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Common understanding of the term "Internet-connected radio equipment"

Introduction

The delegated regulation (EU) 2022/30 defines in Article 1 a "internet-connected radio equipment" as "any radio equipment that can communicate itself over the internet, whether it communicates directly or via any other equipment". A common understanding of the term "internet-connected radio equipment" is key for both the European Standardisation Organisations (ESO)s and economic operators, but also for market surveillance authorities, for the following reasons:

- Basis for the development of harmonised standards (including security risk assessment),
- Identification of products within the scope of the delegated regulation.

Even though an agreement on the definition of the term "internet-connected radio equipment" would not be legally binding, it could then be integrated into the Guidelines to the 2014/53/EU Radio Equipment Directive (RED) as a common understanding between stakeholders and thus support the legal base. Following the discussion in the RED Expert Group 15, the European Commission suggested that the industry should provide further case studies to support the request for better guidance. The following paper gives an overview of the current discussion within trade associations and industry use-cases in this respect.

It should be noted that the approach to analysis in this paper is technology neutral. This paper does not intend to indicate whether one specific technology is affected by the delegated regulation or not. Instead, this paper solely focuses on providing clarifications for the term "internet-connected radio equipment", which is key for the application of the delegated regulation. For example, it cannot be stated that "Bluetooth technology" is excluded from the delegated regulation. Depending on the communication protocol used by that equipment, radio equipment using Bluetooth technology may or may not fall under the scope of the delegated regulation.

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Common understanding of "internet-connnected radio equipment

The delegated regulation defines "***internet-connected radio equipment***" as equipment that: "***can communicate itself over the internet, whether it communicates directly or via any other equipment***".

Therefore, to establish a common understanding of the definition of the term we propose the following interpretation: "***internet-connected radio equipment***"

- is designed to **communicate** over the internet without any further modification, and
- **itself has the technical capabilities** to communicate over the internet, we call this capability "internet-ready," and
- **supports specific communication protocols**[1] that allows it to communicate over the internet

Note 1: Where we refer to internet in this paper, we mean public internet.
Note 2: Any radio equipment that does not itself have the technical capabilities to communicate over the internet is not within the scope of this definition.
Note 3: The term "internet-ready" is used to describe the technical capability of the radio equipment hardware in the scenarios set out below to support specific communication protocols. Regardless of the capability to be "internet-ready", any products falling into the category of childcare, toys and wearables might still be within the scope of the delegated regulation.

