Submission to the European Commission regarding the proposed acquisition of iRobot Corporation by Amazon.com, Inc (Case M.10920 Amazon/iRobot)

Introduction and Executive summary

This submission comprises Privacy International's ("**PI**") comments on Amazon.com, Inc.'s ("**Amazon**") proposed acquisition of iRobot Corporation ("**iRobot**") (the "**Proposed Acquisition**"), notified to the European Commission (the "**Commission**") for review on 1 June 2023.[1] PI considers that the Proposed Acquisition is highly likely to significantly impede effective competition in and across several markets and thus requires careful scrutiny by the Commission. PI has made similar submissions to the UK Competition and Markets Authority ("**CMA**") in the context of its ongoing Phase I review of the Proposed Acquisition[2]. This submission also constitutes PI's application to be heard as an interested third person as part of the Commission's review.

PI is a leading non-profit, non-governmental organisation, based in London, which campaigns globally against corporate and government abuses of data and technology. PI employs specialists in their fields, including technologists and lawyers, to understand the impact of existing and emerging technology upon data exploitation and our right to privacy, including in relation to online platforms and the advertising technology industry.

PI has an established track record of effective and helpful engagement with competition regulators around the world on issues that concern the intersection of data privacy and competition laws. It has previously submitted evidence to the Commission[3], the CMA[4] and the U.S. Federal Trade Commission ("**FTC**")[5] regarding data and competition issues. In 2020, PI intervened and made submissions before the Commission[6] and the Australian Competition and Consumer Commission[7] in their respective reviews of Google LLC's acquisition of Fitbit, Inc (the "**Google/Fitbit Merger**"), highlighting concerns that Google's acquisition of Fitbit's health data troves would further augment Google's dominance in the search and digital advertising markets leading to a lessening of competition in those markets. As the Commission is

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[1] European Commission, Competition Policy: Case M.10920 Amazon/iRobot, https://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=2_M_10920. .

[2] CMA, Amazon / iRobot merger inquiry (6 April 2023), https://www.gov.uk/cma-cases/amazon-slash-irobot-merger-inquiry.

[3] PI, Privacy International's submission to the European Commission consultation on 'Shaping competition policy in the era of digitisation' (2 October 2018), https://privacyinternational.org/advocacy/2312/privacy-internationals-submission-european-commission-consultation-shaping.

[4] PI, Comments on the CMA's interim report on online platforms and digital advertising (12 February 2020), https://privacyinternational.org/sites/default/files/2020-04/20.02.12_CMA_PI_Comments_Interim_Report_FINAL.pdf; PI's Response to the CMA's online platforms and digital advertising market study (29 July 2019), https://privacyinternational.org/advocacy/3101/response-cmas-online-platforms-and-digital-advertising-market-study; PI's Submission to the CMA's call for information on digital mergers (23 July 2019), https://privacyinternational.org/node/3097.

[5] PI, Submission to the US Federal Trade Commission on the intersection between privacy, big data, and competition (1 August 2018), https://privacyinternational.org/report/2262/submission-us-federal-trade-commission-intersection-between-privacy-big-data-and.

[6] PI, European Commission's review of the Google/Fitbit merger, https://privacyinternational.org/legal-action/european-commissions-review-googlefitbit-merger; Submission to the European Commission regarding the proposed acquisition of Fitbit, Inc. by Google LLC (Case M.6990 Google/Fitbit), https://privacyinternational.org/sites/default/files/2020-07/WEB_20.07.03_PI_SubmissionEC_Google_Fitbit.pdf.

[7] PI, Submission to the Australian Competition and Consumer Commission on the proposed acquisition of Fitbit, Inc.by Google LLC (24 March 2020), https://privacyinternational.org/sites/default/files/2020-07/WEB_20.03.25_PI_Submission_Google_Fitbit_ACCC_FINAL.pdf; Response to the Australian Competition and Consumer Commission's Statement of Issues: Proposed acquisition of Fitbit, Inc. by Google LLC (9 July 2020), https://privacyinternational.org/sites/default/files/2020-07/WEB_20.07.09_PI_Google_Fitbit_Response_ACCC_SOI_FINAL.pdf.

aware, PI was admitted as an interested third person in the Commission proceedings[8] and its submissions were cited in the public version of the Commission's final merger decision.[9]

More recently, PI participated in Phase 1 of the CMA's review of the acquisition of GIPHY, Inc. ("**GIPHY**") by Meta Platforms, Inc. ("**Meta**") (the "**Meta/GIPHY Merger**"), with submissions highlighting Meta's ownership and use of data as a factor in the competitive assessment of the Meta/GIPHY Merger[10]. Following the CMA's decision that Meta was required to divest itself of GIPHY in November 2021, PI successfully intervened in support of the CMA in the appeal brought by Meta against that decision before the UK Competition Appeal Tribunal (the "**CAT**").[11] PI's intervention contended, amongst other things, that the divestiture remedy ordered by the CMA was proportionate in light of the risk that Meta would further increase its data dominance through the merger and benefit from GIPHY's data troves to the detriment of rivals.

PI submits that the Proposed Acquisition, like the Google/Fitbit and Meta/GIPHY Mergers, requires very close scrutiny by regulators, including the Commission. The FTC and the CMA's investigations are underway[12], and several organisations and commentators have warned about the merged entity's use of iRobot's data troves and the resulting degradation of consumers' privacy options (a parameter of non-price competition) post-acquisition.[13]

PI considers that the Proposed Acquisition is highly likely to significantly impede effective competition in and across several (adjacent) markets and result in the strengthening of Amazon's dominant positions, with ramifications for competition and in turn upon consumers and wider society, including significant data privacy impacts. In this regard, PI notes that, whilst the starting point for the competitive assessment is the state of static competition in the relevant markets, the Proposed Acquisition requires a broader analysis of potential and *dynamic* competition which arise where businesses engage in a fluid competitive process which revolves around innovation across more than one, connected market. In this regard, PI draws the Commission's attention to the CAT's judgment in Meta's appeal regarding the Meta/GIPHY

