognition and are connected to specific profiles and accounts (e.g. Amazon and Google).

- The second dimension of the business model is created by the different *'services'* that users can access through the assistant. In very simplistic terms, we can understand these services as 'voice operated apps' that families can access through the interaction with their virtual assistant (e.g. Alexa Skills, Google Actions, Siri Shortcuts, Bixby Commands). These services are

continuously expanding. To regain competitive advantage over its competitors, Apple, for instance, is developing Siri Shortcuts by tapping into its 2 million apps at the moment. In order to extend Alexa Skills Amazon, for instance, created the Alexa Fund, which provides up to $100 million in venture capital for companies that build Alexa Skills Kit. In the last two years Alexa Skills have increased from 5,191 in November 2016 to 30,006 in March 2018 (Kinsella, 2018).

- The Alexa fund also invests in the third dimension of the business model of home hubs: the creation of *'compatible technologies'*. All the different companies are investing in the development of their own smart technologies (e.g. Apple, Samsung) or in funding other companies that include their voice operated assistant in their own technologies (Amazon). At present we are seeing homes being built with these technologies. In 2018, for example, Amazon signed a deal with the Lennar Corporation, which is building 35,000 automated homes in Florida, which are operated by Alexa.

- The fourth dimension of the business model is defined by *mobile home apps.* These are apps that enable to control the home remotely from your phone (Alexa App; Google Home app; Apple iOS Home app; Samsung Smart Home app).

HOME LIFE DATA AND CHILDREN'S PRIVACY

When we think about home hubs and their complex business model, the question about children's data and privacy is not a simple one to tackle. There are three different problems that we encounter as we try to address this question: a) the complexity of home life data b) the newness of home data environments c) the secrecy of algorithms

The Complexity of Home Life Data. Debates about the privacy implications of AI home assistants and Internet of Things focus a lot on the the collection and use of *personal data*. Yet these debates lack a nuanced understanding of the different data flows that emerge from everyday digital practices and interactions in the home and that include the data of children. When we think about home automation therefore, we need to recognise that much of the data that is being collected by home automation technologies is not only personal (individual) data but **home life data** (Barassi, 2018) and we need to critically consider the multiple ways in which children's data traces become intertwined with adult profiles. An attention to *home life data* should include a focus to the following categories:

1) *household data* – Home hubs and smart technologies collect a wide variety of household data from shopping lists to energy consumption and gather key information on families' behaviours, choices and routines (including the ones of children).
2) *family data* – Home hubs and smart technologies' Terms and Conditions are usually focused on explaining what happens to personal (individual) data. Yet they don't refer to whether they use family data. What is becoming clear is that, to enable multi-user functions, companies are aggregating profiles (see the example of Amazon Household Profile Case Study in the Appendix). Aggregated profiles, however, constitute a risk for children's privacy. Let's imagine that you are having dinner with a friend who has a child who suffers from diabetes and you might ask Google assistant or Alexa to look for information on 'diabetes in children'. That information would be automatically stored on your profile. Let's also imagine that in the weeks to come you feel concerned about your own child getting diabetes and you start looking for information on symptoms. All these data traces would imply that you probably would be profiled as "parent" with a "diabetes interest'" (this is a guess because there is so much secrecy about the ways in which we are being profiled). If this is the case, the the question emerges naturally: if you shared your 'household' profile with your child, and you were profiled as a parent with a diabetes interest, would your child be profiled as possibly diabetic? The problem is that we don't know the answer.
3) *biometric data* – Most Virtual Assistants and smart technologies rely on the gathering of biometric data (voice recognition or facial recognition), including the one of children. Yet privacy policies often tend to group this data under the generic umbrella term of 'biometric data' and do not differentiate the one of adults from the one of children.
4) *highly contextual data* – To function, AI technologies do not gather only personal data but contextual data. Yet the data policies of home hubs fail to discuss how companies use this data. The following examples are particularly illustrative (although a bit dated) of the ways in which developers are thinking about context:

> "*Understanding context is important for any AI. For example, when I tell it to turn the AC up in "my office", that means something completely different from when Priscilla tells it the exact same thing. That one caused some issues! Or, for example, when you ask it to make the lights dimmer or to play a song without specifying a room, it needs to know where you are or it might end up blasting music in Max's room when we really need her to take a nap*." (Zuckerberg, building Jarvis 2016)
>
> "[*Hello Barbie] should always know that you have two moms and that your grandma died, so don't bring that up, and that your favorite color is blue, and that you want to*

be a veterinarian when you grow up," (Wulfeck, ToyTalk in Vhalos, 2015).

