

Important Notice

This document is a copyrighted IEEE Standard. IEEE hereby grants permission to the 5Rights Foundation to post it as a review copy for interested parties. No further reproduction or distribution of this document is permitted without the express written permission of IEEE Standards Association. Prior to any use of this standard, in part or in whole, by another standards development organization, permission must first be obtained from the IEEE Standards Association (stds-ipr@ieee.org).

IEEE Standards Association
445 Hoes Lane
Piscataway, NJ 08854, USA

IEEE Standard for an Age Appropriate Digital Services Framework Based on the 5Rights Principles for Children

IEEE Consumer Technology Society

Developed by the
Standards Committee

IEEE Std 2089™-2021

IEEE Standard for an Age Appropriate Digital Services Framework Based on the 5Rights Principles for Children

Developed by the

Standards Committee
of the
IEEE Consumer Technology Society

Approved 9 November 2021

IEEE SA Standards Board

Abstract: A set of processes by which organizations seek to make their services age appropriate is established in this standard. The growing desire of organizations to design digital products and services with children in mind and reflects their existing rights under the United Nations Convention on the Rights of the Child (the Convention) is supported by this standard. While different jurisdictions may have different laws and regulations in place, the best practice for designing digital services that impact directly or indirectly on children is offered by this standard. It sets out processes through the life cycle of development, delivery and distribution, that will help organizations ask the right relevant questions of their services, identify risks and opportunities by which to make their services age appropriate and take steps to mitigate risk and embed beneficial systems that support increased age appropriate engagement. One in three users online is under 18, which means that this standard has wide application.

Keywords: age appropriate, age appropriate design, age appropriate services, child, children, children's data governance, children's rights, data protection, digital rights, IEEE 2089™, online protection, online safety, published terms, terms and conditions, terms of service, youth

The Institute of Electrical and Electronics Engineers, Inc.
3 Park Avenue, New York, NY 10016-5997, USA

Copyright © 2021 by The Institute of Electrical and Electronics Engineers, Inc.
All rights reserved. Published 30 November 2021. Printed in the United States of America.

IEEE is a registered trademark in the U.S. Patent & Trademark Office, owned by The Institute of Electrical and Electronics Engineers, Incorporated.

PDF: ISBN 978-1-5044-8085-7 STD25041
Print: ISBN 978-1-5044-8086-4 STDPD25041

*IEEE prohibits discrimination, harassment, and bullying.
For more information, visit <https://www.ieee.org/about/corporate/governance/p9-26.html>.
No part of this publication may be reproduced in any form, in an electronic retrieval system or otherwise, without the prior written permission of the publisher.*

Important Notices and Disclaimers Concerning IEEE Standards Documents

IEEE Standards documents are made available for use subject to important notices and legal disclaimers. These notices and disclaimers, or a reference to this page (<https://standards.ieee.org/ipr/disclaimers.html>), appear in all standards and may be found under the heading “Important Notices and Disclaimers Concerning IEEE Standards Documents.”

Notice and Disclaimer of Liability Concerning the Use of IEEE Standards Documents

IEEE Standards documents are developed within the IEEE Societies and the Standards Coordinating Committees of the IEEE Standards Association (IEEE SA) Standards Board. IEEE develops its standards through an accredited consensus development process, which brings together volunteers representing varied viewpoints and interests to achieve the final product. IEEE Standards are documents developed by volunteers with scientific, academic, and industry-based expertise in technical working groups. Volunteers are not necessarily members of IEEE or IEEE SA, and participate without compensation from IEEE. While IEEE administers the process and establishes rules to promote fairness in the consensus development process, IEEE does not independently evaluate, test, or verify the accuracy of any of the information or the soundness of any judgments contained in its standards.

IEEE makes no warranties or representations concerning its standards, and expressly disclaims all warranties, express or implied, concerning this standard, including but not limited to the warranties of merchantability, fitness for a particular purpose and non-infringement. In addition, IEEE does not warrant or represent that the use of the material contained in its standards is free from patent infringement. IEEE standards documents are supplied “AS IS” and “WITH ALL FAULTS.”

