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NSAI Standards

Irish Standard
I.S. 374:2019

Customer Communications for Utilities — A Universal Design Approach

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S.R. xxx: Standard Recommendation - recommendation based on the consensus of an expert panel and subject to public consultation.

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DECLARATION

OF

SPECIFICATION

ENTITLED

CUSTOMER COMMUNICATIONS FOR UTILITIES — A UNIVERSAL DESIGN APPROACH

AS

THE IRISH STANDARD SPECIFICATION FOR

CUSTOMER COMMUNICATIONS FOR UTILITIES — A UNIVERSAL DESIGN APPROACH

NSAI in exercise of the power conferred by section 16 (3) of the National Standards Authority of Ireland Act, 1996 (No. 28 of 1996) and with the consent of the Minister for Jobs, Enterprise and Innovation, hereby declare as follows:

1. This instrument may be cited as the Standard Specification (Customer Communications for Utilities — A Universal Design Approach) Declaration, 2019.

2. (1) The Specification set forth in the Schedule to this declaration is hereby declared to be the standard specification for Customer Communications for Utilities — A Universal Design Approach.

(2) The said Standard Specification may be cited as Irish Standard 374:2019 or as I.S. 374:2019.

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Contents

Page

DECLARATION 1

1 Scope 6

2 Normative references 6

3 Terms and definitions 6

4 Achieving Universal Design 8
4.1 General 8
4.2 Understanding the goal of Universal Design 8
4.3 Realising an organisational commitment to a Universal Design approach 9
4.4 User characteristics, capabilities and preferences 9
4.5 Using the Universal Design Principles and Guidelines 10
4.6 Evaluating the application of a Universal Design approach 10

5 Universal Design requirements for communication 11
5.1 General 11
5.2 Written communication 12
5.3 Verbal communication 12
5.4 Digital communication 13

Annex A (informative) Universal Design makes good business sense 16
A.1 Universal Design: The demographic case 16
A.2 Universal Design: The legal case 16
A.3 Universal Design: The business case 17

Annex B (informative) Procurement Policy and Practice for Universal Design 18
B.1 Integrating Universal Design in procurement 18
B.2 Evaluating the implementation of Universal Design in procurement 19

Annex C (informative) Universal Design Principles and Guidelines 20
C.1 Introduction 20
C.2 Universal Design Principles and Guidelines 20
Principle 1: Equitable use 20
Principle 2: Flexibility in use 20
Principle 3: Simple and intuitive use 21
Principle 4: Perceptible information 21
Principle 5: Tolerance for Error 21
Principle 6: Low Physical Effort 21
Principle 7: Size and Space for Approach and Use 22

Annex D (informative) User (Customer) characteristics, capabilities and preferences 23
D.1 General 23
D.2 Direct involvement of users 23
D.3 Resources about user characteristics and capabilities 25
D.4 User feedback, expert knowledge and associated design methods 28

Annex E (informative) Tables for mapping Universal Design Principles and Guidelines to design guidance in Annexes F, G, and H 30
E.1 General 30

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E.2 Purpose and structure of the tables **30**

Annex F (informative) Written communication **47**
F.1 Introduction **47**
F.2 Written text guidance **47**
F.3 Document design **47**
F.4 Form design **48**
F.5 Signage guidance **49**

Annex G (informative) Verbal communication **51**
G.1 Introduction **51**
G.2 Verbal communication **51**
G.3 Non-verbal communication **52**

Annex H (informative) Digital communication **53**
H.1 Introduction **53**
H.2 Writing good web content communication **53**
H.3 Designing and developing usable websites **54**
H.4 Mobile web content and apps **56**
H.5 Emails and newsletters **57**
H.6 Documents and brochures **57**
H.7 Telephone based systems **57**
H.8 SMS based communication **58**
H.9 Social media guidance **58**

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Foreword

This document has been prepared by NSAI/TC023 "Universal Design Standards Consultative Committee"

Utility Suppliers, public sector organisations, Universal Design experts and representatives of disability and older persons' organisations contributed to its development.

It is intended for use by Utility Suppliers but could be used by other organisations that want to improve the design of their written, verbal and digital communications.

This document supersedes SWiFT 9:2012 *Universal Design for Energy Suppliers*. SWiFT 9 will be withdrawn on publication of this document.

The requirements in this document can enable an organisation to meet applicable statutory and regulatory requirements related to the Universal Design of customer communications. This document does not purport to include all the necessary provisions of a contract and the user is responsible for its correct application.

Compliance with an Irish Standard does not of itself confer immunity from legal obligations.

In line with international standards practice the following representation of numbers and numerical values apply:

- The decimal point is shown as a comma (,) throughout this Irish Standard.
- Each group of three digits reading to the left or to the right of a decimal sign are separated by a space from the preceding digits or following digits respectively.

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Introduction

No two utility customers are the same. They can have a diverse range of characteristics, capabilities and preferences. This document is about how to implement Universal Design in communication with utilities customers in order to address this diversity.

A Universal Design approach is a process used by organisations that prioritises customer accessibility and usability needs by involving users (customers) and addressing relevant Universal Design Principles and Guidelines.

Clause 4 specifies requirements and recommendations for the application of a Universal Design approach to the planning, design, development and provision of customer communications for utility products and services.

Clause 5 specifies design requirements for written, verbal and digital communication. These design requirements help to ensure that customers can access, understand and use the communications, regardless of their age, size, ability or disability.

Annexes support the understanding of the requirements in this document. They contain information about: the business case for applying a Universal Design approach; integrating Universal Design into the procurement process; a listing of the Universal Design Principles and Guidelines; user/customer characteristics, capabilities and preferences; and a tool for aligning the Universal Design Principles with customer communications for utility products and services. Three further annexes contain guidance on the design of written, verbal and digital communications respectively.

S.I. No. 463/2011 requires the application of the principles of Universal Design to:

a) all products and services offered or provided to final customers, and

b) communications with final customers.

Achieving the requirements in this document can enable an organisation to meet applicable statutory and regulatory requirements related to the Universal Design of customer communications.

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Schedule

Customer Communications for Utilities — A Universal Design Approach

1 Scope

This document provides requirements and recommendations for the application of a Universal Design approach in the development and provision of customer communications for use with utility products and services.

This document enables an organisation to provide mainstream customer communications in relation to products and services so that they can be accessed, understood and used by all people regardless of their age, size, ability or disability.

This document promotes a Universal Design approach to achieve accessibility and usability in mainstream customer communications and interoperability of these with assistive technology.

This document can enable an organisation to meet applicable statutory and regulatory requirements related to accessibility and Universal Design of customer communications.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

I.S. EN 301 549:2018, *Accessibility requirements for ICT products and services*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

accessibility
extent to which products, systems, services, environments and facilities can be used by people from a population with the widest range of user needs, characteristics and capabilities to achieve identified goals in identified contexts of use

Note 1 to entry: Context of use includes direct use or use supported by assistive technology

[SOURCE: I.S. EN ISO 9241-112:2017, 3.15, modified note]

alternative format
different realisation or presentation which may make products and services accessible by the use of another modality or sensory ability

[SOURCE: ISO 28803:2012, 3.5]

assistive technology
equipment, product system, hardware, software or service that is used to increase, maintain or improve capabilities of individuals

Note 1 to entry: Assistive technology is an umbrella term that is broader than assistive products.

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Note 2 to entry: Assistive technology can include assistive services, and professional services needed for assessment, recommendation and provision.

[SOURCE: ISO/IEC Guide 71:2014, 2.16]

interoperable
ability of two or more systems, or components to exchange information and then to be able to use the information that has been exchanged

[SOURCE: ISO 15784-2:2015, 4.8]

organisation
person or group of people that has its own functions with responsibilities, authorities and relationships to achieve its objectives

Note 1 to entry: The concept of organization includes, but is not limited to, sole-trader, company, corporation, firm, enterprise, authority, partnership, association (3.2.8), charity or institution, or part or combination thereof, whether incorporated or not, public or private.

Note 2 to entry: A utility supplier is referred to as an 'organisation' in this document

[SOURCE: ISO 9000:2015, 3.1.4]

user
person who interacts with a system, product or service

Note 1 to entry: A customer is also a user.

Note 2 to entry: a (potential) customer (representative) is referred to as a 'user'

Examples of a user are a final customer, a potential final customer, and a representative of a final customer or potential final customer.

[SOURCE: ISO 27500:2016, 2.12, modified (without the note)]

Universal Design
design and composition of an environment so that it may be accessed, understood and used—

(i) to the greatest practicable extent,

(ii) in the most independent and natural manner possible,

(iii) in the widest possible range of situations, and

(iv) without the need for adaptation, modification, assistive devices or specialised solutions,

by persons of any age or size or having any particular physical, sensory, mental health or intellectual ability or disability.

In relation to electronic systems, it means any electronics-based process of creating products, services or systems so that they may be used by any person.

[SOURCE: Disability Act 2005, Section 52 ,modified]

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usability
extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use

[SOURCE: ISO 9241-11:1998, 3.1]

4 Achieving Universal Design

4.1 General

Organisations shall apply a Universal Design approach to provide products and services that can be accessed, understood and used by all users, to the greatest extent possible, without the need for their adaptation or specialised design.

A Universal Design approach is a process that incorporates the implementation of the Universal Design Principles and Guidelines. It focusses on accessibility and usability from the earliest possible time and throughout all stages in the life of products and services, and the interoperability of products and services with assistive technology.

'Access, understand and use' is about how people generally interact with a product or service: first, they access it (approach and perceive); secondly, they understand it (comprehend and decide); and thirdly, they use it (react to or interact with).

In applying a Universal Design approach, organisations:

— ensure the goal of Universal Design is understood (4.2);

— make and realise an organisational commitment to a Universal Design approach (4.3);

— know and consider the user's characteristics, capabilities and preferences during the planning, design, development and provision of products and services (4.4);

— use the relevant Universal Design Principles and Guidelines in the planning, design, development and provision of products and services (4.5);

— evaluate the application of a Universal Design approach to their customer communications (4.6).

