

Question in Project:

Internet of Things (English Version)

Question Topic:

Digitalization/ Use of digital systems

Construct:

Usage of internet connected devices/systems for private purposes

General Information:

Note: The item was tested both in English and German.

Introduction:

English version: The following questions concern the use of internet connected devices or systems for private purposes. These devices or systems can also be connected to each other in order to enable advanced services; e.g. remotely controlling the device, adjusting settings, giving instructions for tasks to be performed, receiving feedback from the device etc.

German version: Die folgenden Fragen betreffen die Nutzung von mit dem Internet verbundenen Geräten oder Systemen für private Zwecke. Diese Geräte oder Systeme können auch miteinander verbunden sein, um erweiterte Funktionen zu ermöglichen; z. B. Fernsteuerung des Geräts, Anpassung der Einstellungen, Erteilung von Anweisungen zur Durchführung von Aufgaben oder Erhalt von Feedback von dem Gerät.

Question Text:

English version: Have you used any of the following devices or systems that are connected to the internet?

German version: Haben Sie schon einmal die folgenden mit dem Internet verbundenen Geräte oder Systeme verwendet?

Instruction:

English version: Tick all that apply or k).

German version: Mehrfachnennungen oder Option k) möglich.

Answer Categories:

English version:

- a) Solutions for energy management for your home, such as internet-connected thermostat, utility meter, internet connected lights or plug-ins
- b) Solutions to ensure the security/safety of your home, such as internet-connected home alarm system, smoke detector, security cameras, door locks
- c) Home appliances such as internet-connected robot vacuums, fridges, ovens, coffee machines
- d) A virtual assistant in the form of a smart speaker or of an app, such as Google Home, Amazon Alexa/Echo/Computer, Google Assistant, Siri, Cortana, Bixby
- e) Wearable devices connected to the internet, such as smart watches, fitness bands, connected goggles or headsets, connected accessories, cloths or shoes
- f) Internet-connected devices used for health and medical care, for example, devices for monitoring blood pressure, sugar level, body weight (e.g. smart scales)
- g) Entertainment devices connected to the internet, such as smart TVs, smart speakers, game consoles etc.
- h) Toys connected to the internet, such as, robot toys (including educational) and dolls
- i) A car with built-in internet connection
- j) Other devices not mentioned above: _____
- k) I have not used any connected devices or systems

German version:

- a) Lösungen für das Energiemanagement bei Ihnen zu Hause, z. B. mit dem Internet verbundene Thermostate, Stromzähler, Lampen oder Plug-ins
- b) Lösungen zur Gewährleistung der Sicherheit Ihres Zuhauses, z. B. mit dem Internet verbundene Alarmsysteme, Rauchmelder, Überwachungskameras oder Türschlösser
- c) Haushaltsgeräte, z. B. mit dem Internet verbundene Roboter-Staubsauger, Kühlschränke, Öfen oder Kaffeemaschinen
- d) Einen virtuellen Assistenten in Form eines intelligenten Lautsprechers oder einer App, z. B. Google Home, Amazon Alexa/Echo/Computer, Google Assistant, Siri, Cortana oder Bixby
- e) Mit dem Internet verbundene tragbare Geräte, z. B. intelligente Armbanduhren, Fitness-Armbänder, Brillen oder Headsets, Accessoires, Kleidung oder Schuhe
- f) Mit dem Internet verbundene Geräte für die Gesundheit und medizinische Vorsorge, z. B. Geräte zur Überwachung des Blutdrucks, des Blutzuckerspiegels, des Körpergewichts (z. B. intelligente Waagen)

- g) Mit dem Internet verbundene Unterhaltungsgeräte, z. B. intelligente Fernseher, Lautsprecher oder Spielekonsolen
- h) Mit dem Internet verbundenes Spielzeug, z. B. Roboter-Spielzeug (auch für pädagogische Zwecke) und Puppen
- i) Ein Auto mit eingebauter Internetverbindung
- j) Andere, oben nicht genannte Geräte: _____
- k) Ich habe keine mit dem Internet verbundenen Geräte oder Systeme verwendet

Cognitive Techniques:

Specific Probing.