5) *messy data* – The data produced by family life is inevitably messy and full of imprecisions and overlaps. Families often do not use these technologies as they are designed to be used. This is not only because, on an average family da, technologies, profiles etc. always ooverlap, and this confuses algorithms, but also because families often input inaccurate data in their technologies, to use them tactically or because they do 'not want to share too much'. When we think about data traces and profiling than we need to ask ourselves: is this broken, inaccurate data used to profile families and children?

The Newness of Home Data Environments. Home hubs are collecting and processing different types of children data, from biometric data (voice recordings, facial recognition) to personal interests and details (entertainment data, other contextual personal data) but they are not *designed for or targeted at* children. Last year Mattel cancelled its Aristotle AI assistant for kids amidst privacy concerns. This year we are seeing a growing debate from lawmakers in the U.S. about Amazon's use of children's data in the Amazon Dot Echo for Kids. Yet we are seeing very little debate about home hubs and smart technologies that are targeted at adults but that children *encounter* (Montgomery, 2015) in everyday life, and that collect their personal data. These new data environments challenge some of the effectiveness of regulations such as COPPA or the GDPR to protect children's privacy in the automated home.

Secrecy of Data Use: Home hubs rely on a business model that is extraordinarily complex and involves an incredible plurality of companies and agents. Many internet companies accumulate vast amounts of data for unclear purposes and often share with data brokers. Without clarity we are left to presume that data from hubs will end up as part of the modern exploitative business models within the data brokering ecosystem. However, the ways in which companies gather, archive and sell home data or the ways in which they profile, sort and classify their users (including children) is still unknown because of the secrecy of algorithms (Pasquale, 2016) and lack of transparency of data brokers (FTC, 2014).

CONCLUSION:
THE IMPORTANCE OF NEW MEASURES/SOLUTIONS

It seems that companies are not recognizing the privacy implications involved in children's daily interactions with home automation technologies that are not designed for or targeted at them. Yet they make sure to include children in the advertising of their home

technologies. Much of the responsibility of protecting children is in the hands of parents, who struggle to navigate Terms and Conditions even after changes such as GDPR. There is no acknowledgement so far of the complexity of home life data, and much of the privacy debates seem to be evolving around personal (individual) data. It is for this reason that we need to find new measures and solutions to safeguard children and to make sure that age appropriate design code is included within home automation technologies.

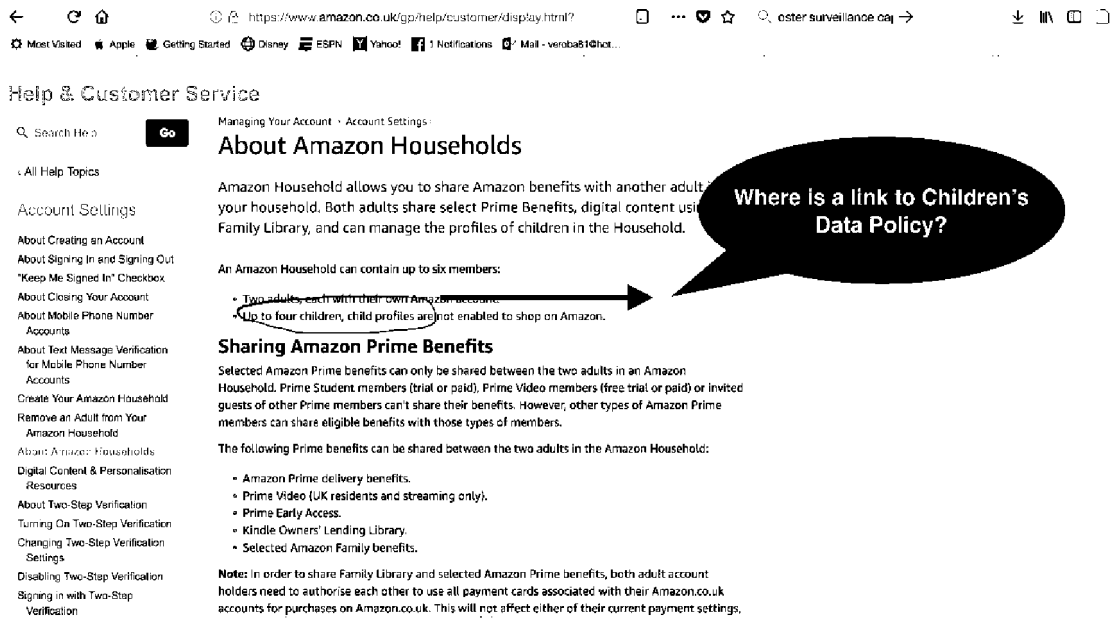
We recommend that the ICO supports further research or launches a review on the impact of home life data on children's privacy, we also recommend that the ICO includes the concept of home life data in current debates on children's data protection.