4.2 Understanding the goal of Universal Design

The organisation shall ensure that the goal of Universal Design is understood throughout the organisation.

The goal of Universal Design is to ensure all users can access, understand and use a product, service or environment to the greatest practicable extent regardless of their age, size, ability or disability.

This can be achieved by:

— designing products, services and environments that are easy to access, understand and use by most customers without any modification,

— making product, service and environmental designs adaptable to different users and

— by having standardised interfaces that are compatible with assistive technology.

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NOTE Universal Design Principle 1 (see Annex C) relates to the overarching goal of equitable use so that the design is useful and marketable to people with diverse abilities.

4.3 Realising an organisational commitment to a Universal Design approach

Top management shall demonstrate leadership and commitment with respect to a Universal Design approach to customer communications. To achieve this, top management shall:

— allocate resources;

— assign responsibilities, tasks and accountabilities;

— support and monitor internal planning, design, development and provision;

— identify recruitment;

— identify training needs;

— put in place an ongoing training programme to ensure that staff are competent;

— define measurement and performance indicators;

— evaluate the effectiveness of the planning, design, development and provision activities;

— ensure that their contractors apply a Universal Design approach to the products and services provided.

NOTE 1 Information on the advantages of applying a Universal Design approach is provided in Annex A.

NOTE 2 Information on incorporating Universal Design in procurement is provided in Annex B.

4.4 User characteristics, capabilities and preferences

As part of applying a Universal Design approach, organisations shall know and consider the diverse characteristics, capabilities and preferences of users during the planning, design, development and provision of communications.

Organisations shall:

— determine the characteristics, capabilities and preferences of the widest possible range of users during design and development activities;

— involve users early and throughout the design and development process;

— use relevant resources and expertise about user characteristics, capabilities and preferences to inform design activities;

— use feedback from current and potential users, including information about assistive technology relevant to their communications.

Organisations should consider users with more diverse capabilities and characteristics during design requirements.

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NOTE Guidance and resources on customer characteristics, capabilities and preferences are provided in Annex D.

All users, user representatives and relevant experts that are consulted during the design and development processes should be treated as having an equal status and be fully accommodated to enable their effective participation.

It is best practice, in order to achieve a Universal Design approach, that, in addition to users, organisations involve user representatives and relevant experts throughout the design and development process, such as during concept stage, prototype evaluation, and current product or service testing.

4.5 Using the Universal Design Principles and Guidelines

Organisations shall use the Principles and Guidelines of Universal Design when planning, designing, developing and providing their customer communications.

Organisations shall identify the Universal Design Principles and Guidelines relevant to a design and use them as criteria in the design activities.

NOTE 1 Annex C lists the 7 Principles and 29 Guidelines of Universal Design.

Not all Universal Design Principles and Guidelines will be applicable to all designs. Universal Design Principles 2, 3, 4, and 5 are most relevant to designs for customer communications.

NOTE 2 Annex E contains tables to guide organisations in applying the relevant Universal Design Principles and Guidelines to the design of their communications.

NOTE 3 Annex F through to Annex H provide detailed information and design guidance on the Universal Design of communications.

4.6 Evaluating the application of a Universal Design approach

4.6.1 General

The organisation shall monitor, measure, analyse and evaluate, the application and effectiveness of the activities relevant to a Universal Design approach.

The organisation shall evaluate the effectiveness of the Universal Design approach by determining how well products and services can be accessed, understood and used by users with a diverse range of characteristics, capabilities and preferences.

4.6.2 Monitoring and measuring

The organisation shall ensure that monitoring and measurement activities reflect the requirements of its Universal Design approach.

The organisation shall:

a) determine what is to be monitored and measured as referred to in 4.2 and 4.3;
b) use methods for monitoring and measurement that produce valid results;
c) determine when to monitor and measure;
d) determine how to analyse results.

NOTE 1 Common methods for monitoring and measuring are electronic-, postal-, telephone-, in-person- and hybrid-surveys.

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NOTE 2 Annex E contains tables that show examples of mapping of the alignment of the design guidance in Annexes F, G and H to the Universal Design Principles and Guidelines.

NOTE 3 The design guidance in Annex F to Annex H provide checklists and website links to tools that will help demonstrate implementation of the design requirements in Clause 5.

4.6.3 Analysis and evaluation

The organisation shall analyse and evaluate data and information arising from monitoring, measuring and other relevant sources.

Organisations shall use the output of the analysis and evaluation to:

a) ensure the effectiveness of the Universal Design approach;

b) assess the performance of external contractors with regard to Universal Design;

c) determine the needs or opportunities for improvement of their processes with regard to the Universal Design approach.

The results of the analysis and evaluation can be used as inputs to reviews such as related to performance indicators.

5 Universal Design requirements for communication

5.1 General

Organisations shall apply a Universal Design approach to their written, verbal and digital mainstream customer communications. Universal Design of mainstream communications shall be interoperable with assistive technology.

Customer communications shall be designed so that written, verbal and digital communication can be accessed, understood and used by all users, to the greatest extent possible, without the need for adaption or specialised design.

Organisations should consider accessible design standards as part of the application of Universal Design.

In the context of this document, the term 'digital communication' refers to all electronic communication.

Requirements for using plain English are included in clause 5.

NOTE Plain English is a way to present information so that the intended user can understand and act on it.

Each category of communication is supported by an Annex that lists a summary of related design guidance.

Clause 5 is supported by Annex F through to Annex H which provides detailed information and design guidance on Universal Design of communications.

NOTE Universal Design toolkits contain guidance on designing communications that are easy to access, understand and use. Universal Design toolkits are hosted by the Centre for Excellence in Universal Design on its website.

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5.2 Written communication

Organisations shall apply a Universal Design approach to their written communication with customers.

Written communication encompasses written text, document design, form design and signage.

Organisations shall:

— write in plain English;

— give relevant information in an appropriate sequence;

— write the content such that customers are able to access, understand and use the information;

— design the layout such that customers are able to access, understand and use the information;

— print the material such that customers are able to access, understand and use the information;

— provide customers with a clear and simple way to get further clarification;

— provide information in an alternative format.

If a written document is to be provided to users digitally, the requirements of 5.4.3 shall apply.

NOTE Further design guidance and resources on the Universal Design of written communication is provided in Annex F.

5.3 Verbal communication

Organisations shall apply a Universal Design approach to their verbal communication with customers.

In the context of this document, verbal communication encompasses telephone, face-to-face, text relay, and video communication, and sign language.

When applying a Universal Design approach to verbal communication, organisations shall:

— communicate in plain English;

— give relevant information in an appropriate sequence;

— support customers to easily access, understand and use the information;

— confirm that customers have understood the information given;

— ensure that staff are trained to understand the accessibility needs of customers with disabilities;

— understand the ways in which the body communicates non-verbally for example, through gesture, posture, appearance, eye- and physical-contact, facial expression, proximity and orientation;

— ensure that staff are trained to be aware of communication needs of Deaf customers and customers that are hard of hearing;

— facilitate use of a text or video relay service, or equivalent, if requested by a user;

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— provide information in an alternative format.

NOTE 1 Further design guidance and resources on the Universal Design of verbal communication is provided in Annex G.

NOTE 2 Text relay and video relay services enable customers who cannot use a standard telephone (for example, due to hearing or speech difficulties) to communicate with organisations in real-time via electronic communications. Text relay services are delivered via a relay operator who translates text from the customer into voice for the organisation's agent and vice versa. Video relay services are delivered via a relay operator who translates sign language from the customer into voice for the organisation's agent and vice versa.

5.4 Digital communication

5.4.1 General

Organisations shall apply a Universal Design approach to their digital customer communication incorporating the applicable requirements from 5.2 and 5.3.

Digital communication includes communication through websites, emails, e-zines, telephone-based systems, instant messaging and social media.

As part of applying Universal Design to digital customer communications, I.S. EN 301 549 is recognised as a minimum standard that aligns with related regulation for accessibility.

Where organisations use digital communication, an alternative format of communication shall be made available.

NOTE Further design guidance and resources on the Universal Design of digital communication is provided in Annex H.

5.4.2 Web-based communication

5.4.2.1 General

Organisations' web content shall be designed to conform to the requirements in I.S. EN 301 549 Clause 9.

NOTE 1 'Web content' refers to any part of a website, including text, images, forms and multimedia, as well as any markup code, scripts and applications. It includes web applications and mobile web applications.

NOTE 2 Conformance with clauses 9.1 to 9.4 and the requirements of clause 9.5 of I.S. EN 301 549:2018 (which together comprise all of Clause 9) is equivalent to conformance with WCAG 2.1 Level AA (Web Content Accessibility Guidelines).

NOTE 3 I.S. EN 301 549 is an adoption of EN 301 549. EN 301 549 is the equivalent of ETSI EN 301 549 which is available at:
https://www.etsi.org/deliver/etsi_en/301500_301599/301549/02.01.02_60/en_301549v020102p.pdf.

5.4.2.2 Social media communication

Organisations' social media communication shall be designed in accordance with the relevant requirements of I.S. EN 301 549.

NOTE Further design guidance on the Universal Design of social media communication is provided in Annex H.

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5.4.3 Non-web electronic documents

Non-web electronic documents shall conform to the requirements of I.S. EN 301 549 Clause 10.

NOTE Some examples of non-web electronic documents are letters, email messages, spreadsheets, books, pictures, presentations and movies that have an associated user agent such as a document reader, editor or media player.

5.4.4 Text messaging communication

Where text messaging communication, such as SMS or instant messaging, is used by an organisation, it shall ensure that the message text meets the requirements in 5.2.

Where information is sent to users through text messaging communication, organisations shall provide details on how the user may obtain clarifying information.

Where information is sent to organisations by users through text messaging communication, organisations shall confirm the receipt of the information.

NOTE 1 For example, after submitting a meter reading by text message, the customer will receive confirmation of the meter reading they have submitted.

Where organisations use text messaging communication, an alternative format of communication shall be available to users.

NOTE 2 Guidance and resources for the Universal Design of digital text-based communication is provided in Annex H.

5.4.5 Telephone based systems

Organisations shall apply a Universal Design approach to their telephone-based systems such as Interactive Voice Response System (IVR) or call-routing.