[8] See https://ec.europa.eu/competition/mergers/cases1/202120/m9660_3317_3.pdf.
[9] Decision in Case M.9660 – GOOGLE/FITBIT, 17 December 2020, at recitals (446)(g) and (452).
[10] PI, Submission to the UK Competition And Markets Authority regarding the Facebook/Giphy Merger Inquiry (March 2021), https://privacyinternational.org/sites/default/files/2021-03/PI%27s%20Submission%20to%20the%20UK%20Competition%20and%20Markets%20Authority_0.pdf. PI also made similar submissions before the Australian Competition and Consumer Commission, https://privacyinternational.org/sites/default/files/2021-03/Submission%20to%20the%20Australian%20Competition%20and%20Consumer%20Commission_0.pdf.
[11] *Case 1429/4/12/21Meta Platforms, Inc. v Competition and Markets Authority.* PI's intervention is accessible at: https://privacyinternational.org/sites/default/files/2022-04/Privacy%20International%27s%20Statement%20of%20Intervention%20-%204%20March%202022.pdf.
[12] FTC probes Amazon's $1.7 billion acquisition of Roomba maker iRobot, 20 September 2022, https://edition.cnn.com/2022/09/20/tech/roomba-amazon-ftc-investigation/index.html; CMA, Amazon / iRobot merger inquiry, https://www.gov.uk/cma-cases/amazon-slash-irobot-merger-inquiry.
[13] See, inter alia: Fight for the Future's Letter Calling on the FTC to Challenge Amazon-iRobot deal, https://www.fightforthefuture.org/news/2022-09-09-letter-to-the-ftc-challenge-amazon-irobot-deal; Foxglove, The Balanced Economy Project, SOMO and the Open Markets Institute Joint submission to the Commission on the proposed merger of Amazon and iRobot, https://www.foxglove.org.uk/wp-content/uploads/2023/02/2023_02_14-PUB-Civil-Society-Groups-Submission-to-the-EC-on-Amazon-iRobot-.pdf; Thorin Klosowski, 'How Amazon's Acquisitions of iRobot and One Medical Could Affect Your Privacy' (The NY Times Wirecutter, 6 September 2022), https://www.nytimes.com/wirecutter/blog/amazon-acquisitions-irobot-and-one-medical; Katherine Tangalakis-Lippert, 'Amazon bought the company that makes the Roomba. Antitrust researchers and data-privacy experts say it's 'the most dangerous, threatening acquisition in the company's history' (Insider, 8 August 2022), https://www.businessinsider.com/amazon-roomba-vacuums-most-dangerous-threatening-acquisition-in-company-history-2022-8?r=US&IR=T; Ron Knox, Amazon's Dangerous New Acquisition (21 August 2022, The Atlantic), https://www.theatlantic.com/ideas/archive/2022/08/amazon-roomba-irobot-acquisition-monopoly/671145.

Merger[14], and to the CMA's Final Report following the CAT's remittal of the case[15]. In its ruling, the CAT suggested that defining markets in the context of an assessment of dynamic competition affords the regulator an even greater margin of appreciation than would ordinarily be the case, as interconnections and synergies between markets are "*the stuff of dynamic competition*".[16]

With that in mind, PI has conducted a legal and technical analysis of the data impacts of the Proposed Acquisition, which strongly indicates that the Proposed Acquisition would threaten competition in and across several potential markets including, without limitation: (a) the market for smart home devices; (b) the market for online retail, including intermediation services (noting that Amazon's conduct in this market has been the subject of investigation by the Commission and is currently being investigated by the CMA[17]); and (c) the market for digital advertising services. More generally, the Proposed Acquisition would reduce what little pressure there currently is on Amazon to compete in relation to privacy options available to consumers, leading to even less competition on privacy standards and thereby enabling the further degradation of consumers' privacy protections.[18]

The remainder of this submission is structured as follows:

- Section A briefly addresses PI's interest in the Proposed Acquisition.
- Section B addresses the importance of examining Amazon's wealth of consumer data pre- and post- transaction, as an integral part of the Commission's assessment of the competitive effects of the Proposed Acquisition.
- Section C focuses on how iRobot's products operate, and the extent of users' data collected by iRobot, including by presenting the results of empirical testing by PI.
- Section D sets out PI's concerns that Amazon could amass iRobot's existing and future data to consolidate its position of dominance in several connected markets, thereby disincentivising competition in those markets (whilst noting, as above, that the precise market definition should not be decisive in this context).

A. PI's interest in the Proposed Acquisition

PI applies for the right to be heard in the Commission's review as a legal person with sufficient interest in the Proposed Acquisition within the meaning of Article 18(4) of Regulation (EC) No 139/2004,[19] Articles

[14] *Meta Platforms, Inc v Competition and Markets Authority* [2022] CAT 26, paragraphs 34-37, https://www.catribunal.org.uk/sites/default/files/2022-06/20220614_1429_Judgment_FINAL%20%5B2022%5D%20CAT%2026.pdf 2022.

[15] CMA's Final Report on the Completed acquisition by Facebook, Inc (now Meta Platforms, Inc) of Giphy, Inc (Final report on the case remitted to the CMA by the Competition Appeal Tribunal), 18 October 2022, https://assets.publishing.service.gov.uk/media/635017428fa8f53463dcb9f2/Final_Report_Meta.GIPHY.pdf.

[16] [2022] CAT 26, at paragraphs 67-68.

[17] CMA, Investigation into Amazon's Marketplace (6 July 2022), https://www.gov.uk/cma-cases/investigation-into-amazons-marketplace.

[18] In a competitive market, it should be expected that the level of data protection offered to individuals would be subject to genuine competition, i.e. companies would compete to offer privacy-friendly services. In its 2014 assessment of the proposed merger of Facebook and WhatsApp, the Commission acknowledged that "*competition on privacy*" exists. In addition, the CMA's Online Platforms and Digital Advertising Market Study Final Report, published on 1 July 2020 (the "**CMA Final Report**"), explicitly refers to privacy as a parameter of competition, see (for example) at [3.12] and [3.158].

[19] Article 18(4) states that: "*In so far as the Commission or the competent authorities of the Member States deem it necessary, they may also hear other natural or legal persons. Natural or legal persons showing a sufficient interest and especially members of the administrative or management bodies of the undertakings concerned or the recognised representatives of their employees shall be entitled, upon application, to be heard*".

11(c) and 16(1) of Regulation (EC) No 802/2004 and Article 5 of Decision 2011/695/EU. PI has a "sufficient interest" in the proposed acquisition within the meaning of these provisions.

PI's application to the Commission is made in its capacity as an organisation seeking to promote consumers' rights and to defend their privacy. As detailed further below in this submission, the Proposed Acquisition at its heart concerns a product used by final consumers and associated troves of data belonging to those consumers, whose interests PI, a legal person, strives to protect. As such, PI has a significant interest in the Proposed Acquisition.

As noted above, PI has significant experience and expertise regarding competition issues and interacting with competition regulators, including the European Commission. In July 2020, PI was recognised as an interested third person in Case M.9660 concerning the Commission's review of the Google/Fitbit acquisition.[20] In her contribution to PI's report 'Personal Data and Competition: Mapping perspectives, identifying challenges and enhancing engagement for competition regulators and civil society', the Executive Vice-President Margrethe Vestager underlined: "*The Commission found the cooperation with Privacy International, which was active in both phases of the Google/Fitbit investigation (e.g. with submissions, expert opinions, replies to the questionnaire and to market test of the remedies), and other digital rights organisations useful. For future cases, the Commission welcomes input from all relevant stakeholders. This applies both to future merger cases as well as any antitrust investigations concerning conduct in which the collection and use of personal data is a relevant factor in the assessment*."[21]

Most recently, as mentioned above, PI submitted comments to the CMA with regard to its investigation of the proposed acquisition. Indeed, the level of interest shown globally in the Proposed Acquisition - and specifically the concerns that have been highlighted in relation to Amazon's use of iRobot's data troves and degradation of consumers' privacy post-acquisition[22] - indicate that PI is well placed to engage with the Commission on these critical aspects.