Applicability

Identification of applicability

Table 1 shows symbols and terms used in the scenarios

Table 1

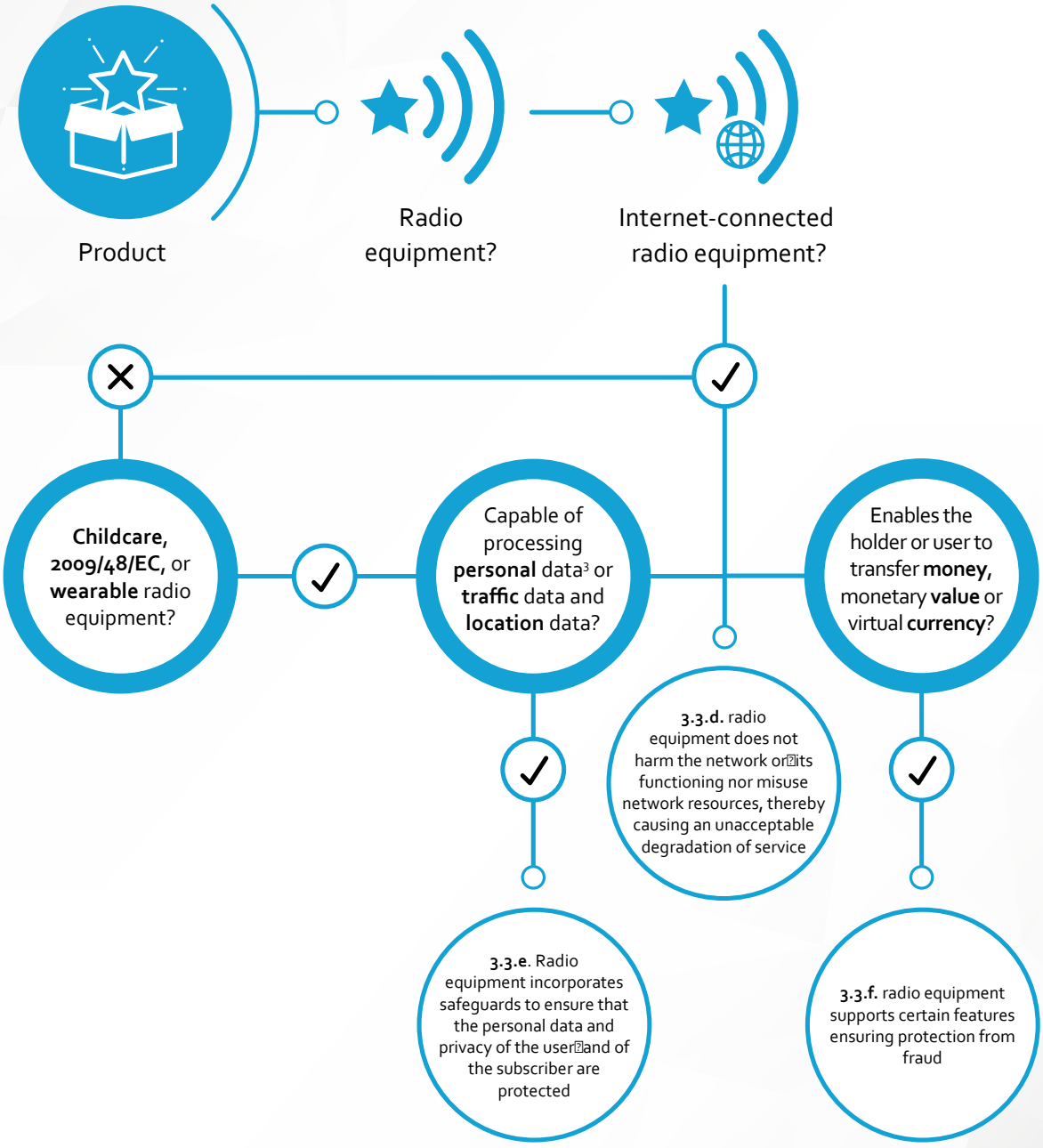
Symbol/ Term	Explanation
	Internet: the global system of interconnected computer networks that uses the internet protocol suite to communicate between networks and devices[2]
	A product potentially in scope of the delegated regulation
	Radio interface (for the purpose of communication or radio-determination)
	"Wired" connection"
	"Wireless" connection via a radio interface
"Internet-ready"	Product itself has the capability to communicate over the internet
"Not internet-ready"	Product itself does not have the capability to communicate over the internet
"Any protocol"	All protocols, including those required to be "internet- ready"

[1] These specific communication protocols may be those from the Internet Protocol Suite. Other equivalent communication protocols allowing internet communication would also be included.

[2] Adapted definition from Wikipedia: See also: The IEC electropedia: ref 732-07-01

Figure 1. shows the generic approach for the identification of products affected by the delegated regulation and the respective essential requirements 3.3.d, e & f of the Radio Equipment Directive (2014/53/EU).

Figure 1: Applicability



Disclaimer:

The product examples provided below are for information only and are not comprehensive. They serve to illustrate the scenarios and make them more tangible. It is not our intention to define whether or not a specific product falls under the scope of the delegated regulation. Each one of these examples requires an assessment by the manufacturer on a case-by-case basis.

[3]'personal data' means any information relating to an identified or identifiable natural person ('data subject'); an identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person; definition from Regulation (EU) 2016/679 on GDPR.

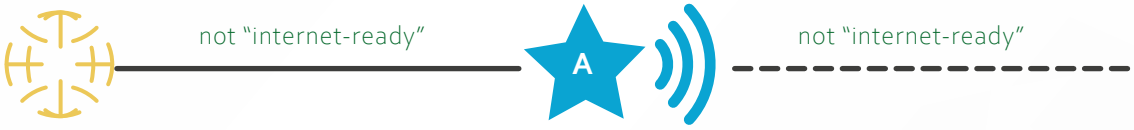
Scenario 1: Non-radio equipment

Figure 2

PRODUCT A	
Radio equipment according to 2014/53/EU?	NO
	The product has no radio interface and is not radio equipment according to the definition in 2014/53/EU.
"Internet-connected radio equipment"?	NOT APPLICABLE
Product examples	A router or gateway without wireless capabilities (e.g., without WiFi, 3G/4G/5G), industrial electronic control modules without wireless capabilities, IP alarm transmitter, control panel for alarm system.

Scenario 2: Radio equipment itself not capable of communicating over the internet

Figure 3



PRODUCT A	
Radio equipment according to 2014/53/EU?	YES
	The product has a radio interface and is radio equipment according to the definition in 2014/53/EU.
"Internet-connected radio equipment"?	NO
	The product itself does not have the capability of communicating over the internet, neither "wireless" nor "wired".
Product examples	Industrial position sensors, temperature sensors, RFID tags, tyre pressure sensors, accelerometers, pressure sensors, machine to machine gateway, mounted walkie-talkie in mobile construction machines, microwave sensors for movement detection.