Organisation shall:

— provide only essential information at the beginning of automated options;

— provide a statement at the start of the call indicating the number of options that the user will be presented with;

— present options in order of most frequently chosen;

— where possible, limit options to those most frequently used, minimizing subsequent lower levels per option;

— where a user fails to make a recognised choice, automatically divert to a call centre agent. This shall take place no later than when the options have been presented twice;

— notify the user when they are being placed on hold;

— where a user is transferred to a different agent during a call, avoid repetition of non-essential gathering of information.

It is best practice, when a user is placed on hold, to inform them about the call-holding process and to provide them frequent updates on their place in the queue and/or the estimated duration of their wait

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until an agent will speak with them. It is best practice to provide the user with (an) alternative option(s) to remaining on hold, such as a callback, each time an update is provided. The alternative option(s) provided should allow the user to interrupt the call at any time and resume it at a time that is more convenient for them.

To assist users in accessing services through their IVR or call routing systems, an organisation shall provide guidelines on the use of it on its website and, where requested, in print. This is to allow users to see what options they will be presented with and to assist them in making an appropriate choice for their query.

Where an organisation offers a text phone service, call centre agents shall be appropriately trained in its use to respond to calls received using this service.

NOTE Guidance and resources for the Universal Design of telephone-based systems communication is provided in Annex H.

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Annex A
(informative)

Universal Design makes good business sense

A.1 Universal Design: The demographic case

No two people have exactly the same characteristics, capabilities and preferences. The diverse characteristics, capabilities and preferences among people can be influenced by both external and internal factors. The type of activity and the environment in which the person is carrying out the activity can impact on the person's ability.

Utility customers are diverse. They are adults over 18 and may be employed, unemployed, students, or retired. Some have computer skills; some do not. Some have literacy difficulties. They may have seeing, hearing, or mobility difficulties. They may be experiencing gradual loss of vision, hearing and mobility, due to ageing, but do not consider themselves to have a disability. Therefore, there is no typical utility customer. Universal Design recognises differences and helps to design in such a way that the resulting product, service or environment can be accessed, understood and used by everyone regardless of their diverse characteristics, capabilities and preferences.

A.2 Universal Design: The legal case

In Ireland, both the private and the public sectors are legally required to provide a standard of service to all customers that does not exclude or discriminate. Universal Design enables organisations to address their obligations with respect to national legislation.

The Equal Status Acts 2000-2015 (the Acts) cover various forms of discrimination, including discrimination on the basis of a disability. Under the Acts, anyone selling goods or providing services must do all that is reasonable to accommodate the needs of a person with a disability. This involves providing special treatment or facilities in circumstances where, without these, it would be impossible or unduly difficult to avail of the goods or services.

Various legislation[1] sets out basic requirements for energy suppliers regarding information they must provide to customers. This includes levels of protection for customers and dealings with customers who are considered vulnerable. To facilitate implementation of these requirements the Commission for Regulation of Utilities (CRU) issued guidelines to energy suppliers covering: marketing; complaint handling; billing and payment; disconnection of customers; customer charters; and services to vulnerable customers. Those guidelines require energy suppliers to put in place Codes of Practice in order to comply with their legal obligations.

The legal obligations on energy suppliers were further expanded in S.I. No. 463 of 2011, which strengthened the requirements around Codes of Practice and services to vulnerable customers and also put an obligation on energy suppliers to apply the Principles of Universal Design in the development of their products, services and communications to customers.

[1] https://www.dccae.gov.ie/en-ie/energy/legislation/Pages/default.aspx

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The Disability Act 2005 is a positive action measure designed to advance and underpin the participation of people with disabilities in everyday life. It establishes a statutory basis for access to mainstream public services and lists actions to support access to public buildings, services and information.

The National Disability Authority's (NDA) 'Code of Practice on Accessibility of Public Services and Information Provided by Public Bodies 'further expands on the obligations of public sector organisations in the provision of accessible services and provides practical advice and examples. It highlights that all communication should be accessible to people with disabilities should achieve Level AA conformance rating with the Web Content Accessibility Guidelines.

Accessible procurement is a legal requirement for all entities operating in the energy sector under S.I No 286/2016, which gives effect to EU procurement "Directive 2014/25/EU of the European Parliament and of the Council of 26 February 2014 on procurement by entities operating in the water, energy, transport and postal services sectors and repealing Directive 2004/17/EC". Specifically, Article 60.2 of Directive 2014/25/EU states:

> "*For all procurement which is intended for use by natural persons, whether the general public or staff of the contracting entity, the technical specifications shall, except in duly justified cases, be drawn up so as to take into account accessibility criteria for persons with disabilities or design for all users*."

A.3 Universal Design: The business case

There is a strong business case for an organisation to apply a Universal Design Approach. A Universal Design Approach promotes designs that are accessible to, understandable by, and usable by as many customers/users as possible. By applying a Universal Design Approach an organisation can increase its number of potential customers as persons with more diverse characteristics, capabilities and preferences will be able to access, understand and use its products and services. In this way an organisation can increase its market share.

The more flexible a service is, and the more options it provides to customers, the higher the likelihood of the service meeting the diverse needs of as diverse a customer base as possible.

A high-quality flexible approach to customer service can lead to customer satisfaction. A satisfied customer may tell other people about the service, increasing awareness and potentially generating new customers.

An organization that positively contributes to society by incorporating a Universal Design approach is likely to receive a reputation for having a high level of corporate social responsibility.

Universal Design can reduce the requirement for costly and wasteful retrofitting. It can also create a sustainable service that meets the needs of all people who wish to use it.

Universal Design should be considered throughout the entire customer experience from when the customer first reads or learns about the utility service supplier right through to when they are a full paying customer.

Universal Design simply makes good business sense.

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Annex B
(informative)

Procurement Policy and Practice for Universal Design

B.1 Integrating Universal Design in procurement

Accessible procurement is a legal requirement for all entities operating in the energy and water sectors under S.I No 286/2016, which gives effect to EU procurement "Directive 2014/25/EU of the European Parliament and of the Council of 26 February 2014 on procurement by entities operating in the water, energy, transport and postal services sectors and repealing Directive 2004/17/EC". Specifically, Article 60.2 of Directive 2014/25/EU states:

> "*For all procurement which is intended for use by natural persons, whether the general public or staff of the contracting entity, the technical specifications shall, except in duly justified cases, be drawn up so as to take into account accessibility criteria for persons with disabilities*[2] *or design for all users*."

Procurement policy, procedures, practices, guidelines and templates that are used or developed should incorporate Universal Design into the procurement process for communications for use with utility products and services.

The application of Universal Design is necessary throughout the entire procurement process, for example, in:

- the preparatory study and needs analysis stage of the procurement process;
- assessing the preparedness and ability of the suppliers and contractors to deliver Universal Design solutions for products and services;
- selecting suppliers and contractors;
- any mandatory requirements in the Call for Tender;
- Award Criteria and Technical Specification in the Call for Tender;
- contract management.

NOTE A toolkit on the procurement of accessible ICT is published by CEN CENELEC ETSI[3].

[2] S.I No 286/2016 clarifies that "disability" has the same meaning as it has in the Disability Act 2005 (No. 14 of 2005).

[3] http://mandate376.standards.eu/.

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B.2 Evaluating the implementation of Universal Design in procurement

In procurement activities, organisations should evaluate suppliers and contractors by how they conform to the requirements and guidelines in this document. Based on this document, suppliers and contractors can demonstrate that they:

— Understand the goal of Universal Design (4.2 and Annex A).

— Understand the diverse characteristics, capabilities and preferences of their users (4.4 and Annex D).

— Use the Universal Design Principles and Guidelines (4.5 and Annex C).

— Understand and implement the design requirements listed in Clause 5 and the design guidance listed in Annex F to Annex H.

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Annex C
(informative)

Universal Design Principles and Guidelines

C.1 Introduction

The Principles of Universal Design comprise 7 Principles and 29 Guidelines. This set of design principles was established by a group of experts to inspire design thinking and for use as a set of criteria to compliment design and development activities when evaluating the features and elements of designs for people.

Find out more about on the Universal Design Principles at www.universaldesign.ie[4].

C.2 Universal Design Principles and Guidelines

Principle 1: Equitable use

The design is useful and marketable to people with diverse abilities.

Guidelines:

1a. Provide the same means of use for all users: identical whenever possible; equivalent when not.

1b. Avoid segregating or stigmatizing any users.

1c. Provisions for privacy, security, and safety should be equally available to all users.

1d. Make the design appealing to all users.

Principle 2: Flexibility in use

The design accommodates a wide range of individual preferences and abilities.

Guidelines:

2a. Provide choice in methods of use.

2b. Accommodate right or left-handed access and use.

2c. Facilitate the user's accuracy and precision.

2d. Provide adaptability to the user's pace.

[4] http://universaldesign.ie/What-is-Universal-Design/The-7-Principles/

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Principle 3: Simple and intuitive use

Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.

Guidelines:

3a. Eliminate unnecessary complexity.

3b. Be consistent with user expectations and intuition.

3c. Accommodate a wide range of literacy and language skills.

3d. Arrange information consistent with its importance.

3e. Provide effective prompting and feedback during and after task completion.

Principle 4: Perceptible information

The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.

Guidelines:

4a. Use different modes (pictorial, verbal, tactile) for redundant presentation of essential information.

4b. Maximize "legibility" of essential information.

4c. Differentiate elements in ways that can be described (i.e., make it easy to give instructions or directions).

4d. Provide compatibility with a variety of techniques or devices used by people with sensory limitations.

Principle 5: Tolerance for Error

The design minimizes hazards and the adverse consequences of accidental or unintended actions.

Guidelines:

5a. Arrange elements to minimize hazards and errors: most used elements, most accessible; hazardous elements eliminated, isolated, or shielded.

5b. Provide warnings of hazards and errors.

5c. Provide fail safe features.

5d. Discourage unconscious action in tasks that require vigilance.

Principle 6: Low Physical Effort

The design can be used efficiently and comfortably and with a minimum of fatigue.