B. <u>The importance of examining Amazon's access to and use of consumer data as part of the assessment of the Proposed Acquisition</u>

The ability to deal appropriately with concentrations of data is key to evolving competition rules to deal with the challenges and realities of the digital economy. A concentration of personal data amongst a few providers risks a negative impact on consumer welfare, harming consumer choices and control in the long run.[23] As the CMA and the Information Commissioner's Office put it, "*[T]he most important factor from a competition standpoint is that market participants compete with one another on a level playing field. In circumstances where competitors in a digital market have significantly differential access to data, then competition 'on the merits' is likely to be undermined. As a result, consumers will have less choice, and will ultimately lose out through higher prices, lower quality, and reduced innovation*."[24] Personal data is an even more valuable asset to a digital service provider, and an even greater threat to competition on the merits, when the provider in question is able to combine data from multiple sources, including across multiple services or platforms.

[20] HO/WW/LR/al/2020/083045 (Brussels, 8 July 2020).
[21] PI, 'Personal Data and Competition: Mapping perspectives, identifying challenges and enhancing engagement for competition regulators and civil society' (April 2022), page 103, https://privacyinternational.org/sites/default/files/2022-05/Personal%20Data%20and%20Competition%20May%202022%20EN.pdf.
[22] See supra note 12.
[23] CMA Final Report, at [5.328].
[24] CMA and Information Commissioner's Office Joint Statement, "Competition and data protection in digital markets: a joint statement between the CMA and the ICO", 19 May 2021, at [32].

Amazon's business model has thus far relied on acquiring rivals, sometimes in adjacent markets, and then rapidly expanding through predatory pricing while leveraging the vast troves of consumer data of the acquired rivals to cement its position in existing markets and expand into others.[25]

The Proposed Acquisition of iRobot is another example of this given that, as set out in more detail below, it would allow Amazon to combine a rich new source of consumer "Home Knowledge" data with existing databases from Amazon's other offerings (in addition to enhancing Amazon's smart home technology offering itself), thereby obtaining potentially otherwise unattainable insights and advantages.

As the Commission itself found in its Preliminary Report of its Internet of Things ("**IoT**") Sector Inquiry: "*Through their ecosystems combining voice assistants with search and/or marketplaces, and/or operating systems and/or app stores Google, Amazon and Apple have a unique position in the consumer IoT sector […] with every new smart device or consumer IoT service added, these three consumer IoT ecosystems can realise growth through network effects and obtain unprecedented access to user (and sometimes competitor) data*."[26]

The costs of acquiring such depth and breadth of data, and the benefits of its aggregation, are capable of vertically foreclosing potential competitors in a variety of ways. If Amazon buys iRobot, it will potentially be able to: foreclose the data as an input to its rivals in the market for smart home devices; foreclose the data by supplying competitors with less granular data; or require competitors to provide commercially valuable data concerning their operations in exchange for access to its "Home Knowledge" data.

PI therefore submits that it is vital that the Commission consider the role and impact of data on competition when examining the Proposed Acquisition.

C. iRobot collects vast amounts of personal data

iRobot is a technology company headquartered in the United States that specialises in designing and building consumer robots. Its portfolio includes a variety of autonomous 'smart home' devices, such as vacuum cleaners (Roomba), floor moppers (Braava), and other autonomous cleaning devices.[27] iRobot's total revenue for the 2022 fiscal year was over USD $1 billion, and as of the end of 2022 the company had nearly 18 million consumers globally using its services.[28] It has over USD $202 million recorded UK revenue through its subsidiary, iRobot UK Limited.[29]

Most iRobot products rely on a combination of devices with cleaning capabilities (hardware), and applications (software) that allow users to control and personalise them, while introducing advanced features such as virtual space mapping, dirt detection, obstacle avoidance and voice assistant integration.[30] The devices can be equipped with advanced sensors, ranging from cameras to proximity sensors, which allow them to navigate around obstacles and even detect stains and identify objects.[31]

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[25] Report of the Subcommittee on Antitrust, Commercial and Administrative Law of the Committee on the Judiciary, "Investigation of Competition in Digital Markets", 2020, (Investigation of Competition in Digital at 260-267, https://www.govinfo.gov/content/pkg/CPRT-117HPRT47832/pdf/CPRT-117HPRT47832.pdf

[26] European Commission Preliminary Report on Internet of Things Sector Inquiry, 9 June 2021, paragraph 125, https://competition-policy.ec.europa.eu/system/files/2021-06/internet_of_things_preliminary_report.pdf.

[27] iRobot Corporation, 2022 Annual Report (U.S. Securities and Exchange Commission), https://www.sec.gov/ix?doc=/Archives/edgar/data/1159167/000115916723000011/irbt-20221231.htm#i3366579e47a845ed88e2ee661a22566b_13, page 3.

[28] Ibid, pages 4-5.

[29] iRobot UK Ltd, Annual Report and Financial Statements for the Year Ended 31 December 2021: https://find-and-update.company-information.service.gov.uk/company/10785183.

[30] iRobot, iRobot OS. More thoughtful than you thought, https://www.irobot.co.uk/en_GB/irobot-os.html.

[31] iRobot, Wifi Connected Roomba® s9+ Self-Emptying Robot Vacuum, https://www.irobot.co.uk/en_GB/irobot-roomba-s9/S955840.html.

Building on iRobot's expertise and investment in Artificial Intelligence, home knowledge and machine vision technologies, the iRobot OS platform "*provides consumers with greater control over where, when and how [the] robots work, simple integration with other smart home devices, thoughtful recommendations to further enhance the cleaning experience, and the ability to share and transfer home knowledge across multiple iRobot robots*".[32] iRobot smart devices are able to learn from users' habits and the environment they operate in and adapt accordingly by, for example, creating smart maps of homes, initiate a cleaning routine once the user leaves the house, avoid pet waste or suggest more frequent cleaning during allergy seasons.[33] Users can control the devices manually, with their voice or via the iRobot app which requires registering for an iRobot account.[34]

As explained above, iRobot devices rely on a variety of online and offline user interactions and input, as well as data gathered through their various hardware sensors. The analysis below seeks to demonstrate the extent of iRobot's data collection practices, which may also involve the processing of sensitive special-category personal data.

The analysis is predominantly based on iRobot's Privacy Policy (effective: 23 May 2022) (the "**Policy**"), which is enclosed with the present submission (Annex I).[35] The analysis is further supplemented by screenshots, which aim to illustrate the various types of personal data that might be processed while using iRobot devices. The screenshots were captured between December 2022 and February 2023 as part of testing carried out by PI staff, which involved the use of a WIFI Connected Roomba® i7 Robot Vacuum device in association with two accounts created by PI staff (one on a personal and one on a company smartphone). The analysis is further based on data received in response to a Data Subject Request submitted under Article 15 of the UK General Data Protection Regulation (the "**UK GDPR**") with respect to the former account. In this section, the terms iRobot and iRobot services are used interchangeably, and they should be deemed to mean iRobot itself as well as any of its devices, applications, software, websites, APIs, products and services.

i. Personal data obtained by iRobot directly from users

According to the Policy, iRobot may collect a variety of personal data about users, including full names, email addresses, usernames and passwords, phone numbers, billing information and shipping addresses. This data is collected when users register for an iRobot account or otherwise use the iRobot services (e.g., communication with customer support). Moreover, when users register their device, iRobot collects certain device information such as "*Robot ID, serial number, or product code*".