Case study

This scenario includes products connected via wires to an industrial network which only have wireless functionality for reading data or calibrating/commissioning without the capability of communicating over the internet. It is common practice for many industrial products and for laboratory equipment to have wireless functionality for ease of set-up, data reading, or simply to avoid wiring (e.g. for industrial sensors). Such devices are only able to transmit radio waves, but this does not mean that they should automatically fall within the scope of the delegated act since they are not able to communicate over the internet.

Scenario 3: Radio equipment itself capable of communicating over the internet ("wired")

Figure 4

PRODUCT A	
Radio equipment according to 2014/53/EU?	YES
	The product has a radio interface and is radio equipment according to the definition in 2014/53/EU.
"Internet-connected radio equipment"?	YES
	Even though the product itself might not be capable of communicating over the internet via its radio interface, the product itself is capable of communicating over the internet via its "wired" interface.
Product examples	Smart home gateway, internet router with WiFi capability, network appliance, radio determination device, industrial gateways or network managers, control panel for wireless alarm system, IoT version of microwave sensor for movement detection.

Scenario 4: Radio equipment itself capable of communicating over the internet ("wireless")

Figure 5

PRODUCT A	
Radio equipment according to 2014/53/EU?	YES
	The product has a radio interface and is radio equipment according to the definition in 2014/53/EU.
"Internet-connected radio equipment"?	YES
	The product itself is capable of communicating over the internet via its radio interface, independent from a capability offered by any other interface ("wireless", "wired").
Product examples	Smartphones, tablets, laptops, , telematic devices on machinery (satellite/cell), Smart Home device, 4G/5G routers, alarm transmitter with wireless port, IoT version of control panel for alarm system.

Scenario 5: Combination of Scenario 2 and Scenario 3

Figure 6

PRODUCT A	
Radio equipment according to 2014/53/EU?	YES
	The product has a radio interface and is a radio equipment according to the definition in 2014/53/EU.
"Internet-connected radio equipment"?	YES
	Even though the product itself is not capable of communicating over the internet via its radio interface, the product itself is capable of communicating over the internet via its "wired" interface.
Product examples	Smart home gateway, internet router with WiFi capability, network appliance, radio determination device, industrial gateways or network managers, control panel for wireless alarm system, internet connected microwave sensor for movement detection.

PRODUCT B	
Radio equipment according to 2014/53/EU?	YES
	The product has a radio interface and is a radio equipment according to the definition in 2014/53/EU.
"Internet-connected radio equipment"?	NO
	Product B itself is not capable of communicating over the internet, even if Product A itself is capable of communicating over the internet.
Product examples	Smart light bulb, wireless computer mouse, RFID tag, actuators, industrial sensors, wireless detectors for alarm system, temperature sensors, pressure sensors, accelerometers, , headphones, microphones, digital cameras.

Scenario 6: Combination of Scenario 3 and Scenario 4

Figure 7

PRODUCT A	
Radio equipment according to 2014/53/EU?	YES
	The product has a radio interface and is radio equipment according to the definition in 2014/53/EU.
"Internet-connected radio equipment"?	YES
	The product itself is capable of communicating over the internet via its radio interface ("wireless") as well as the "wired" interface.
Product examples	Smart home gateway, internet router, network appliance, local controller of social alarm system radio determination device, industrial gateways or network managers, IoT version of local controller of social alarm system.

PRODUCT B	
Radio equipment according to 2014/53/EU?	YES
	The product has a radio interface and is a radio equipment according to the definition in 2014/53/EU.
"Internet-connected radio equipment"?	YES
	The product itself is capable of communicating over the internet via its radio interface ("wireless").
Product examples	PC, smartphone, notebook, tablet, smart speaker, smart TV, IP camera for social alarm system telematic devices on machinery (satellite/cell), , Smart Home device, 4G/5G routers, IP camera for social alarm system.

Scenario 7: Combination of Scenario 1 and Scenario 3

Figure 8

PRODUCT A	
Radio equipment according to 2014/53/EU?	NO
	The product has no radio interface and is not radio equipment according to the definition in 2014/53/EU.
"Internet-connected radio equipment"?	NOT APPLICABLE
Product examples	A router/gateway without wireless capabilities (e.g., without WiFi, 3G/4G/5G), industrial controller without wireless capabilities, electronic control units on machinery or systems.