Guidelines:

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6a. Allow user to maintain a neutral body position.

6b. Use reasonable operating forces.

6c. Minimize repetitive actions.

6d. Minimize sustained physical effort.

Principle 7: Size and Space for Approach and Use

Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

Guidelines:

7a. Provide a clear line of sight to important elements for any seated or standing user.

7b. Make reach to all components comfortable for any seated or standing user.

7c. Accommodate variations in hand and grip size.

7d. Provide adequate space for the use of assistive devices or personal assistance.

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Annex D
(informative)

User (Customer) characteristics, capabilities and preferences

D.1 General

This Annex provides guidance on how to meet the requirements of clause 4.4. It contains information on determining and considering the characteristics, capabilities and preferences of the most diverse users (customers) in design and development activities, including:

— involving users early and throughout the design and development process;

— using resources and information on user characteristics, capabilities and preferences;

— using expert knowledge and feedback from current and potential users, including information about what assistive technologies are relevant to an organisation's products and services.

Knowing and prioritising the more diverse characteristics, capabilities and preferences of customers is key to the Universal Design and development of products and services.

It is recommended to directly involve users (customers) with the more diverse capabilities, characteristics and preferences early and throughout the design and development of products and services, where appropriate.

D.2 to D.4 provide further information in relation to:

— direct involvement of users (customers);

— resources about user characteristics and capabilities;

— user feedback, expert knowledge and associated design methods.

D.2 Direct involvement of users

It is recommended to directly involve users with diverse characteristics, capabilities and preferences, early and throughout the design and development of products and services.

Design methods and practices such as User-Centred or Human-Centred design prioritise direct involvement with users. Involving users with the more diverse characteristics, capabilities and preferences is key to applying a Universal Design approach. This is illustrated in Figures D.1 and D.2, below.

Organisations can involve users through: feedback surveys; consultation; direct observation; user testing; and participatory co-design processes with the design developers. Further information on user involvement can be found in Annex B of I.S. EN 17161:2019.

NOTE Resources for guidance on direct involvement and awareness of customers with disabilities are located in the website of the National Disability Authority (NDA) "Ask Me" Guidelines for Effective Consultation with People with Disabilities, and the e-learning tool 'Disability Equality Training for Public Service Staff'; find these at the NDA website: www.nda.ie.

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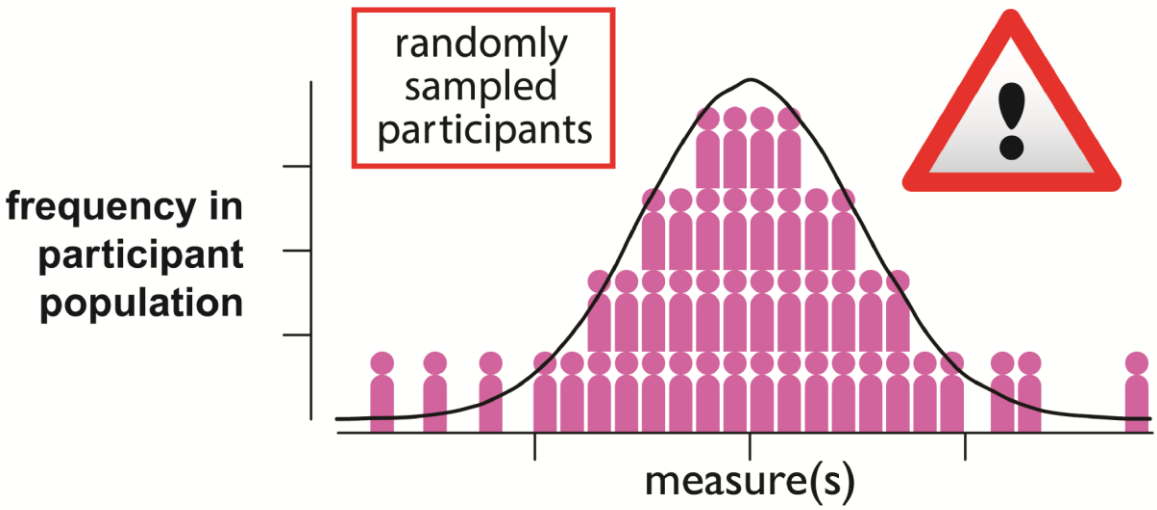
Figure D.1 and Figure D.2 below are two separate graphs that show a normal distribution (bell shaped curve) for values associated with a human characteristic or capability. Silhouettes of people are used to show representations of persons, or 'participants', on both graphs.

In the Figure D.1, most participants are contained within and toward the centre of the normal distribution curve. The largest number of participants are concentrated at the average measure of the variable, so that it represents 'randomly sampled' participants.

In Figure D.2, the number of participants increases with distance away from centre of the normal distribution curve – that is, the average measure of the variable – so that the largest number of participants are at the tails/edges of the normal distribution curve, representing an 'oversampling' of those participants.

To inform the Universal Design approach in user research and user testing, the involvement of users with the most diverse characteristics and capabilities should be prioritised, as represented at the tails of the distribution curves in the Figure D.2

Figure D.1 — Random sampling of users for a particular characteristic or capability



SOURCE: Body size and shape: User testing by CEUD[5]

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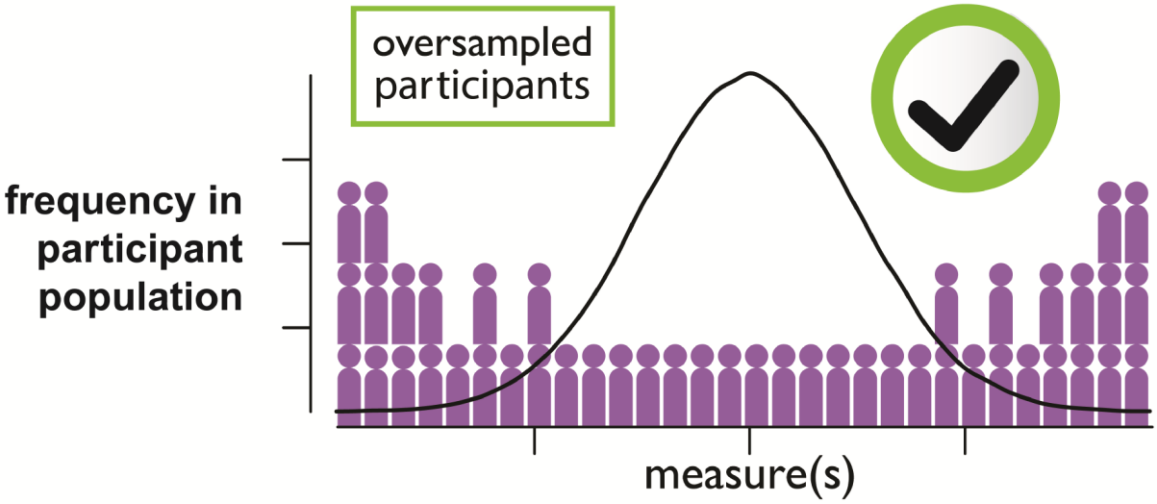
[5]Find at: http://universaldesign.ie/Products-Services/Guidelines-on-Body-Size/Testing.pdf.

Figure D.2 — Oversampling of non-average users for a particular characteristic or capability



SOURCE: Body size and shape: User testing by CEUD[5]

Alternatively, and where direct involvement is not possible or appropriate, virtual human modelling systems can offer methods and tools to represent how customers will interact with designs. This method allows for customer representation in design activities without involvement, which may be useful during a particular phase, or specific activity, of the design development process.

D.3 Resources about user characteristics and capabilities

People access, understand and use customer communications based on their characteristics and capabilities. An understanding of these (human factors) can help to inform a set of user needs that should be addressed during the design activities. Consideration of the more diverse sensory, cognitive and physical characteristics and capabilities should be prioritised when applying a Universal Design approach to the development of products and services.

A key guide on human characteristics and capabilities is ISO/IEC Guide 71:2014 (which is also published as CEN/CENELEC Guide 6:2014) 'Guide for addressing accessibility in standards.' ISO/IEC Guide 71 helps to inform decisions when establishing design requirements during standards development, but it can also be used by organisations when making decisions about product and service design requirements.

Clause 7 in the ISO/IEC Guide 71:2014 is based on the World Health Organisation (WHO) International Classification of Functioning (ICF). Annex B of ISO/IEC Guide 71:2014 provides an overview of the ICF, as well as a guide on how to use the ICF Browser for locating established terminology to describe human characteristics, functions and activities.

NOTE More specific human capability data to inform Universal Designs can be found in the ISO/TR 22411 technical report supplement to the ISO/IEC Guide 71

Clause 7 of ISO/IEC Guide 71:2014 provides subclauses with information on human characteristics and abilities, as listed below:

— Sensory abilities and characteristics

— Immunological system functions

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— Physical abilities and characteristics

— Cognitive abilities

It is structured so that under each characteristic and ability subclause, the following are provided:

— a formal description;

— consequences of related impairments and limitations; and,

— corresponding design considerations.

See an example of this structure and detail of the content for "7.5 Cognitive abilities" in the following extract from ISO/IEC Guide 71:

7.5 Cognitive abilities

7.5.1 Description

Cognition is the understanding, integrating and processing of information which includes abstraction, organization of ideas, reasoning, analysis and synthesis (ICF: b164). Cognition is complex and dependent on a number of mental functions (ICF: b1) including:

1) global mental functions such as intellect, consciousness, energy and motivation;

2) specific mental functions, such as

— perception (ability to recognize and interpret stimuli),

— attention (ability to sustain, shift, divide, and/or share attention),

— learning,

— memory (ability to register, store and/or retrieve information as needed),

— language (ability to produce and understand),

— reasoning,

— problem solving,

— decision making, and

— reading;

3) affective (emotional) functions.

7.5.2 Impairments and limitations

Impairment of global mental, specific mental and/or affective function (listed above) can occur and cause limitations for any person including those with average and high intellectual functioning.

Cognitive impairments can be related to limitations such as reduced capacity to carry out activities and/or difficulties with social participation.