ii. Personal data obtained by iRobot from third parties

iRobot might also obtain personal data of users via third parties. For example, the Policy provides that: *"If you login to our Website or Apps through a third party social network or authentication service, these services will authenticate your identity and may share your personal information with us (such as your name, email address, and profile information). Similarly, we may receive certain personal information if you interact with our accounts on a social network, such as by "Liking" or "Following."*

iii. Personal data obtained by iRobot from registered robots equipped with smart technology

More importantly and as mentioned above, several iRobot devices are equipped with advanced sensors and hardware which allows them to transmit data wirelessly to iRobot. According to the Policy, this personal data, which is indirectly collected from users while they interact with iRobot services, "*is stored*

[32] Supra note 18, page 6.
[33] iRobot, Wifi Connected Roomba® s9+ Self-Emptying Robot Vacuum, https://www.irobot.co.uk/en_GB/irobot-roomba-s9/S955840.html.
[34] iRobot, iRobot OS. More thoughtful than you thought, https://www.irobot.co.uk/en_GB/irobot-os.html.
[35] iRobot Corporation, Privacy Policy (23 May 2022), https://about.irobot.com/Legal/Privacy-Policy.

in a deidentified state (separated from identifiable information)". Nonetheless, the Policy does not provide an exhaustive list of the kinds of data that may be collected through the use of its services, leaving this effectively open-ended for iRobot. For example, the Policy states: "*we collect information about the Robot, **such as...***" (emphasis added) or "*Information about how you use your Robot and the product Apps, **such as**...*" (emphasis added). The personal data generated through user interaction with iRobot devices and the iRobot app is, in fact, extensive and may include the following, as illustrated by the figures below:

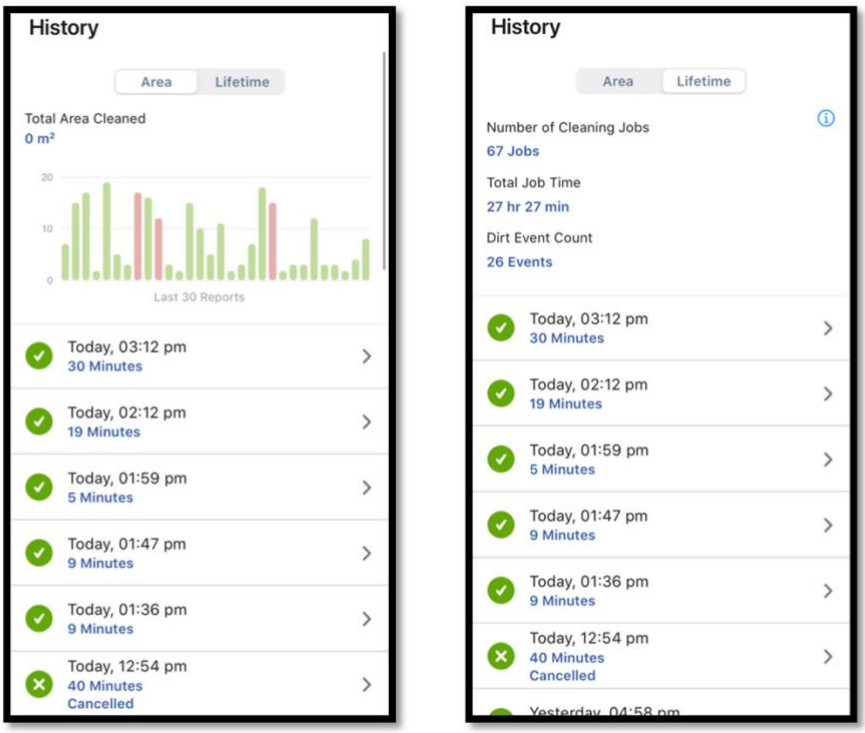
- **Data related to robot and/or app usage:** Robot name, device number, device battery life and health, number of missions, location mapping, etc.

- **Data related to the robot's environment:** Images of the environment (for models equipped with a camera), level of dirt detection, Wi-Fi signal strength in each location, information about the robot's movement throughout the environment to create a location "map" of the Robot's domain, existence, and type of objects (chair, desk, fridge etc.) or obstacles encountered, floorplans, room names or zone names, keep out zones and clean zones, etc.

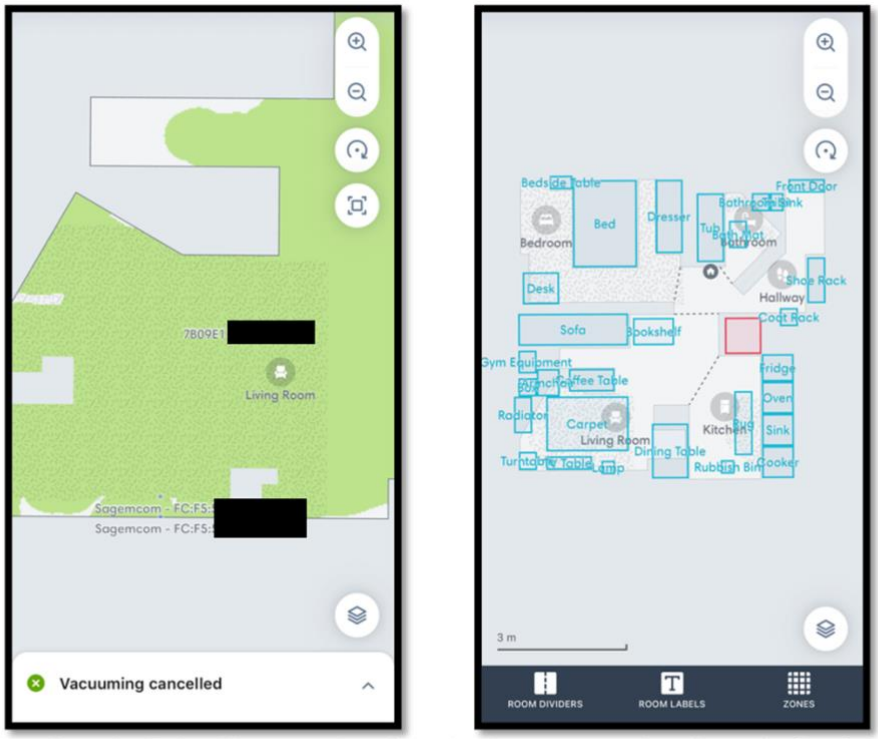
- **Data related to the iRobot app:** device data, such as MAC address, device type, device name, identifier, serial number, product code, network bandwidth usage, and device location within and near the home, robot customisation settings and preferences, such as robot name, room names, zone names, and scheduled start/stop times.

- **Data related to the iRobot Beta Program:** personal data collected to support additional experimental robot or application functionalities. The quality and quantity of this data depends on the features offered through the beta program. For example, "Remote Check In" is a beta feature currently offered in the US[36] which allows the user to view livestream video from their robot. The generated video feed and associated metadata are additional personal data iRobot may collect.