Use of an IEEE standard is wholly voluntary. The existence of an IEEE Standard does not imply that there are no other ways to produce, test, measure, purchase, market, or provide other goods and services related to the scope of the IEEE standard. Furthermore, the viewpoint expressed at the time a standard is approved and issued is subject to change brought about through developments in the state of the art and comments received from users of the standard.

In publishing and making its standards available, IEEE is not suggesting or rendering professional or other services for, or on behalf of, any person or entity, nor is IEEE undertaking to perform any duty owed by any other person or entity to another. Any person utilizing any IEEE Standards document, should rely upon his or her own independent judgment in the exercise of reasonable care in any given circumstances or, as appropriate, seek the advice of a competent professional in determining the appropriateness of a given IEEE standard.

IN NO EVENT SHALL IEEE BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO: THE NEED TO PROCURE SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE PUBLICATION, USE OF, OR RELIANCE UPON ANY STANDARD, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE AND REGARDLESS OF WHETHER SUCH DAMAGE WAS FORESEEABLE.

Translations

The IEEE consensus development process involves the review of documents in English only. In the event that an IEEE standard is translated, only the English version published by IEEE is the approved IEEE standard.

Official statements

A statement, written or oral, that is not processed in accordance with the IEEE SA Standards Board Operations Manual shall not be considered or inferred to be the official position of IEEE or any of its committees and shall not be considered to be, nor be relied upon as, a formal position of IEEE. At lectures, symposia, seminars, or educational courses, an individual presenting information on IEEE standards shall make it clear that the presenter's views should be considered the personal views of that individual rather than the formal position of IEEE, IEEE SA, the Standards Committee, or the Working Group.

Comments on standards

Comments for revision of IEEE Standards documents are welcome from any interested party, regardless of membership affiliation with IEEE or IEEE SA. However, **IEEE does not provide interpretations, consulting information, or advice pertaining to IEEE Standards documents.**

Suggestions for changes in documents should be in the form of a proposed change of text, together with appropriate supporting comments. Since IEEE standards represent a consensus of concerned interests, it is important that any responses to comments and questions also receive the concurrence of a balance of interests. For this reason, IEEE and the members of its Societies and Standards Coordinating Committees are not able to provide an instant response to comments, or questions except in those cases where the matter has previously been addressed. For the same reason, IEEE does not respond to interpretation requests. Any person who would like to participate in evaluating comments or in revisions to an IEEE standard is welcome to join the relevant IEEE working group. You can indicate interest in a working group using the Interests tab in the Manage Profile and Interests area of the [IEEE SA myProject system](#). An IEEE Account is needed to access the application.

Comments on standards should be submitted using the [Contact Us](#) form.

Laws and regulations

Users of IEEE Standards documents should consult all applicable laws and regulations. Compliance with the provisions of any IEEE Standards document does not constitute compliance to any applicable regulatory requirements. Implementers of the standard are responsible for observing or referring to the applicable regulatory requirements. IEEE does not, by the publication of its standards, intend to urge action that is not in compliance with applicable laws, and these documents may not be construed as doing so.

Data privacy

Users of IEEE Standards documents should evaluate the standards for considerations of data privacy and data ownership in the context of assessing and using the standards in compliance with applicable laws and regulations.

Copyrights

IEEE draft and approved standards are copyrighted by IEEE under US and international copyright laws. They are made available by IEEE and are adopted for a wide variety of both public and private uses. These include both use, by reference, in laws and regulations, and use in private self-regulation, standardization, and the promotion of engineering practices and methods. By making these documents available for use and adoption by public authorities and private users, IEEE does not waive any rights in copyright to the documents.

Photocopies

Subject to payment of the appropriate licensing fees, IEEE will grant users a limited, non-exclusive license to photocopy portions of any individual standard for company or organizational internal use or individual, non-commercial use only. To arrange for payment of licensing fees, please contact Copyright Clearance Center, Customer Service, 222 Rosewood Drive, Danvers, MA 01923 USA; +1 978 750 8400; <https://www.copyright.com/>. Permission to photocopy portions of any individual standard for educational classroom use can also be obtained through the Copyright Clearance Center.