Impairments and related limitations can affect:

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— ability to plan, initiate, carry out and terminate activities;

— ability to organize thoughts and activities;

— ability to sustain attention, concentrate on important stimuli/information and ignore distractions;

— ability to multi-task (i.e. to divide attention among several operations, tasks or individual task elements);

— ability to maintain skills (e.g. how to drive a car);

— speed in performing tasks/activities and in responding in a timely manner;

— ability to store and retrieve information (e.g. remember episodes in relation to time, recall facts);

— ability to perceive information (e.g. accurate and fluid word recognition);

— ability to learn;

— ability to make generalizations and associations;

— ability to solve problems including recognizing the problem, identifying, choosing and implementing solutions, and evaluating outcomes;

— ability to understand and/or express oneself (e.g. comprehension, communication, speech, fluency, writing, repetition, naming, signs, symbols);

— capacity for self-control and self-motivation (including increased irritability, rigidity, lower stress tolerance, confusion, disorientation, anxiety, loneliness and depression);

— preference for different learning or information understanding styles such as text-based vs. graphics-based styles.

Adverse environmental conditions, such as high levels of environmental stimuli (e.g. flashing lights, crowds of people), can overwhelm or confuse many persons and present the same type of effects listed above for many persons.

7.5.3 Design considerations

Design considerations that can facilitate accessibility include the following:

— information about time and place;

— schedules, structures, signals to indicate start and termination of activities;

— an overview that informs the user what to expect before providing any details;

— appropriate feedback/cues/reminders that hold the user's attention and give support through a process;

— feedback that is adjustable to the needs and preferences of users;

— environments and presentations that are stimulating but also avoid distractions;

— systems and procedures that adapt to individual situations, abilities and preferences;

— similar arrangement/layout and design of feedback and control logic on products of a similar type;

— similar design of feedback and control logic on products of a similar type;

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— error-tolerant operating sequences; — flexible time period for assimilation of information and response; — simple and straightforward sequences for opening of packaging and assembling, installing or operating a product; — information provided in multiple formats, e.g. text is read out, diagrams are provided in addition to text; — information and instructions that are easy to understand in the language of the user; — explicit information on expectations placed on the user; — systems that can be used (as far as possible) without an instruction manual; — procedures that facilitate learning (learning by doing is generally easier than memorizing instructions, repetitions); — multiple means of information presentation (e.g. text is read out, widely recognized symbols); — emergency evacuation routes designed so that they are intuitive and easy to follow which clearly designate any alternative routes that accommodate for persons with disabilities; — accommodation for/compatibility with relevant supports and assistive products and assistive technology. Design considerations that accommodate persons with varying cognitive impairments are also advantageous for most people because they reduce cognitive load (e.g. facilitate memory, decrease errors, and facilitate solving complex problems).

Other sources for design guidance that may help to address diverse characteristics, capabilities and preferences can be found in the following Universal Design toolkits:

- Universal Design for Customer Engagement – Energy[6],
- Customer Communications for the Public Service – A Universal Design Approach[7].

D.4 User feedback, expert knowledge and associated design methods

Organisations will already have some knowledge about their utility customers' characteristics, capabilities and preferences through market practices used by in-house expertise and feedback practices. Specialised information can also be obtained from external experts specialising in fields such as: accessibility, ergonomics; interaction design; Universal Design; and assistive technology.

6 http://universaldesign.ie/Products-Services/Customer-Engagement-in-Energy-Services/

7 http://universaldesign.ie/Products-Services/Customer-Communications-Toolkit-for-the-Public-Service-A-Universal-Design-Approach/

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Numerous tools and resources are available to help an organisation learn about specialised information and design methods and to help engage those with specialised knowledge. There are also tools available to analyse designs, such as the Cambridge Engineering Design Centre Inclusive Design Toolkit[8].

'Designing for Public Services: a practical guide', produced by NESTA and IDEO under Design for Europe, describes and provides real-life practical applications of design tools and methods that are aligned with a Universal Design approach.[9]

Universal Designs recognise the importance of interoperability with assistive technologies, or the ability for mainstream designs to have embedded features and elements that work seamlessly with assistive products. Assistive products can be very specific to individual users. An effective way to learn about these is from assistive technology users and experts.

Organisations may also consider engaging persons with expert knowledge of assistive technology. Assistive technology includes assistive products and the professional services needed to assess, provide and train users of assistive products. [26] ISO 9999 provides a classification of terminology for assistive products for persons with disability.

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8 http://www.cedc.tools/.

9 https://www.nesta.org.uk/toolkit/designing-for-public-services-a-practical-guide/

Annex E
(informative)

Tables for mapping Universal Design Principles and Guidelines to design guidance in Annexes F, G, and H

E.1 General

The Universal Design Principles help to inspire design thinking that prioritises people and their needs. Underpinning each Universal Design Principle there are Universal Design Guidelines, which can be used to inform the development of design solutions that optimise accessibility and usability of communications.

NOTE 1 The Universal Design Principles and Guidelines are listed in Annex C.

NOTE 2 Not all the Universal Design Principles and Guidelines apply to all designs.

NOTE 3 Universal Design Principles 2, 3, 4 and 5 are the most relevant to informing designs for communications.

Application of the Principles of Universal Design in communication design can be demonstrated, in part, by implementation of their associated Guidelines. Implementing the Guidelines can be demonstrated, in part, by achieving the relevant design guidance in Annexes F, G and H. That is, achievement of the design guidance can partly demonstrate implementation of a Guideline which can partly demonstrate application of the associated Universal Design Principle.

Tables E.1, E.2 and E.3 link the communication design guidance from Annexes F, G and H to the Universal Design Guidelines for Principles 2, 3, 4 and 5.

NOTE 4 The design guidance in Annexes F, G and H is also available in the easy-to-use Universal Design Toolkits. Universal Design Toolkits related to written, verbal and digital communication can be found in the Customer Engagement and Customer Communications Toolkits[10]. The Toolkits also contain a set of questions devised to help inform some communication design decisions where relevant design guidance might not be available or readily applied.

E.2 Purpose and structure of the tables

Below are tables associated with each of the most relevant Universal Design Principles (Universal Design Principles 2. 3. 4 and 5). Each Table lists a sample of the design guidance from Annexes F, G and H corresponding to each Guideline associated with the Principle.

The purpose of the tables are to provide an example of a tool that can be adapted and modified for use in design activities, evaluations and reviews.

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10 http://universaldesign.ie/Products-Services/

E.2.1 Content of Tables

There are 4 columns in each table:

Column 1 lists the Guidelines off a Universal Design Principle.

Column 2 lists the design guidance from Annex F 'Written communication' that corresponds to each Universal Design Guideline.

Column 3 lists the design guidance from Annex G 'Verbal communication' that corresponds to each Universal Design Guideline.

Column 4 lists the design guidance from Annex H 'Digital communication' that corresponds to each Universal Design Guideline.

NOTE 1 Annex E tables contain some empty cells. Empty cells in the tables occur where the design guidance in Annex F, G or H may not obviously align to a Universal Design Guideline. The tables are tools that can be adapted as needed, so text can be inserted into any cell, as considered appropriate.

NOTE 2 Some design guidance may be repeated across columns referring to written, verbal and digital communication.

E.2.2 Order of the Tables

Tables E.1-E.3 are ordered in accordance with the steps or sequence that a user would naturally follow to successfully access, understand and use a communication in relation to a product or service.

The sequence of actions a user goes though when interacting with a communication associated with a product or service are:

a) Access: a user uses their eyes, ears or sense of touch to approach and perceive content and to find the information see Table E.1 for UD Principles 4 and 2.

b) Understand: a user comprehends and decides on the accessed information see Table E2 for UD Principle 3.

c) Use: a user then reacts to or interacts with the information they have accessed and understood see Table E3 for UD Principle 5.

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Table E.1 — Access

The table below maps the Universal Design Principles 4 and 2 to their associated Universal Design Guidelines and on to the design guidance from Annexes F, G and H.

Universal Design Principles 4 and 2 and their associated guidelines help identify how to present the information in a way that enables the user to access it (approach and perceive) and personalise it to match their needs

Guidelines for: **Principle 4 (Perceptible Information) and** **Principle 2 (Flexibility in Use)**	**Annex F** **Written design guidance for achieving Universal Design Guideline**	**Annex G** **Verbal design guidance for achieving Universal Design Guideline**	**Annex H** **Digital design guidance for achieving Universal Design Guideline**
Principle 4: 4a. Use different modes (pictorial, verbal, tactile) for redundant presentation of essential information.	Do not convey information through images alone. (F.3.3)	• Be aware of the importance of your non-verbal communication. (G2)	-
Principle 4: 4b. Maximize "legibility" of essential information.	• Use at least 12 point font size and a clear, easy to read font (F.3.1) • Avoid using features such as underlining, italics and BLOCK CAPITALS to emphasise information. (F.3.1) • Ensure good contrast between text and background colour. (F.3.3) • There should be good contrast between the signboard and any mounting or background surface. (F.5.2)	• Speak clearly and slowly. (G2) • Speak directly to the person. (G2) • Face the person when speaking. (G3) • Do not put your hands in front of your mouth while speaking. (G3) • Do not sit or stand with the light behind you. (G3) • Keep background noise to a minimum. (G3) • Consider the distance you are standing from the person. (G3) • Keep your message simple. (G2)	• Avoid flash content that flashes more than three times per second. (H.3.8) • Avoid text within images. (H.3.9) • Create good colour contrast between text and background. (H.3.10) • Carefully consider colour combinations. (H.3.10) • Increase the size or weight of a light coloured font on a dark background. (H.3.10)