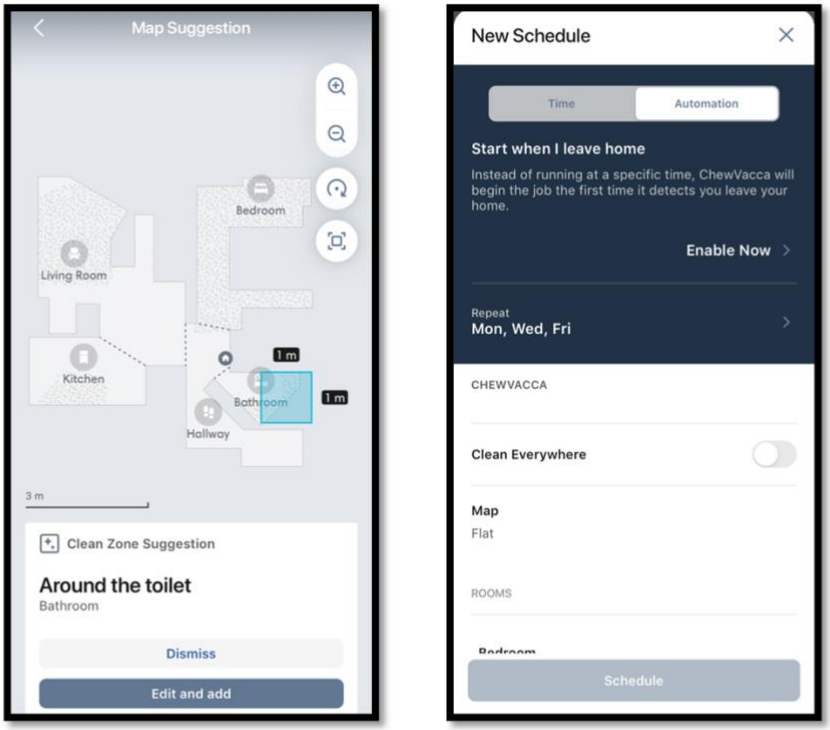
[36] iRobot, iRobot® Beta Program Common Questions (19 November 2021), https://homesupport.irobot.com/s/article/1404.



Screenshots from the iRobot Home app interface showing data pertaining, among other things, to how many times an iRobot device was used, the duration and exact time of each use, as well as the total area covered.



Screenshots from the iRobot Home app interface showing, among other things, the level of detail about users' homes iRobot may have access to, including the existence of other connected devices by identifying their MAC addresses.



Screenshots from the iRobot Home app interface showing, among other things, the ability of iRobot devices to also identify carpet floorings as well as initiate cleaning routines when they detect that users have left their home.

As demonstrated by the examples above, iRobot products can collect a wide variety of information about users and their environment. Moreover, as far as the first three categories of data above are concerned, i.e. data pertaining to the iRobot app or the robot's usage and environment, these may be processed for a variety of purposes, including "*to develop new products and features*", according to the Policy. The Policy does not specify what these products and features might be; however it is reasonable to assume that they relate to exercises aiming at, among others, making the robots 'smarter' or more efficient, by relying on users' actual as well as potentially inferred data (see below).

iv. Inferences and user profiling

The personal data held by iRobot could become even more valuable when combined in order to profile individuals, by, for instance, identifying patterns, drawing inferences and making predictions about consumers' behaviours and interests.[37] Through profiling, highly sensitive details can be inferred or predicted from seemingly uninteresting data, leading to detailed and comprehensive profiles which may or may not be accurate or fair.[38]

In a section titled "*[Inferences]*" in the Policy, iRobot states that it may use personal data related to consumer behaviour "*such as products purchased, motivation for purchase, and other purchasing behavior and preferences*" to develop new products and features, as well as to determine products and services that may be of interest to users for marketing purposes. iRobot states that the legal basis for both those processing purposes is the company's legitimate interests in informing its product development and direct marketing. In other words, the legal basis is not the grant of consent by users as this data is generated by iRobot.

[37] Article 4(4) UK GDPR, which mirrors the corresponding article in the EU GDPR, defines profiling as "*any form of automated processing of personal data consisting of the use of personal data to evaluate certain personal aspects relating to a natural person, in particular to analyse or predict aspects concerning that natural person's performance at work, economic situation, health, personal preferences, interests, reliability, behaviour, location or movements*".

[38] PI, Data Is Power: Profiling and Automated Decision-Making in GDPR (2017), https://privacyinternational.org/sites/default/files/2018-04/Data%20Is%20Power-Profiling%20and%20Automated%20Decision-Making%20in%20GDPR.pdf.

Notably, the inferences that iRobot may be able to draw about users may extend to inferences revealing and/or concerning special category data, such as religion or health – the processing of which is prohibited by the UK (and EU) GDPR absent specific conditions (one of which is explicit consent by the data subject)[39]. To better understand the extent of inferences that iRobot could potentially draw about users, PI wishes to draw the Commission's attention to the following hypothetical examples:

Example 1: Inferences about a user's social or financial status
An iRobot vacuum cleaner used in a two-storey house in central London. While mapping out the space, the device creates a floorplan and identifies several objects. By knowing that a user lives in a big house with several bedrooms and bathrooms which include expensive furnishings and appliances (as recorded by the camera and later identified using software), iRobot could hypothetically infer that the user belongs in an upper social class and profile them accordingly.

Example 2: Inferences about a user's health or religion
An iRobot device equipped with a camera might be able to detect the presence of assistive devices, such as wheelchairs, in users' homes and thus potentially infer that there are persons with disabilities in the house.
Similarly, an iRobot device used in a home where a specific area has been labeled as "prayer room" could identify individual movement within that space at specific times daily, allowing iRobot to infer that the user is of a specific faith (potentially in combination with other data such as their name).

Example 3: Inferences about a person's purchase habits
An iRobot device used in a home where new furniture or objects are added by the user and later identified by the device might allow iRobot to draw inferences about the shopping habits of the user, such as the items they are interested in, as well as times and frequency of their purchases. This could be particularly true for connected devices, such as smart appliances, that will likely be connected to the same network, potentially allowing the iRobot app to discover them.

D. Amazon could combine iRobot's existing and future data troves to entrench its market power in several markets

i. Market for smart home devices

Background and potential horizontal effects of the Proposed Acquisition

Amazon has heavily invested in the development and sale of smart home appliances, both through internal R&D[40] but also with the acquisition of companies such as Ring LCC.[41] It currently offers smart

[39] See Article 9 UK and EU GDPR.
[40] See Rani Molla, Amazon spent nearly $23 billion on R&D last year — more than any other U.S. company (Vox, 9 April 2018), https://www.vox.com/2018/4/9/17204004/amazon-research-development-rd; Shivaram Rajgopal, Amazon Spends $42 Billion On R&D But The 10K Discusses R&D In 300 Words (Forbes, 8 March 2021), https://www.forbes.com/sites/shivaramrajgopal/2021/03/08/amazon-spends-42-billion-on-rd-but-devotes-less-than-300-words-of-disclosure-in-its-10k/?sh=182b50056d25.
[41] Eugene Kim, Amazon buys smart doorbell maker Ring for a reported $1 billion (CNBC, 27 February 2018), https://www.cnbc.com/2018/02/27/amazon-buys-ring-the-smart-door-bell-maker-it-backed-through-alexa-fund.html.

devices such as Ring cameras,[42] Amazon speakers,[43] voice-controlled Echo assistants,[44] Echo Show smart displays,[45] as well as connected devices that are compatible with Amazon's smart home, such as smart power outlets,[46] smart bulbs,[47] smart watches[48] and more.