Updating of IEEE Standards documents

Users of IEEE Standards documents should be aware that these documents may be superseded at any time by the issuance of new editions or may be amended from time to time through the issuance of amendments, corrigenda, or errata. An official IEEE document at any point in time consists of the current edition of the document together with any amendments, corrigenda, or errata then in effect.

Every IEEE standard is subjected to review at least every 10 years. When a document is more than 10 years old and has not undergone a revision process, it is reasonable to conclude that its contents, although still of some value, do not wholly reflect the present state of the art. Users are cautioned to check to determine that they have the latest edition of any IEEE standard.

In order to determine whether a given document is the current edition and whether it has been amended through the issuance of amendments, corrigenda, or errata, visit [IEEE Xplore](#) or [contact IEEE](#). For more information about the IEEE SA or IEEE's standards development process, visit the IEEE SA Website.

Errata

Errata, if any, for all IEEE standards can be accessed on the [IEEE SA Website](#). Search for standard number and year of approval to access the web page of the published standard. Errata links are located under the Additional Resources Details section. Errata are also available in [IEEE Xplore](#). Users are encouraged to periodically check for errata.

Patents

IEEE Standards are developed in compliance with the [IEEE SA Patent Policy](#).

Attention is called to the possibility that implementation of this standard may require use of subject matter covered by patent rights. By publication of this standard, no position is taken by the IEEE with respect to the existence or validity of any patent rights in connection therewith. If a patent holder or patent applicant has filed a statement of assurance via an Accepted Letter of Assurance, then the statement is listed on the IEEE SA Website at <https://standards.ieee.org/about/sasb/patcom/patents.html>. Letters of Assurance may indicate whether the Submitter is willing or unwilling to grant licenses under patent rights without compensation or under reasonable rates, with reasonable terms and conditions that are demonstrably free of any unfair discrimination to applicants desiring to obtain such licenses.

Essential Patent Claims may exist for which a Letter of Assurance has not been received. The IEEE is not responsible for identifying Essential Patent Claims for which a license may be required, for conducting inquiries into the legal validity or scope of Patents Claims, or determining whether any licensing terms or conditions provided in connection with submission of a Letter of Assurance, if any, or in any licensing agreements are reasonable or non-discriminatory. Users of this standard are expressly advised that determination of the validity of any patent rights, and the risk of infringement of such rights, is entirely their own responsibility. Further information may be obtained from the IEEE Standards Association.

IMPORTANT NOTICE

IEEE Standards do not guarantee or ensure safety, security, health, or environmental protection, or ensure against interference with or from other devices or networks. IEEE Standards development activities consider research and information presented to the standards development group in developing any safety recommendations. Other information about safety practices, changes in technology or technology implementation, or impact by peripheral systems also may be pertinent to safety considerations during implementation of the standard. Implementers and users of IEEE Standards documents are responsible for determining and complying with all appropriate safety, security, environmental, health, and interference protection practices and all applicable laws and regulations.

Participants

At the time this draft standard was completed, the Age Appropriate Digital Services Framework Working Group had the following membership:

Katina Michael, *Chair*
Beeban Kidron, *Vice Chair*
Gisele Waters, *Secretary*
Ali Hessami, *Technical Editor*

Roba Abbas	Victoria Jaynes	Stephanie Nguyen
Teki Akuetteh	Natasha Jetha	Towela Nyirenda-Jere
John Carr	Muhammad Khurram	Martin Schmalzreid
Gökçe Çobansoy Hızal	Khan	Genevieve Smith-Nunes
Lorna Cropper	Ansgar Koene	Jeremy Weissman
Rys Farthing	Ephraim Luwemba	John Wyllie
Miles Hastie	Brooke Nelson	Yu Yuan
Rachel Higham		Jun Zhao

The following members of the individual Standards Association balloting group voted on this standard. Balloters may have voted for approval, disapproval, or abstention.