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Guidelines for: **Principle 4 (Perceptible Information) and** **Principle 2 (Flexibility in Use)**	**Annex F** **Written design guidance for achieving Universal Design Guideline**	**Annex G** **Verbal design guidance for achieving Universal Design Guideline**	**Annex H** **Digital design guidance for achieving Universal Design Guideline**
	• There should also be good contrast between the text and background colours of the sign itself so that it is easy to read. (F.5.2) • Use colours that are easy to differentiate where colour coding is used. (F.5.2) • The surface of the sign should not be reflective. (F.5.2)		• Ensure there is good contrast between text and background colour combinations. Choose a font colour that will provide good contrast. (H.5) • (H.4)
Principle 4: 4c. Differentiate elements in ways that can be described (i.e., make it easy to give instructions or directions).		• At the start of a conversation, introduce yourself to the customer. (G2) • Finish the conversation by saying 'thank you' and 'good-bye'. (G2)	
Principle 4: 4d. Provide compatibility with a variety of techniques or devices used by people with sensory limitations.	• Use good quality, uncoated or matt paper. (F.3.4) • Avoid shadowing by using heavier paper (over 90gsm). (F.3.4) • Bind documents so they can be opened out flat. (F.3.4) • Embossed lettering should be raised 1 to 1,5 mm above the surface of the sign. Avoid engraved lettering. (F.5.2)	• For verbal communication with persons who are Deaf or hard of hearing, use the translation/relay services of Irish Sign Language interpreters, the Irish Remote Interpreting Service, or the Irish Text Relay Service. (G2) • Be aware of non-verbal communication when on video calls. (G3)	• Ensure you comply with Directive (EU) 2016/2102 on the accessibility of the websites and mobile applications of public sector bodies. (H.2.1) • Web content and applications should be usable by the widest variety of browsers, devices and assistive technologies. (H.3.1) • Provide captions/subtitles for multimedia. (H.3.8)

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Guidelines for: **Principle 4 (Perceptible Information) and** **Principle 2 (Flexibility in Use)**	**Annex F** **Written design guidance for achieving Universal Design Guideline**	**Annex G** **Verbal design guidance for achieving Universal Design Guideline**	**Annex H** **Digital design guidance for achieving Universal Design Guideline**
	• Embossed letters should be between 16mm and 50 mm in height. (F.5.2) • Position tactile and Braille signs within reach. (F.5.2) • Position signs where people reading them will not cause an obstruction. (F.5.2)		• Where captions/subtitles are not provided, provide transcripts. (H.3.8) • Provide Alt text to convey the same information as your image or graph. (H.3.9) • Make sure that information presented with colour is also available without colour. (H.4) • All attachments should be accessible. (H.5) • Do not use the 'print document' function to save a document as PDF; instead, use the 'save as' or 'export to', functions to retain the accessibility properties. (H.6) • Turn on accessibility features. (H.6) • Check the accessibility of your document. (H.6) • Provide access to the full caption or transcript for a photo, audio or video. (H.9) • All videos should have closed captioning. (H.9)
Principle 2: 2a. Provide choice in methods of use.	• Use symbols in place of text or to supplement text where possible. (F 5.2)	• Find a way of communicating that works for the person. (G3) • Be aware of the importance of your non-verbal communication. (G2)	• Use Alt text to convey the same meaning as the images or media. (H.2.1)

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Guidelines for: Principle 4 (Perceptible Information) and Principle 2 (Flexibility in Use)	Annex F Written design guidance for achieving Universal Design Guideline	Annex G Verbal design guidance for achieving Universal Design Guideline	Annex H Digital design guidance for achieving Universal Design Guideline
			• Use good quality, relevant images that add to or support your text content. (H.2.1) • All website navigation should be fully accessible through the keyboard. (H.3.1) • Provide CAPTCHAs in more than one format (for example, visual and auditory versions). (H.3.6) • Members of the public should be able to access content on a range of devices, regardless of differences in presentation capabilities and methods of access. (H.4) • Assign access keys to the most commonly used functions. (H.4) • Choose a suitable email format. Best practice is to provide an option to choose between plain text and HTML. (H.5) • Provide Alternative (Alt) Text for images and graphics. (H.5) • Provide Alt text to convey the same content as images. (H.6) • Provide alternative ways for members of the public to make contact. (H.7)

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Guidelines for: **Principle 4 (Perceptible Information) and** **Principle 2 (Flexibility in Use)**	**Annex F** **Written design guidance for achieving Universal Design Guideline**	**Annex G** **Verbal design guidance for achieving Universal Design Guideline**	**Annex H** **Digital design guidance for achieving Universal Design Guideline**
			• Provide different ways for members of the public to get further information. (H.9)
Principle 2: 2c. Facilitate the user's accuracy and precision. (comment: explain accuracy vs precision)	• The form should have a clear title. It should also identify whom it is for and what its purpose is at the start of the form. (F4) • Provide clear instructions at the start. (F4) • Place 'official use only' sections near the end of the form. (F4) • Make sure people have enough space for providing answers. (F4) • Where possible, use boxes rather than lines for answers. (F4) • Make sure 'tick boxes' are clearly linked to the answer (F4) • Make sure that the borders of 'tick boxes' and answer lines are solid (F4) and at least one point wide. (F4) • Clearly identify mandatory fields that must be answered. (F4)	• Speak clearly and slowly. (G2) • Speak directly to the person. (G2) • Face the person when speaking. (G3) • Do not put your hands in front of your mouth while speaking. (G3) • Do not sit or stand with the light behind you. (G3) • Keep background noise to a minimum. (G3) • Consider the distance you are standing from the person. (G3) • Keep your message simple. (G2) • At the start of a conversation, introduce yourself. (G2) • Finish the conversation by saying 'thank you' and 'good-bye'. (G2) • Listen first and then respond to the person. (G2) • If you do not understand what a person has said, politely ask the person to repeat the information. (G2) • Make sure the person understands what you have said. (G2)	• Provide an easy to use on-site search. (H.3.7) • Provide helpful suggestions and alterative options in search results. (H.3.7) • Use your design to enhance information, not distract from it. (H.3.8) • Offer different download sizes. (H.3.8) • Do not cause pop-ups or other windows to appear. (H.4) • Do not use text speak. (H.8)

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Guidelines for: **Principle 4 (Perceptible Information) and** **Principle 2 (Flexibility in Use)**	**Annex F** **Written design guidance for achieving Universal Design Guideline**	**Annex G** **Verbal design guidance for achieving Universal Design Guideline**	**Annex H** **Digital design guidance for achieving Universal Design Guideline**
Principle 2: 2d. Provide adaptability to the user's pace.		• Do not finish the person's sentences. (G2) • Be patient. (G3) • Listen to the person. (G3)	• Provide enough time to allow the person to read, digest and respond to information. (H.3.1) • Ideally avoid time-out messages and time limitations. (H.3.5) • Provide controls to skip, pause or stop the presentation. (H.3.8)

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Table E.2 — Understand

The table below maps the Universal Design Principle 3 to its associated Universal Design Guidelines and on to the design guidance from Annexes F, G and H.

Universal Design Principle 3 and the associated guidelines help identify how to present the information in a way that enables the user to understand it (comprehend and decide)

Guidelines for Principle 3 (Simple and Intuitive Use)	**Annex F Written design guidance for achieving Universal Design Guideline**	**Annex G Verbal design guidance for achieving Universal Design Guideline**	**Annex H Digital design guidance for achieving Universal Design Guideline**
3a. Eliminate unnecessary complexity.	Keep sentences short; 15 to 20 words in each sentence. (F.2.1) If a local phone number contains more than five digits, divide the digits into groups of two or three and leave a space between them. (F.2.2) Use a clear, easy to read font. (F.3.1) Use left aligned text only, do not justify text. (F.3.1) Avoid splitting a word between two lines. (F.3.1) Limit each paragraph to one idea. (F.3.1) Use clear spacing: (F.3.2) Text should be a minimum of single spaced. White space should separate paragraphs. There should be a wide, clear space separating text columns.		Keep content clear and concise. (H.2.1) Use the full organisation name on each page. (H.2.1) Link descriptions should be short but descriptive. (H.2.3) Descriptions should be less than 156 characters long, including spaces. (H.2.5) Avoid the use of pop-ups. (H.3.1) Avoid unnecessary or repeated questions. (H.3.2) Make it clear which fields are mandatory. (H.3.2) Make numbering as simple as possible. (H.3.2) Make it clear where answers should be provided. (H.3.2) Make it easy to navigate through the form. (H.3.2)

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Guidelines for Principle 3 (Simple and Intuitive Use)	Annex F Written design guidance for achieving Universal Design Guideline	Annex G Verbal design guidance for achieving Universal Design Guideline	Annex H Digital design guidance for achieving Universal Design Guideline
	Images should not break text flow. (F.3.3) Avoid unnecessary or repeated questions. (F.4)		Make it easy for the person to select options. (H.3.2) Make the 'next' or 'submit' button obvious and distinctive. (H.3.2) Where possible, avoid the use of CAPTCHAs. (H.3.6) Divide pages into usable but limited sized sections. (H.4) Make sure that the overall size of page is suitable to the memory capacity of the device. (H.4) For apps, minimise application and data size. (H.4) Where possible avoid large or high-resolution images. (H.4) Send content in a format that is known to be supported by the majority of devices. (H.4) Use a clear and descriptive subject line on your email. (H.5) Use clear and descriptive file names for any attachments. (H.5) Give the documents a structure using heading styles. (H.6) Use pre-set bullet points, numbering and tables. (H.6) Provide a table of contents for long documents (over 10 pages). (H.6)

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Guidelines for Principle 3 (Simple and Intuitive Use)	Annex F Written design guidance for achieving Universal Design Guideline	Annex G Verbal design guidance for achieving Universal Design Guideline	Annex H Digital design guidance for achieving Universal Design Guideline
			For long documents allow the customer to download sections or chapters of the document. (H.6) Inform the caller upfront of the number of options to choose from and provide the options in order of priority. (H.7) If the caller does not make a choice, divert to a live agent. (H.7) Avoid repetition or unnecessary gathering of information. (H.7) State the times that SMS service is available. (H.8) Limit all texts to 160 characters. (H.8) Use an identifier at the start of all SMS. (H.8) Provide contact information in your bio line. (H.9) Capitalise the first letters of compound words for hashtags. (H.9)
3b. Be consistent with user expectations and intuition.	Be consistent with terms throughout your document. (F.2.1) Write dates in dd mm yyyy (date month year). (F.2.2) Write the numbers one to nine in words and use digits for the number 10 and upwards. (F.2.2)	Use a friendly smile and welcoming voice. (G3) At the start of a conversation, introduce yourself.(G2) Finish the conversation by saying ‘thank you’ and ‘good-bye’. (G2)	Use a house style. (H.2.1) Make sure your content is up-to-date. (H.2.2) Use correct spelling and punctuation. (H.2.2) Be consistent with terms and formats. (H.2.2)