APPENDIX I
AMAZON HOUSEHOLD A CASE STUDY

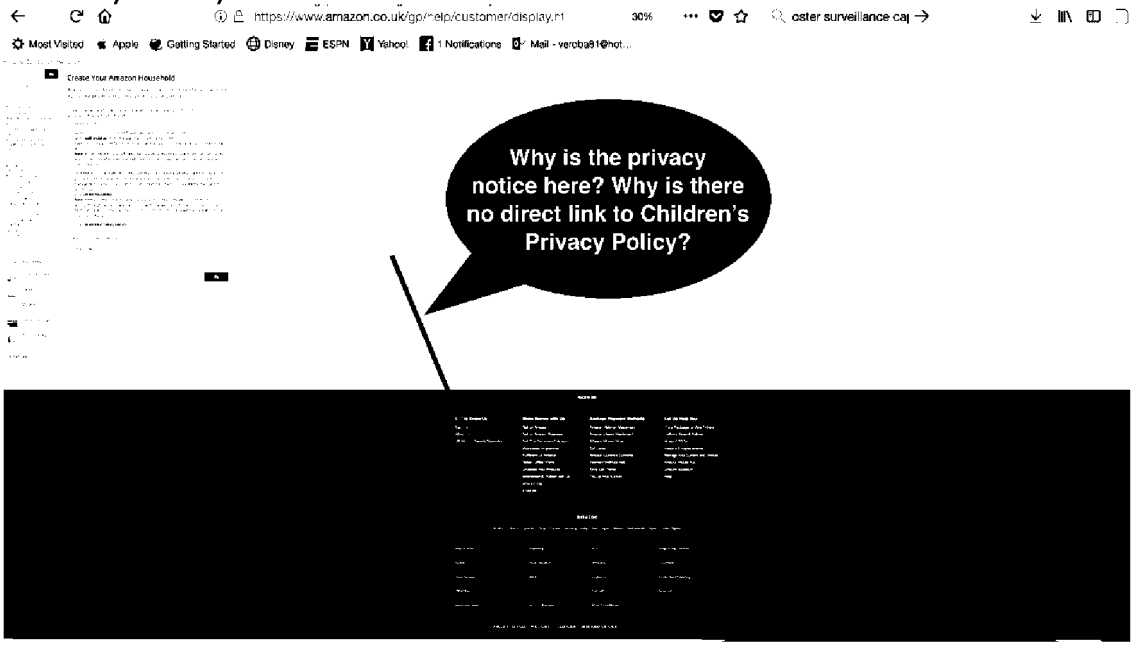
Amazon Household Profile enables you to add another adult and up to four children to your account. It is an interesting case study because it highlights the complexity of 'family data' and how different individual profiles can be grouped together. My personal, auto-ethnographic, journey as a parent of two young children, to find more about the Household Profile and Amazon's use of my children's data has been confusing and frustrating.

I carried out this auto ethnographic exercise by looking at both UK and US data policies. This was important especially in the light of the changes brought about by the GDPR. Please note that the screenshots below are all taken from Amazon UK. I took note of the steps that I have taken to find out more. By Step 5 I gave up.

- **Step 1** I landed on the Amazon UK Household Profile page. It tells me that I could add under a unique profile two adults and up to four children. Yet there is no mention of compliance to COPPA or GDPR.