Ali Hessami	Ansgar Koene	Rajesh Murthy
Werner Hoelzl	Ting Li	Pablo Rivas Perea
Piotr Karocki	Katina Michael	Gisele Waters
Beeban Kidron		Yu Yuan

When the IEEE SA Standards Board approved this standard on 9 November 2021, it had the following membership:

Gary Hoffman, *Chair*
Jon Walter Rosdahl, *Vice Chair*
John D. Kulick, *Past Chair*
Konstantinos Karachalios, *Secretary*

Edward A. Addy	Howard Li	Mehmet Ulema
Doug Edwards	Daozhuang Lin	Lei Wang
Ramy Ahmed Fathy	Kevin Lu	F. Keith Waters
J. Travis Griffith	Daleep C. Mohla	Karl Weber
Thomas Koshy	Chenhui Niu	Sha Wei
Joseph L. Koepfinger*	Damir Novosel	Howard Wolfman
David J. Law	Annette Reilly	Daidi Zhong
	Dorothy Stanley	

*Member Emeritus

Introduction

This introduction is not part of IEEE Std 2089-2021, IEEE Standard for an Age Appropriate Digital Services Framework Based on the 5Rights Principles for Children.

This standard for an age appropriate digital services framework is based on the 5Rights Foundation principles in order to help build the digital world young people deserve. Organizations are becoming increasingly aware of the need to treat children as a separate user group to support their engagement in the digital world. Children and their parents and responsible adults have established rights, and specific vulnerabilities associated with their age which require special consideration. Organizations make decisions and take actions that affect not just their financial bottom line, but also the rights and needs of children and young people. This Standard offers organizations the opportunity to create services that uphold children and young people's rights and support their evolving capacity. For the purposes of this standard, a child is any person under the age of 18.

Contents

1. Overview.....	11
1.1 Scope.....	11
1.2 Purpose.....	11
1.3 Use of the standard	12
1.4 Process overview.....	12
1.5 Word usage.....	12
2. Normative references	13
3. Definitions, acronyms, and abbreviations	14
3.1 Definitions.....	14
3.2 Acronyms and abbreviations	20
4. Conformance.....	20
5. Key concepts and application.....	21
5.1 General application.....	21
5.2 Specified context of use	21
5.3 The organization.....	22
5.4 Stakeholders.....	22
5.5 Stages and processes.....	23
6. Key roles in Age Appropriate Engineering project teams.....	24
6.1 General	24
6.2 Role descriptions.....	24
6.3 Team competency.....	26
7. Preparation phase	27
7.1 Purpose.....	27
7.2 Outcomes.....	27
7.3 Activities and tasks	27
7.4 Inputs.....	28
7.5 Outputs	29
8. Recognizing child users and meeting their needs and diversity.....	29
8.1 Purpose.....	29
8.2 Outcomes.....	29
8.3 Activities and tasks	29
8.4 Inputs.....	30
8.5 Outputs	30
9. Upholding children’s rights	31
9.1 Purpose.....	31
9.2 Outcomes.....	31
9.3 Activities and tasks	31
9.4 Inputs.....	32
9.5 Outputs	32
10. Child-centered approach to data use.....	32
10.1 Purpose.....	32
10.2 Outcomes.....	32
10.3 Activities and tasks	32
10.4 Inputs.....	33
10.5 Outputs	34

11. Moderation and redress	34
11.1 Purpose	34
11.2 Outcomes.....	34
11.3 Activities and tasks	34
11.4 Inputs	35
11.5 Outputs	35
12. Presenting published terms in age appropriate formats	36
12.1 Purpose.....	36
12.2 Outcomes.....	36
12.3 Activities and tasks.....	36
12.4 Inputs.....	38
12.5 Outputs.....	38
13. Implementing the Age Appropriate Digital Service Framework (AADSf), including across your supply chain	38
13.1 Inputs.....	38
13.2 Purpose.....	39
13.3 Outcomes.....	39
13.4 Activities and tasks.....	39
13.5 Outputs.....	39
14. Risk based age appropriate design and development.....	40
14.1 Purpose.....	40
14.2 Outcomes.....	40
14.3 Activities and tasks.....	40
14.4 Inputs.....	42
14.5 Outputs.....	42
15. Age appropriate deployment, operation, upgrade, monitoring, and decommissioning.....	42
15.1 Purpose.....	42
15.2 Outcomes.....	42
15.3 Activities and tasks.....	43
15.4 Inputs.....	43
15.5 Outputs.....	44
Annex A (normative) Case for Age Appropriate Conformity	45
Annex B (informative) Illustrative AAR	47
Annex C (informative) Age appropriate frameworks	49
Annex D (informative) Illustrative Age Appropriate Enterprise Policy Statement.....	50
Annex E (informative) Examples of regulations	51
Annex F (informative) Bibliography.....	53