Respondents who selected one of the answer options a), b), c), e), or i) received (one or more) specific probes. Thereby, we wanted to find out whether they interpret these answer options in the intended way. Additionally, question Z1 included an "Other" answer option so that respondents could type in additional devices or systems that were not mentioned in the answer categories. The goal of this "probe"/answer option was to find out whether the list of answer options is exhaustive and clear.

Findings for Question:

Question Z1 asked respondents whether they had used any of the internet-connected devices or systems listed in the answer options. In accordance with the quotas defined, 20 respondents in each country answered that they had not used any connected devices or systems (answer option k)). The remaining respondents selected one or more of the other answer options a) to j). Due to the possibility to select multiple answer categories, percentages do not add up to 100 percent.

In both countries, the most frequently selected answer options were "Entertainment devices. . ." (UK: 48.3%, DE: 43.3%), "Wearable devices. . ." (UK: 31.7%, DE: 25.0%), and "A virtual assistant. . ." (UK: 31.7%, DE: 20.0%). Neither the British nor the German respondents mentioned any "other devices or systems" that were not already included in the list of answer categories. This result suggests that the list of answer options is exhaustive and clear to respondents.

Respondents who selected one of the answer options a), b), or c) received a probe which asked them to indicate whether they have controlled these devices/systems remotely or locally. Respondents received this probe up to three times, depending on how many of the options a) to c) they had ticked in question Z1. The results of this probe are shown in table 2 (see attached PDF file).

Table 2 shows that the British and German respondents control each of the three devices both remotely and locally. Those who control the devices remotely do so mainly via an app on a smartphone (UK: n=7, DE: n=6) or a tablet (UK: n=3, DE: n=1.) One German respondent said that he controlled the devices in answer category a) and c) via the virtual assistant "Alexa".

Respondents who selected answer category e) "Wearable devices. . ." received a probe

asking them for the wearable devices they had in mind when answering question Z1. A total of 34 respondents received this probe (UK: n=19, DE: n=15). The goal of this probe was to check whether respondents indeed thought about wearables that are connected to the internet and not about "non-connected" versions of these devices. In addition, the probe aimed at investigating whether the distinction between answer options e) and f) is clear to respondents.

Most respondents provided "in scope" examples of wearables, such as "fitness bands" (UK: n=9, DE: n=7), "smart watches" (UK: n=8, DE: n= 5), and "headsets" (UK: n=0, DE: n=2). However, a few re-spondents also provided "out of scope" examples, namely "iPhone" (TP185_UK), "mobile phone, tablet, laptop" (TP120_DE), and "mobile phone and tablet" (TP121_DE). No respondent mentioned a device that would better fit into answer option f) "Internet-connected devices used for health and medical care...". Hence, it seems that the distinction between answer options e) and f) is clear to respondents.

Respondents who selected answer option i) "A car with built-in internet connection" received a probe asking them whether this car was equipped with internet access (in scope interpretation) or whether they connected to the internet via a smartphone or tablet (out of scope interpretation). In total, 10 respondents received this probe (UK: n=4, DE: n=6), of which most (UK: n=4, DE: n=4) said they connected to the internet via a smartphone or tablet. Hence, most of the respondents who selected this option misinterpreted it.

Comments on question wording/translation: The German translation of the respondent instruction ("tick all that apply or k)") is suboptimal in the way that it describes a possibility rather than explaining the response task. Therefore, we recommend re-wording it into: "Bitte wählen Sie alle zutreffenden Antwortmöglichkeiten oder k) aus."

The German translation of answer option k) does not exactly match the wording of question Z1. Therefore, we recommend re-wording it into: "Ich habe bisher keine mit dem Internet verbundenen Geräte oder Systeme verwendet."

Recommendations:

Question: No changes recommended.

Instruction: We recommend re-wording the German version into "Bitte wählen Sie alle zutreffenden Antwortmöglichkeiten oder k) aus." This holds for questions Z2, Z3, and Z4 as well.

Answer option e): Consider re-phrasing this answer category so that it becomes clear that devices such as smartphones, tablets or notebooks should not be included.

Answer option i): We recommend re-phrasing this answer category so that it becomes clear that situations in which respondents connect to the internet via a smartphone in a car should not be included: "A car with built-in wireless internet connection" // "Ein Auto mit eingebauter WLAN-Verbindung"

Answer option k): We recommend re-wording the German version into "Ich habe bisher keine mit dem Internet verbundenen Geräte oder Systeme verwendet."