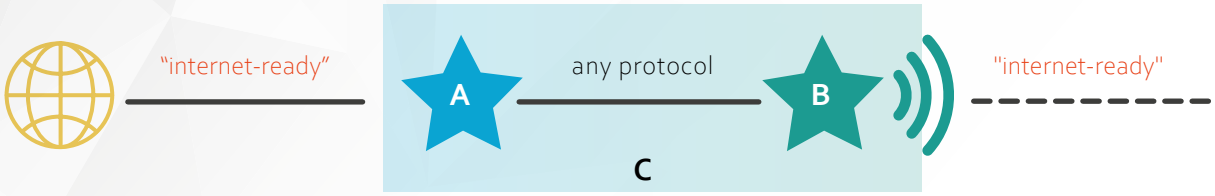
PRODUCT B	
Radio equipment according to 2014/53/EU?	YES
	The product has a radio interface and is radio equipment according to the definition in 2014/53/EU.
"Internet-connected radio equipment"?	YES
	Even though the product itself might not be capable of communicating over the internet via its radio interface, it is capable of communicating over the internet via its "wired" interface.
Product examples	PC, notebook, Smart Home Gateway, RFID tag reader, alarm transmitter, IoT version of control panel for wireless alarm system, network appliance, radio determination device, IoT version of microwave sensor for movement detection.

Case study

A typical use case for this scenario would be a machine control unit (product A) that has a wired connection "into" the machinery and a wired connection to a telematic device (product B), which transfers data wirelessly through the internet.

Scenario 8: Combined equipment (Scenario 1 and Scenario 4)

Figure 10



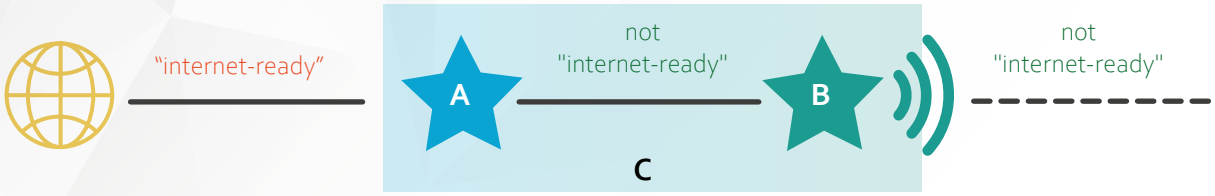
PRODUCT A	
Radio equipment according to 2014/53/EU?	NO
	The product has no radio interface and is not radio equipment according to the definition in 2014/53/EU.
"Internet-connected radio equipment"?	NOT APPLICABLE
Product examples	Standalone network component, remotely controllable machinery.

PRODUCT B	
Radio equipment according to 2014/53/EU?	YES
	The product has a radio interface and is radio equipment according to the definition in 2014/53/EU.
"Internet-connected radio equipment"?	YES
	The product itself is capable of communicating over the internet via its radio interface ("wireless").
Product examples	Transmitter to a remote operating station.

PRODUCT C	
Radio equipment according to 2014/53/EU?	YES
	The product has a radio interface and is radio equipment according to the definition in 2014/53/EU.
"Internet-connected radio equipment"?	YES
	Regardless, of whether Product A is within the scope of the delegated regulation, the combined equipment itself is capable of communicating over the internet via its radio interface ("wireless") and via its "wired" interface.
Product examples	Combustion engine with a telematic device incorporated remote controllable machinery.

Scenario 9: Combined equipment (Scenario 1 and Scenario 2)

Figure 11



PRODUCT A	
Radio equipment according to 2014/53/EU?	NO
	The product has no radio interface and is not radio equipment according to the definition in 2014/53/EU.
"Internet-connected radio equipment"?	NOT APPLICABLE
Product examples	Standalone network component, IP alarm transmitter.

PRODUCT B	
Radio equipment according to 2014/53/EU?	YES
	The product has a radio interface and is radio equipment according to the definition in 2014/53/EU.
"Internet-connected radio equipment"?	NO
	The product itself is not capable of communicating over the internet via its radio interface ("wireless") nor via its "wired" interface.
Product examples	Control panel for wireless alarm system.

PRODUCT C	
Radio equipment according to 2014/53/EU?	YES
	The product has a radio interface and is radio equipment according to the definition in 2014/53/EU.
"Internet-connected radio equipment"?	YES
	The combined equipment itself is capable of communicating over the internet via its "wired" interface.
Product examples	Control panel for wireless alarm system (B) with embedded IP alarm transmitter (A).

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