As set out above, iRobot holds a leading position in the manufacture of robotic vacuum cleaners and mops specifically. Amazon has already moved into this segment of the market with its Astro[49] product, but it will acquire a very large share of it if the Proposed Acquisition goes ahead, as the Proposed Acquisition will effectively remove any competition from iRobot itself as well as any potential competition from other entrants.

Further, iRobot is a potential entrant in the wider market for smart home devices which Amazon dominates, as demonstrated by iRobot's recent acquisition of Aeris[50]. The Proposed Acquisition will eliminate any such potential for iRobot to innovate and enter or expand in this way, leading to a loss of potential and dynamic competition in the market.

User lock-in, stronger ecosystem and smart device offering

With the acquisition of iRobot, Amazon would strengthen its smart home ecosystem, offering a range of interconnected products that can be controlled from a single account. Smart home products currently benefit from a single unified ecosystem from a consumer perspective as they have reduced frictions and are usually easier to manage. This is reinforced by the lack of unified protocols (except Matter, currently in development[51]) and desire by companies to offer interoperability between systems. By acquiring iRobot, Amazon would have the opportunity to further consolidate its ecosystem and potentially prevent

[42] Amazon.co.uk, Ring Indoor Cam by Amazon, https://www.amazon.co.uk/ring-indoor-cam-compact-plug-in-hd-security-camera-with-two-way-talk-works-with-alexa/dp/B07Q769MFM/ref=sr_1_2?crid=2GNXMTXH9VHYK&keywords=amazon+camera&qid=1680262345&sprefix=amazon+camer%2Caps%2C295&sr=8-2.

[43] Amazon.co.uk, Echo Studio, https://www.amazon.co.uk/amazon-echo-studio-high-fidelity-smart-speaker-with-3d-audio-and-alexa/dp/B07NQCKJSH/ref=sr_1_1?crid=2DUQX27YEF34A&keywords=amazon+speakers&qid=1680262389&sprefix=amazon+speake%2Caps%2C191&sr=8-1.

[44] Amazon.co.uk, Echo Dot (3rd Gen), https://www.amazon.co.uk/Echo-Dot-3rd-Gen-Charcoal/dp/B07PJV3JPR/ref=sr_1_1?crid=P3TC61RDSCR6&keywords=amazon+alexa&qid=1680262707&sprefix=amazon+alex%2Caps%2C142&sr=8-1.

[45] Amazon.co.uk, Echo Show 15 + Remote, https://www.amazon.co.uk/made-for-amazon-tilt-and-swivel-stand-for-the-echo-show-15/dp/B0BKRJC71J/ref=sr_1_4?crid=15DWX8C7R649L&keywords=amazon+alexa+smart+display&qid=1680263010&sprefix=amazon+alexa+smart+%2Caps%2C1004&sr=8-4.

[46] See, for example, amazon.co.uk, Smart Power Strip WiFi Plug, https://www.amazon.co.uk/Smart-Power-Strip-WiFi-Plug/dp/B0B1MQ93KH/ref=sr_1_5?crid=3AL4WWGOUO1UD&keywords=amazon+smart+power+outlet&qid=1680262534&sprefix=amazon+smart+power+outlet%2Caps%2C101&sr=8-5.

[47] See, for example, amazon.co.uk, TP-Link Tapo Smart Bulb, https://www.amazon.co.uk/TP-LINK-Tapo-Colour-Changeable-Required-L530B/dp/B08JZHXQC4/ref=sr_1_1?crid=V4JFEV5HNS05&keywords=amazon+alexa+smart+bulb&qid=1680262981&sprefix=amazon+alexa+smart+bulb%2Caps%2C111&sr=8-1.

[48] See, for example, amazon.co.uk, Smart Watch, https://www.amazon.co.uk/Fitness-Activity-Trackers-Waterproof-Smartwatch-Black/dp/B0956XD8Y7/ref=sr_1_1?crid=1UKEY8BLGD2QF&keywords=smart+watch&qid=1680262331&sprefix=smart+watc%2Caps%2C432&sr=8-1.

[49] Ken Washington, How Amazon is enhancing Astro for the home and beyond (Amazon, 28 September 2022), https://www.aboutamazon.com/news/devices/amazon-astro-2022.

[50] iRobot, iRobot Acquires Air Purification Company, Aeris Cleantec AG (18 November 2021), https://investor.irobot.com/news-releases/news-release-details/irobot-acquires-air-purification-company-aeris-cleantec-ag.

[51] 'Matter' is an open-source connectivity standard for smart home and IoT devices developed since 2019 by the Connectivity Standards Alliance (which notably includes Google, Amazon, Apple). A first version of the standard was released in October 2022 but has seen poor adoption. At the time of writing, the only Amazon products supporting it are Echo products, see Jennifer Pattison Tuohy, Which devices work with Matter and what's coming soon (The Verge, 3 April 2023), https://www.theverge.com/23568091/matter-compatible-devices-accessories-apple-amazon-google-samsung.

competitors from integrating with it, making its own products more interesting and encouraging user lock-in with respect to the Amazon ecosystem.[52]

One such way Amazon could do that is by removing integration between Alexa and other rival smart robot or smart devices, making its own product the preferred option for consumers already within the Amazon ecosystem (or looking to buy a first smart home device). Similarly, Amazon could limit iRobot's integration with smart assistant and automation tools (such as Siri, IFFT, OK Google) and only allow integration with its own products (Alexa).

The vast amounts of iRobot data which Amazon would obtain through the Proposed Acquisition could also be used by the company in ways that would harm competition. Usage data, inferred data, and diagnostic data could all be used with iRobot's expertise and experience to improve Amazon's other smart home appliances. For example, data about on-boarding process, app usage and first device use could provide Amazon with critical insights on how to improve its own offerings. This data effectively offers years of experience and testing of different methods as well as the knowledge and insights that have been drawn from it. Amazon could further integrate the data with its own and draw new and even more accurate inferences.

Modern artificial intelligence ("**AI**") systems often use machine learning to identify patterns in large datasets. In supervised machine learning, the algorithm is given a training set of labelled examples, which it uses to generate a statistical model that can be used to predict the correct label for new, unlabelled data points. For example, an AI-powered vacuum cleaner might use a training set of sensor readings and associated labels to learn how to identify obstacles, surfaces, and dirt.

Creating an effective zone identification and navigation model for autonomous devices like AI-powered vacuum cleaners requires a large volume and variety of data to be trained on. This data must be tailored to the specific device, cover long timescales, and account for different users and environments. Collecting and processing this data requires a significant investment of resources and time. There are no shortcuts to building effective AI models.
In this case, such datasets have been built up over the many years in which iRobot products have been in development and used by customers, allowing increasingly accurate obstacle detection and navigation models to be developed. Even if iRobot's AI-powered products were launched in 2020, it is safe to assume that years of data collected before this launch were used to feed the datasets. For example, according to a 2020 article, in order to create its AI-powered platform, "*iRobot collected tens of thousands of images from inside employees' homes, to learn what furniture looks like when you're scooting around the floor*".[53] iRobot's CEO has described the company's fleet of data collecting vehicles as "*probably second only to Tesla's*".[54]

These datasets, as well as the models trained on those to improve navigation, obstacle detection and dirty zone identification, would be readily available to Amazon to build its own AI capacity for autonomous devices. Models and datasets are valuable assets that could be used to accelerate the development of new devices such as Amazon Astro, offering the company a shortcut to produce efficient and capable devices.