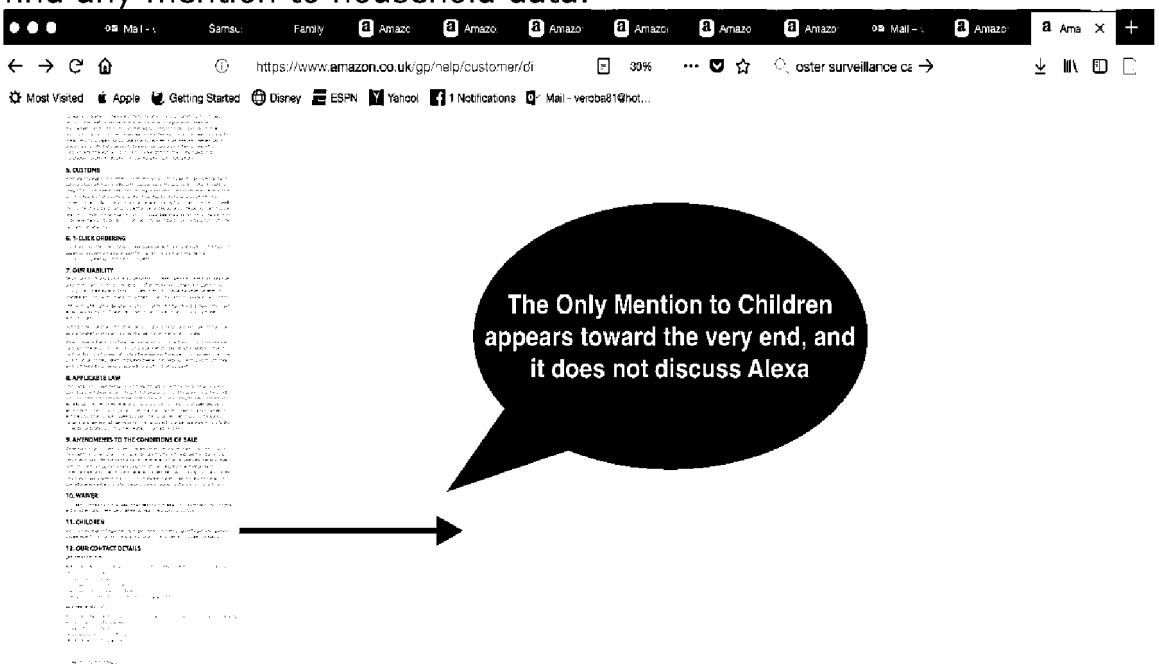
Step 2 I decide to create my household profile so I land on the page 'Create your Amazon Household Profile'. Here again I can see no mention to the COPPA or GDPR and in order for me to get information on Privacy I have to Scroll down until I notice a very small tab: 'Privacy Policy'



- **Step 3:** I want to find out whether I could connect my Household to Alexa, I find out that, in the UK although children can be added to household profiles they can't have their household profiles on Alexa (whilst in the U.S. they can). But it is all really confusing.

- **Step 4:** I decide that if I want to find out how Amazon uses my children's data is to look at their UK policy (the U.S. Policy is more extensive but problematic anyway). The UK only mentions that

children under the age of 18 can't purchase Amazon 'services'. I can't find any mention to household data.



- **Step 5:** I give up. As I carried out the exercise I took field notes and documented how I felt. The below quote is taken out of my notes: "*I don't understand, I feel so incompetent and frustrated. I have been reading the privacy policy again and again but fail to understand it. It is clear that the company recognises that children interact with the virtual assistants or can create their own profiles connected to the adults. Yet I can't find an exhaustive description or explanation of the ways in which their data is used. […] I can't tell at all how this company archives and sells my home life data, and the data of my children.*"

References:

Barassi, V. (2018) 'Home Life Data' chapter in the Child | Data | Citizen forthcoming book currently under review by MIT PRESS, more info at http://childdatacitizen.com

Federal Trade Commission. (2014). *Data Brokers: A Call for Transparency and Accountability*. Retrieved from https://www.ftc.gov/system/files/documents/reports/data-brokers-call-transparency-accountability-report-federal-trade-commission

Kinsella, B. (2018, March 22). Amazon Alexa Skill Count Surpasses 30,000 in the U.S. *Voicebot*. Retrieved from https://voicebot.ai/2018/03/22/amazon-alexa-skill-count-surpasses-30000-u-s/

Montgomery, K. (2015). Children's Media Culture in a Big Data World. *Journal of Children and Media*, *9*(2), 266–271. https://doi.org/10.1080/17482798.2015.1021197

O'Hara, D (2018) Conversation with Dr. Barassi by Dustin O'Hara, 3rd of May

Pasquale, F. (2016). *The Black Box Society: The Secret Algorithms That Control Money and Information* (Reprint edition). Cambridge, Massachusetts London, England: Harvard University Press.

Zuckerberg, M. (2016). Building Jarvis. Retrieved August 23, 2018, from https://www.facebook.com/notes/mark-zuckerberg/building-jarvis/10154361492931634/

Are you:

A body representing the views or interests of children? Please specify:	☐
A body representing the views or interests of parents? Please specify:	☐
A child development expert? Please specify:	☐
A provider of ISS likely to be accessed by children? Please specify:	☐
A trade association representing ISS providers? Please specify:	☐
An ICO employee?	☐
Other? Please specify: Researcher working on a project on children data traces with the support of leading non-profit organisations working on privacy and internet rights.	☒

Thank you for responding to this call for evidence.
We value your input.