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Guidelines for Principle 3 (Simple and Intuitive Use)	Annex F Written design guidance for achieving Universal Design Guideline	Annex G Verbal design guidance for achieving Universal Design Guideline	Annex H Digital design guidance for achieving Universal Design Guideline
	Write percentages with digits and the percentage sign (for example, 60 %). (F.2.2) Write addresses the way they would appear on an envelope. (F.2.2) Use a consistent layout for recurring features (such as page numbers and headings) (F.3.2) Use arrows to indicate direction (F.5.2).	Listen first and then respond to the person. (G2) If you offer assistance, wait until you receive permission. (G3)	Put a content quality process in place: (H.2.2) Assign a designated manager with responsibility for content. (H.2.2) Put in place a content review process before information is placed on your website. (H.2.2) Use key phrases and terms that your customer is likely to use. (H.2.4) Select a key phrase for your title (fewer than 70 characters). (H.2.4) Be consistent with your navigation layout. (H.3.1) Make webpages appear and operate in predictable ways, which are intuitive to use. (H.3.1) Fill out the document properties, providing the author and contact details for further information. (H.6) Create a tone that suits your organisation. (H.9)
3c. Accommodate a wide range of literacy and language skills.	Use plain English (F.2.1) Avoid technical words, unfamiliar abbreviations or acronyms; also avoid French and Latin expressions. (F.2.1)	Use plain English. (G2) Speak clearly and slowly. (G2) Speak directly to the person. (G2) Face the person when speaking. (G3) Do not put your hands in front of your mouth while speaking. (G3)	Avoid technical language, Latin and French expressions and unfamiliar acronyms and abbreviations. (H.2.1) Where applicable provide important information in other languages. (H.2.1) Avoid unfamiliar acronyms / spell out acronyms where feasible. (H.9)

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Guidelines for Principle 3 (Simple and Intuitive Use)	Annex F Written design guidance for achieving Universal Design Guideline	Annex G Verbal design guidance for achieving Universal Design Guideline	Annex H Digital design guidance for achieving Universal Design Guideline
		Do not sit or stand with the light behind you. (G3) Keep background noise to a minimum. (G3)	
3d. Arrange information consistent with its importance.	Use bold or bigger size font to make important points stand out. (F.3.1) Use clear and accessible formatting to make information easy to find. For example, use headings, subheadings and a table of contents. (F.3.2) Make good use of white space so your message stands out. (F.3.2) Use images, visuals and graphs that are relevant to the text. (F.3.3) Group similar questions under useful headings. (F.4) Use informative headings and clear numbering (F.4)		Present content so that readers can absorb and understand the content quickly. Help readers to scan text by: (H.2.1) Presenting key conclusions at the start. (H.2.1) Presenting information in order of importance. (H.2.1) Presenting detailed or background information. (H.2.1) Providing links to related or background information. (H.2.1) The navigation bar should be easy to identify and distinguish from the rest of the content. (H.3.1) Give the form a clear title. (H.3.2) Provide clear instructions at the start of the form. (H.3.2) Provide questions in a logical order. (H.3.2) Group similar questions together under a useful heading. (H.3.2)

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Guidelines for Principle 3 (Simple and Intuitive Use)	Annex F Written design guidance for achieving Universal Design Guideline	Annex G Verbal design guidance for achieving Universal Design Guideline	Annex H Digital design guidance for achieving Universal Design Guideline
			Only provide frequently used options. (H.7)
3e. Provide effective prompting and feedback during and after task completion.		At the start of a conversation, introduce yourself.(G2) Finish the conversation by saying 'thank you' and 'good-bye'. (G2) Where appropriate ask the person "How can I help?" (G2)	Navigation bars should provide feedback to identify where the person is on the website. (H.3.1) Confirm when the transaction has been completed successfully. (H.7) Try to place any hashtags or @mentions at the end of the tweet. (H.9)

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Table E.3 — Use

The table below maps the Universal Design Principle 5 to its associated Universal Design Guidelines and on to the design guidance from Annexes F, G and H.

Universal Design Principle 5 and the associated guidelines help identify how to present the information in a way that enables the user to use it (react to/interact with).

Guidelines for Principle 5 (Tolerance for Error)	**Annex F Written design guidance for achieving Universal Design Guideline**	**Annex G Verbal design guidance for achieving Universal Design Guideline**	**Annex H Digital design guidance for achieving Universal Design Guideline**
5a. Arrange elements to minimize hazards and errors: most used elements, most accessible; hazardous elements eliminated, isolated, or shielded.			
5b. Provide warnings of hazards and errors.			• Make the customer aware that there is an error in an obvious and easy to understand way. (H.3.3) • Indicate the number and location of errors on the form. (H.3.3) • Allow the customer to resubmit and revalidate the form. (H.3.3) • Provide informative error messages and a means of navigating away from an error message back to useful information. (H.4)
5c. Provide fail safe features.			• Link descriptions should describe the target that they link to. (H.2.3)

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Guidelines for Principle 5 (Tolerance for Error)	Annex F Written design guidance for achieving Universal Design Guideline	Annex G Verbal design guidance for achieving Universal Design Guideline	Annex H Digital design guidance for achieving Universal Design Guideline
			• Link descriptions should avoid 'click here' type terminology. (H.2.3) • Descriptions should be factual and accurately reflect the content. (H.2.5) • Guidance / reminders should be provided before the login area. (H.3.4) • Inform the person if a document is attached. (H.5) • Inform the person of when they might expect a response. (H.5) • Music or a signal should be given informing the caller that they are on hold. (H.7) • Where possible give an indication of the waiting time. (H.7) • Where applicable state whether a reply will cost the customer money (and how much). (H.8) • If appropriate, include whether a reply is expected or not. (H.8) • If the SMS from a person is unclear, seek clarification. (H.8) • When the SMS conversation is complete, confirm this. (H.8) • Do not put sensitive information in a SMS. (H.8) • Inform the person of when they might expect a response. (H.8)

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Guidelines for Principle 5 (Tolerance for Error)	Annex F Written design guidance for achieving Universal Design Guideline	Annex G Verbal design guidance for achieving Universal Design Guideline	Annex H Digital design guidance for achieving Universal Design Guideline
			• Put prefixes before tweets that have photos, videos or audio. (H.9)
5d. Discourage unconscious action in tasks that require vigilance.			

Annex F
(informative)

Written communication

F.1 Introduction

This Annex presents design guidance for written communication. The design guidance is based on the published Universal Design Toolkit for Customer Engagement: Written Communication[11].

The toolkit provides practical guidance and checklists for the Universal Design of written communication. It contains explanations of the guidance points presented, as well as good and bad examples.

F.2 Written text guidance

F.2.1 Written text

- Use plain English.
- Keep sentences short; 15 to 20 words in each sentence.
- Avoid technical words, unfamiliar abbreviations or acronyms; also avoid French and Latin expressions.
- Be consistent with terms throughout your document.
- Proofread your document to ensure correct spelling and punctuation.

F.2.2 Dates, numbers and percentages

- Write dates in dd mm yyyy (date month year).
- Write the numbers one to nine in words and use digits for the number 10 and upwards.
- Write percentages with digits and the percentage sign (for example, 60 %).
- Write addresses the way they would appear on an envelope.
- If a local phone number contains more than five digits, divide the digits into groups of two or three and leave a space between them.

F.3 Document design

F.3.1 Font and paragraphs

- Use at least 12-point font size and a clear, easy to read font.

[11] http://universaldesign.ie/web-content-/written-communication-toolkits-energy.pdf

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- Use bold or bigger size font to make important points stand out.
- Avoid using features such as underlining, italics and BLOCK CAPITALS to emphasise information.
- Use left aligned text only, do not justify text.
- Avoid splitting a word between two lines.
- Limit each paragraph to one idea.

F.3.2 Formatting and layout

- Use clear and accessible formatting to make information easy to find. For example, use headings, sub-headings and a table of contents.
- Use a consistent layout for recurring features (such as page numbers and headings).
- Make good use of white space so your message stands out.
- Use clear spacing:
  - Text should be a minimum of single spaced.
  - White space should separate paragraphs.
  - There should be a wide, clear space separating text columns.

F.3.3 Colours, images, graphs and visuals

- Use images, visuals and graphs that are relevant to the text.
- Images should not break text flow.
- Do not convey information through images alone.
- Ensure good contrast between text and background colour.

F.3.4 Paper and binding

- Use good quality, uncoated or matt paper.
- Avoid shadowing by using heavier paper (over 90 gsm).
- Bind documents so they can be opened out flat.

F.4 Form design

- The form should have a clear title. It should also identify whom it is for and what its purpose is at the start of the form.
- Provide clear instructions at the start.
- Place 'official use only' sections near the end of the form.

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- Group similar questions under useful headings.
- Use informative headings and clear numbering.
- Avoid unnecessary or repeated questions.
- Make sure people have enough space for providing answers.
- Where possible, use boxes rather than lines for answers.
- Make sure 'tick boxes' are clearly linked to the answer and that the borders and answer lines are solid and at least one point wide.
- Clearly identify mandatory fields that must be answered.

F.5 Signage guidance

F.5.1 Content

- Use an easy to read font.
- Wording on signs should be as simple as possible.
- The use of unfamiliar abbreviations should be avoided.
- Use Arabic numbers (1, 2, 3) not Roman numerals (i, ii, iii).
- Capitalise the first letter of names and messages with all other letters lower case.
- List names and messages alphabetically or group them logically, for example, by floor level.
- Align wording to the left.
- Wording and font should be used consistently in signs throughout a building.
- Select a letter size to suit viewing distance

F.5.2 Design

- Use symbols in place of text or to supplement text where possible.
- Use arrows to indicate direction.
- There should be good contrast between the signboard and any mounting or background surface. There should also be good contrast between the text and background colours of the sign itself so that it is easy to read.
- Use colours that are easy to differentiate where colour coding is used.
- The surface of the sign should not be reflective.
- Embossed lettering should be raised 1 mm to1,5 mm above the surface of the sign. Avoid engraved lettering.