Obtaining datasets, models and expertise could constitute a very significant advantage to a company on implementation of AI in products. To illustrate: Google purchased DeepMind in 2014, an AI company

[52] See also Commission Notice, Guidance on the interpretation and application of Directive 2005/29/EC of the European Parliament and of the Council concerning unfair business-to-consumer commercial practices in the internal market (2021/C 526/01), https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52021XC1229(05)&from=EN, paragraph 4.2.11.
[53] James Vincent, iRobot is giving its vacuum cleaners a new AI-powered brain (The Verge, 25 August 2020), https://www.theverge.com/2020/8/25/21377585/irobot-ai-software-update-home-intelligence-genius-app.
[54] Ibid.

founded in 2010.[55] The expertise and models developed by Deepmind were already strong enough that in 2015 it was able to defeat the Go world champion with an AI software, AlphaGo.[56] This expertise gave Google a very significant advantage in AI and allowed it, in part, to develop Bard, a Large Language Model, in a very short time following the success of OpenAI's ChatGPT.[57]

Leveraging iRobot personal data to better target customers with advertising of other Amazon smart devices

Additionally, through the Proposed Acquisition, Amazon would obtain access to the personal data of past and future iRobot customers. These clients represent a potential client base interested in smart devices. This dataset will also include information about whether iRobot customers already use some form of smart assistant (through logs from the robot and apps connected to the network) as well as devices connected to the same network as the iRobot products (including smart devices). This means Amazon would have the ability to contact and target potential clients in an effectively preferential manner to offer its own range of smart devices.

robot_id	timestamp	chrgM	chrgs	dirt	done	durationM	eDock	flags	initiator	nMssn	pauseId	pauseM	runM	saves	sku	softwareVer	sqft	startTime	startendwlbars	wlBars
5995449797BA4[redacted]	1670252391	0	0	1	ok	16	1	1057	alexa	51	0	0	16	0	i715640	lewis+22.29.	57	1670251358	[2, 3]	[0, 2, 98, 0, 0]
5995449797BA4[redacted]	1670680248	0	0	0	ok	5	1	1025	alexa	58	0	0	5	0	i715640	lewis+22.29.	18	1670679875	[2, 2]	[0, 14, 86, 0, 0]
5995449797BA4[redacted]	1670153223	0	0	0	ok	8	1	1057	localApp	48	0	0	8	0	i715640	lewis+22.29.	16	1670152702	[2, 3]	[0, 13, 87, 0, 0]

Excerpt from the data contained in the "clean_history" file, obtained by Privacy International through the Data Subject Access Request. The first two line are logs (records) of a clean that was started from the Alexa app. This means the customer uses Alexa on a connected device or an Amazon Echo smart device.

Screenshot from the iRobot Home app interface showing, among other things, the ability of iRobot devices to detect the presence of other smart devices connected to the same WIFI network (as well as their (partial) MAC addresses).

As noted by the Commission in its IoT Sector Inquiry, "*a large number of respondents consider the inability to compete effectively with the leading providers of smart (mobile) device operating systems and voice assistants to be the main obstacle to developing new products and services. This is because these*

[55] Samuel Gibbs, Google buys UK artificial intelligence startup Deepmind for £400m (The Guardian, 27 January 2014), https://www.theguardian.com/technology/2014/jan/27/google-acquires-uk-artificial-intelligence-startup-deepmind.
[56] Sam Byford, Google's AlphaGo AI beats Lee Se-dol again to win Go series 4-1 (The Verge, 15 March 2016), https://www.theverge.com/2016/3/15/11213518/alphago-deepmind-go-match-5-result.
[57] Will Knight, Meet Bard, Google's Answer to ChatGPT (Wired, 6 February 2023), https://www.wired.com/story/meet-bard-googles-answer-to-chatgpt.

companies are vertically integrated and have built their own ecosystems within and beyond the consumer IoT sector by combining their own and integrating third-party products and services into an offering with a large number of users".[58] The Proposed Acquisition exemplifies this trend and its threat to competition. Acquiring iRobot will allow Amazon effortlessly to extend its smart devices offering, raising barriers to entry for potential competitors and making competition harder for existing ones. Few companies have the resources to develop an ecosystem as complex and interconnected as Amazon and the possibility that Amazon could limit integration with existing and future products makes the Proposed Acquisition all the more concerning.

i. Online retail/intermediation services and digital advertising markets

Background

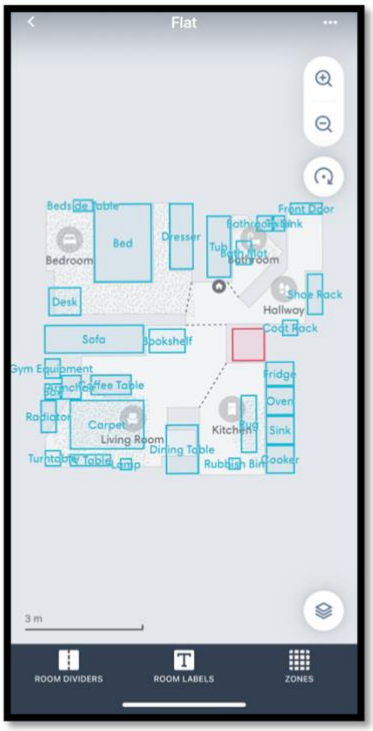
In its investigations into Amazon's conduct in online marketplace services, which concluded with a settlement and Amazon offering commitments, the Commission took the preliminary view that, *inter alia*, Amazon abused its dominance on the French, German and Spanish markets for the provision of marketplace services to third-party sellers.[59] The CMA is also investigating Amazon for suspected breaches of competition law in its UK Marketplace.[60] As of July 2022, Amazon was the most popular online marketplace in Europe, registering approximately one billion monthly visits.[61]

As for the digital advertising market, this is currently dominated by Google and Meta, however Amazon has recently demonstrated a rapid growth in its ad-revenue and communicated its intent to further enter this market through its own marketplace,[62] within its brick-and-mortar stores[63] as well as in other online spaces. With Inspire,[64] Amazon has also recently entered the social media space, which is dominated by ad-revenue-based business models that rely on the exploitation of personal data for advertising purposes.[65]

Through the Proposed Acquisition, Amazon could obtain access to historic and future iRobot users' data. By merging this data with its existing datasets, or simply by processing it to extract key information (such as the profile of users most likely to buy connected devices), Amazon will gain an advantage with respect to targeted advertising for both its own products and other products available on its Marketplace. For example, Amazon would know which iRobot customers don't have a voice-assistant powered smart speaker and push advertising for its own Echo product line to these set of users or offer that segment and information to advertisers.

[58] European Commission Final report - sector inquiry into consumer Internet of Things, 20 January 2022, page 7, https://competition-policy.ec.europa.eu/system/files/2022-01/internet-of-things_final_report_2022_en.pdf.
[59] European Commission, Antitrust: Commission accepts commitments by Amazon barring it from using marketplace seller data, and ensuring equal access to Buy Box and Prime (Brussels, 20 December 2022), https://ec.europa.eu/commission/presscorner/detail/en/ip_22_7777.
[60] CMA, Investigation into Amazon's Marketplace (6 July 2022), https://www.gov.uk/cma-cases/investigation-into-amazons-marketplace.
[61] Stephanie Chevalier, Leading online marketplaces in Europe 2022, by monthly visits (Statista, 6 September 2022), https://www.statista.com/statistics/288056/leading-retail-websites-in-europe-based-on-unique-visitors.
[62] Chris Sutcliffe, Videos and AI: Amazon's ad plans for 2023 (The Drum, 14 February 2023), https://www.thedrum.com/news/2023/02/14/videos-and-ai-amazon-s-ad-plans-2023.
[63] Katherine Long, Eugene Kim, and Lauren Johnson, Exclusive: Amazon plans to sell digital advertising space inside its physical stores (Insider, 25 February 2022), https://www.businessinsider.com/amazon-to-sell-digital-ads-inside-fresh-go-physical-stores-2022-2?r=US&IR=T.
[64] Sarah Perez, Amazon launches Inspire, a TikTok-like shopping feed that supports both photos and videos (TechCrunch, 8 December 2022), https://techcrunch.com/2022/12/08/amazon-launches-inspire-a-tiktok-like-shopping-feed-that-supports-both-photos-and-videos/?guccounter=1&guce_referrer=aHR0cHM6Ly93d3cuZ29vZ2xlLmNvbS8&guce_referrer_sig=AQAAAG0Cwcl3_GD3yLtXd2rC8HTdQBhN7TmK5_gZ6KoZ1IO8-xUYNAWYdsKXEA30f8sTJaThjPpxfLskhhBRlHNYQJVtmISy9XXIXwCWUHyxUTo2a-bVqJklQ94uwmmXYJVHNmotV3v2tZd9eAtkht4m6LH-tnCOrai1uoRii2xzLfmy.
[65] PI, Why am I really seeing that ad? The answer might be Real Time Bidding (RTB) (21 May 2019), https://privacyinternational.org/explainer/2974/why-am-i-really-seeing-ad-answer-might-be-real-time-bidding-rtb. See also CMA, Online platforms and digital advertising: Market study final report (July 2020), page 42ff.

Tech giants who make a substantial part of their revenues through targeted advertising have been found to use their vast personal data troves to target individuals in their most vulnerable moments, such as when they are searching for information about depression[66]. In this instance, behavioural data collected by iRobot would also be a valuable asset for Amazon as it could allow the company to target customers at key moments. For example, combining the fact that a user recently searched for 'armchairs' on the Amazon marketplace together with the data obtained by a Roomba vacuum cleaner, which could include details about room layout as well as the identification of specific furnishings and their colour/style captured by the robot's visual sensors and software, Amazon could serve the user with targeted ads that are a lot more likely to meet their demands.



Screenshot from the iRobot Home app interface showing a map of a flat with different areas and household items identified.

Certain iRobot products also have the capability to design maps based on the robot's movements. These maps can be further improved by the user, by separating and naming the different areas and identifying furniture, allowing them to e.g., ask the robot to clean a specific area (as per the screenshot above). Map data, in addition to other data captured by the robot's sensors (such as images captured by the robot's camera or devices connected to the network) could be processed by Amazon for advertising purposes. Knowing that a user has an 'Office' or a 'Children's Bedroom' would allow Amazon to infer information about users to better profile and target them with ads. For example, Amazon would be in a position to know that an iRobot user has bought a new smart TV and suggest accessories for the TV or even an Amazon Prime Video subscription. Another example would be to identify, for instance, a small dining table added by the user and the free space around it, and then serve the user with ads for a bigger table.

As a result of the Proposed Acquisition, therefore, Amazon will be able to strategically leverage iRobot's extensive "home knowledge" data to further reinforce its advertising and online retail/marketplace businesses.

i. Effects on Amazon's incentive to compete in relation to privacy options for consumers

[66] PI, Your Mental Health For Sale, https://privacyinternational.org/campaigns/your-mental-health-sale.

Despite consistent demands by consumers in Europe and elsewhere for protection of their personal data,[67] in markets like that of IoT, companies do not compete to offer privacy-friendly alternatives. While technically possible, very few IoT manufacturers offer or advertise products with data minimisation and data protection principles at heart. This could be due either to the fact that they don't want to let go of the potential financial benefits that the data collected could yield, or that the exploitation of this data is part of their business model. Online advertising is also dominated by the collection of personal data for behavioural and targeted advertising despite the existence of privacy-friendly alternative with equivalent efficiency (such as contextual advertising).

As illustrated above, Amazon could use past and future data collected by iRobot products for a variety of purposes that could potentially put consumers' privacy at risk, including photographs taken by iRobot products, maps of their houses, cleaning habits, presence at home, children, pets etc. This is particularly problematic in an environment where privacy-friendly options are limited, despite the intrusive nature of the appliances, and where privacy breaches have already been observed.[68] Smart devices fundamentally only need to be connected to a restricted set of online services to be controlled from anywhere in the world. Any additional data sharing with third parties is unnecessary for the product to function and usually exists for marketing, analytics or profiling purposes.[69]

Broadly speaking, the Proposed Acquisition would further tie the development of smart appliances with the exploitation of personal data as it both creates assumptions for consumers that these devices only come bundled with personal data collection and processing. As a result, new market players will face high barriers to entry which will force them to engage in extensive and often ambiguous data collection practices to seek to compete with Amazon's data advantage. The development of privacy-friendly technology should be encouraged for all the markets approached in this submission, both to strengthen the privacy rights of European customers but also their security.

Conclusion

In light of the considerations outlined in this submission, PI considers that the Proposed Acquisition is likely to significantly impede effective competition across a number of markets which are vitally important for the development of the digital economy and for consumers.

PI therefore respectfully urges the Commission to meticulously scrutinise the Proposed Acquisition, including thoroughly assessing the impact such further concentration of data would have on the competitive landscape post-acquisition. We would be pleased to engage further with the Commission on any aspect of this submission, including by providing further information on any of the issues referred to above.

[67] See EU Agency for Fundamental Rights (FRA), Your rights matter: Data protection and privacy - Fundamental Rights Survey (18 June 2020), https://fra.europa.eu/en/news/2020/how-concerned-are-europeans-about-their-personal-data-online; Eurobarometer, Europeans' attitudes towards cyber security (January 2020), https://ec.europa.eu/commfrontoffice/publicopinion/index.cfm/Survey/getSurveyDetail/instruments/SPECIAL/surveyKy/2249.

[68] Eileen Guo, A Roomba recorded a woman on the toilet. How did screenshots end up on Facebook? (MIT Technology Review, 19 December 2022), https://www.technologyreview.com/2022/12/19/1065306/roomba-irobot-robot-vacuums-artificial-intelligence-training-data-privacy.

[69] Stanislaw Piasecki, Jiahong Chen, 'Complying with the GDPR when vulnerable people use smart devices', *International Data Privacy Law*, Volume 12, Issue 2, May 2022, Pages 113–131, https://doi.org/10.1093/idpl/ipac001. See also EDPB, Guidelines 4/2019 on Article 25: Data Protection by Design and by Default (Version 2.0, Adopted on 20 October 2020), https://edpb.europa.eu/sites/default/files/files/file1/edpb_guidelines_201904_dataprotection_by_design_and_by_default_v2.0_en.pdf.