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- Embossed letters should be between 16 mm and 50 mm in height.
- Position tactile and Braille signs within reach.
- Position signs where people reading them will not cause an obstruction.

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Annex G
(informative)

Verbal communication

G.1 Introduction

This Annex presents design guidance for verbal and non-verbal communication. The design guidance is based on the published Universal Design Toolkit for Customer Engagement: Verbal Communication.[12]

The toolkit provides practical guidance and checklists for the Universal Design of verbal and non-verbal communication. It contains explanations of the guidance points presented, as well as good and bad examples.

G.2 Verbal communication

- Use plain English.
- Speak clearly and slowly.
- Keep your message simple.
- At the start of a conversation, introduce yourself.
- Where appropriate ask the person "How can I help?"
- Listen first and then respond to the person.
- Do not finish the person's sentences.
- Speak directly to the person.
- If you do not understand what a person has said, politely ask the person to repeat the information.
- Make sure the person understands what you have said.
- Finish the conversation by saying 'thank you' and 'good-bye'.
- For verbal communication with persons who are Deaf or hard of hearing and cannot use a telephone, use the translation/relay services of Irish Sign Language interpreters, the Irish Remote Interpreting Service, or the Irish Text Relay Service.
- Be aware of the importance of your non-verbal communication.

[12] http://universaldesign.ie/web-content-/verbal-communication-energy.pdf

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G.3 Non-verbal communication

- Use a friendly smile and welcoming voice.
- Be patient.
- Listen to the person.
- Face the person when speaking. Do not put your hands in front of your mouth while speaking.
- Do not sit or stand with the light behind you.
- Keep background noise to a minimum.
- Find a way of communicating that works for the person.
- Consider the distance you are standing from the person.
- If you offer assistance, wait until you receive permission before providing it.
- Be aware of non-verbal communication when on video calls.

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Annex H
(informative)

Digital communication

H.1 Introduction

This Annex presents design guidance for digital communication. The design guidance is based on the published Universal Design Toolkit for Customer Engagement: Electronic and Web-Based Communication.[13]

The toolkit provides practical guidance and checklists for the Universal Design of digital communication. It contains explanations of the guidance points presented, as well as good and bad examples.

H.2 Writing good web content communication

H.2.1 Writing for the web

The European Directive (EU) 2016/2102[14] sets out the obligations of public sector bodies on the accessibility of the websites and mobile applications.

- Avoid technical language, Latin and French expressions and unfamiliar acronyms and abbreviations.
- Where applicable provide important information in other languages.
- Present content so that readers can absorb and understand the content quickly. Help readers to scan text by:
    - Presenting key conclusions at the start.
    - Presenting information in order of importance.
    - Presenting detailed or background information.
    - Providing links to related or background information.
- Keep content clear and concise.
- Use the full organisation name on each page.
- Use a house style.
- Use Alt text to convey the same meaning as the images or media.

[13] http://universaldesign.ie/web-content-/electronic-and-web-base-communication-energy.pdf

[14] Directive (EU) 2016/2102 of the European Parliament and of the Council of 26 October 2016 on the accessibility of the websites and mobile applications of public sector bodies (https://eur-lex.europa.eu/eli/dir/2016/2102/oj)

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- Use good quality, relevant images that add to or support your text content.

H.2.2 Content quality

- Make sure your content is up-to-date.
- Use correct spelling and punctuation.
- Be consistent with terms and formats.
- Put a content quality process in place:
  - Assign a designated manager with responsibility for content.
  - Put in place a content review process before information is placed on your website.

H.2.3 Links

- Link descriptions should be short but descriptive.
- Link descriptions should describe the target that they link to.
- Link descriptions should avoid 'click here' type terminology.

H.2.4 Titles

- Use key phrases and terms that your customer is likely to use.
- Select a key phrase for your title (fewer than 70 characters).

H.2.5 Descriptions

- Descriptions should be factual and accurately reflect the content.
- Descriptions should be less than 156 characters long, including spaces.

H.3 Designing and developing usable websites

H.3.1 Website navigation

- All website navigation should be fully accessible through the keyboard.
- Be consistent with your navigation layout.
- The navigation bar should be easy to identify and distinguish from the rest of the content.
- Navigation bars should provide feedback to identify where the person is on the website.
- Provide enough time to allow the person to read, digest and respond to information.
- Make webpages appear and operate in predictable ways, which are intuitive to use.
- Web content and applications should be usable by the widest variety of browsers, devices and assistive technologies.

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- Avoid the use of pop-ups.

H.3.2 Online forms

- Give the form a clear title.
- Provide clear instructions at the start of the form.
- Provide questions in a logical order.
- Group similar questions together under a useful heading.
- Avoid unnecessary or repeated questions.
- Make it clear which fields are mandatory.
- Make numbering as simple as possible.
- Make it clear where answers should be provided.
- Make it easy to navigate through the form.
- Make it easy for the person to select options.
- Make the 'next' or 'submit' button obvious and distinctive.

H.3.3 Error messages

- Make the customer aware that there is an error in an obvious and easy to understand way.
- Indicate the number and location of errors on the form.
- Allow the customer to resubmit and revalidate the form.

H.3.4 Login details

- Guidance / reminders should be provided before the login area.

H.3.5 Time-out messages

- Ideally avoid time-out messages and time limitations.

H.3.6 CAPTCHAs[15]

- Where possible, avoid the use of CAPTCHAs.
- Provide CAPTCHAs in more than one format (for example, visual and auditory versions).

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[15] Completely automated public Turing test to tell computers and humans apart (CAPTCHA)

H.3.7 Search

- Provide an easy to use on-site search.
- Provide helpful suggestions and alterative options in search results.

H.3.8 Multimedia, images and colour

- Use your design to enhance information, not distract from it.
- Provide controls to skip, pause or stop the presentation.
- Provide audio and video files in a range of download sizes where they are available for download only.
- Avoid flash content that flashes more than three times per second.
- Provide captions/subtitles for multimedia.
- Where captions/subtitles are not provided, provide transcripts.
- Provide Alt text to convey the same information as your image or graph.
- Avoid text within images.
- Create good colour contrast between text and background.
- Carefully consider colour combinations.
- Increase the size or weight of a light coloured font on a dark background.

H.4 Mobile web content and apps

- Members of the public should be able to access content on a range of devices, regardless of differences in presentation capabilities and methods of access.
- Assign access keys to the most commonly used functions.
- Do not cause pop-ups or other windows to appear.
- Divide pages into usable but limited sized sections.
- Make sure that the overall size of page is suitable to the memory capacity of the device. For apps, minimise application and data size.
- Where possible avoid large or high-resolution images.
- Make sure that information presented with colour is also available without colour.
- Ensure there is good contrast between text and background colour combinations.
- Send content in a format that is known to be supported by the majority of devices.

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- Provide informative error messages and a means of navigating away from an error message back to useful information.

H.5 Emails and newsletters

- Choose a font colour that will provide good contrast.
- Choose a suitable email format. Best practice is to provide an option to choose between plain text and HTML.
- Provide Alternative (Alt) Text for images and graphics.
- All attachments should be accessible.
- Use a clear and descriptive subject line on your email.
- Use clear and descriptive file names for any attachments.
- Inform the person if a document is attached.
- Inform the person of when they might expect a response.

H.6 Documents and brochures

- Give the documents a structure using heading styles.
- Use pre-set bullet points, numbering and tables.
- Provide a table of contents.
- Provide Alt text to convey the same content as images.
- Fill out the document properties, providing the author and contact details for further information.
- Do not use the 'print document' function to save a document as PDF; instead, use the 'save as' or 'export to', functions to retain the accessibility properties.
- Turn on accessibility features.
- Check the accessibility of your document.
- For long documents allow the customer to download sections or chapters of the document.

H.7 Telephone based systems

- Inform the caller upfront of the number of options to choose from and provide the options in order of priority.
- Only provide frequently used options.
- If the caller does not make a choice, divert to a live agent.
- Music or a signal should be given informing the caller that they are on hold.

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- Avoid repetition or unnecessary gathering of information.
- Provide alternative ways for members of the public to make contact.
- Where possible give an indication of the waiting time.
- Confirm when the transaction has been completed successfully.

H.8 SMS based communication

- State the times that SMS service is available.
- Do not use text speak.
- Limit all texts to 160 characters.
- Use an identifier at the start of all SMS.
- Where applicable state whether a reply will cost money (and how much).
- If appropriate, include whether a reply is expected or not.
- If the SMS from a person is unclear, seek clarification.
- When the SMS conversation is complete, confirm this.
- Do not put sensitive information in a SMS.
- Inform the person of when they might expect a response.

H.9 Social media guidance

- Create a tone that suits your organisation.
- Provide contact information in your bio line.
- Put prefixes before tweets that have photos, videos or audio.
- Provide access to the full caption or transcript for a photo, audio or video.
- Try to place any hashtags or @mentions at the end of the tweet.
- Avoid unfamiliar acronyms / spell out acronyms where feasible.
- Capitalise the first letters of compound words for hashtags.
- Provide different ways for members of the public to get further information.
- All videos should have closed captioning.

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GIVEN under the seal of the National Standards Authority of Ireland

This 13th day of September 2019

L. S.

Geraldine Larkin

Chief Executive

Patrick Bracken

Secretary to the Board of the NSAI

The Minister for Business, Enterprise and Innovation hereby gives his consent under Section 16 of the National Standards Authority of Ireland Act, 1996 to the above declaration.

Conor Verdon

13/09/2019

An Officer of the Department of Business, Enterprise and Innovation duly authorised under Section 15 (4) of the Ministers and Secretaries Act, 1924, to authenticate instruments (under the National Standards Authority of Ireland Act, 1996) made by the Minister for Business, Enterprise and Innovation.

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