IEEE Standard for an Age Appropriate Digital Services Framework Based on the 5Rights Principles for Children

1. Overview

1.1 Scope

This standard is the first in a family of standards focused on the 5Rights principles and establishes a set of processes for developing age appropriate digital services for situations where users are children. The framework centers around the following key areas as follows:

- a) Recognition that the user is a child
- b) Consideration for the capacity of and upholds the rights of children
- c) Offers terms appropriate to children
- d) Presents information in an age appropriate way
- e) Offers a level of validation for service design decisions

This standard provides a specific impact rating system and evaluation criteria and explains how vendors, public institutions, and the educational sector can meet the criteria.

This standard sets normative requirements for published terms, design, and delivery that can recognize and respond to the needs of children and young people.

Data privacy and security are complex and highly regulated areas of law, particularly as related to children and young people. The relevant legal definitions and requirements are rapidly evolving, and may vary at the local, state, national, and regional level. No standard can provide unconditional consistency with all such laws and regulations. Users of this standard are responsible for referring to and observing all applicable legal and regulatory requirements, and should refer questions of compliance to competent legal counsel with expertise in the relevant jurisdiction.

1.2 Purpose

This standard provides a set of processes for digital services when end users are children, and, by doing so, aids in the tailoring of the services that are provided so that they are age appropriate. This is essential to creating a digital environment that supports, by design and delivery, children safety, privacy, autonomy, agency, and

health, specifically providing a set of guidelines and best practices and thereby offering a level of validation for service design decisions.

1.3 Use of the standard

The standard describes the set of processes by which engineers and technologists can consider children's rights and needs throughout the stages of concept exploration and development. It provides implementable processes to help align innovation management to make processes, system design approaches, and software engineering methods age appropriate and, in doing so, reduce risk and, wherever possible, amplify the benefits of the digital world for end users under the age of 18.

The standard sits on the values of 5Rights Foundation's principles and reflects the rights of children under the United Nations Convention on the Rights of the Child. Many digital systems impact children in intended or unintended ways and, therefore, should take them into account. All organizations for which that is the case are encouraged to use this standard to help make that engagement age appropriate. This standard can be used to create services that build the digital world that children deserve.

Before using this standard, it is necessary to consider that your product or service is likely to be accessed by children or engage with children either directly, indirectly, or deliberately in the course of their operations. Data analytics, independent research, research about similar services and products, or research from surveys and research with children may help identify if and how your products, services, or systems engage with children and/or their data. In each case, if children use your services and/or if you collect children's data; this standard aims to help organizations create services that benefit children. This standard is based on the foundation that the 'best interests' (see [Clause 3](#)) of the child are placed in primary focus during the design of digital services.

To reach this goal, this standard supports organizations in identifying how their products and services impact children and how to verify that engagement is age appropriate. It is applicable within any life cycle model or set of methods for systems and software engineering and/or new or modified product or service development including brokering children's data. If organizations have running systems that cause risks to children, then the processes in this standard can be used for reiteration of analysis and redress.

1.4 Process overview

The goal of this standard is to enable organizations to design and deliver systems with the rights and needs of children in mind. Age appropriateness includes a variety of values that support children. For example, values such as sustainability, privacy, usability, convenience, controllability, accountability, inclusivity, evolving capacity, and children's rights are realized by this standard. This standard also supports values or attributes in systems typically considered in system engineering, such as functionality, efficiency, and effectiveness. An overview of the key processes in this standard is depicted in [Figure 1](#).

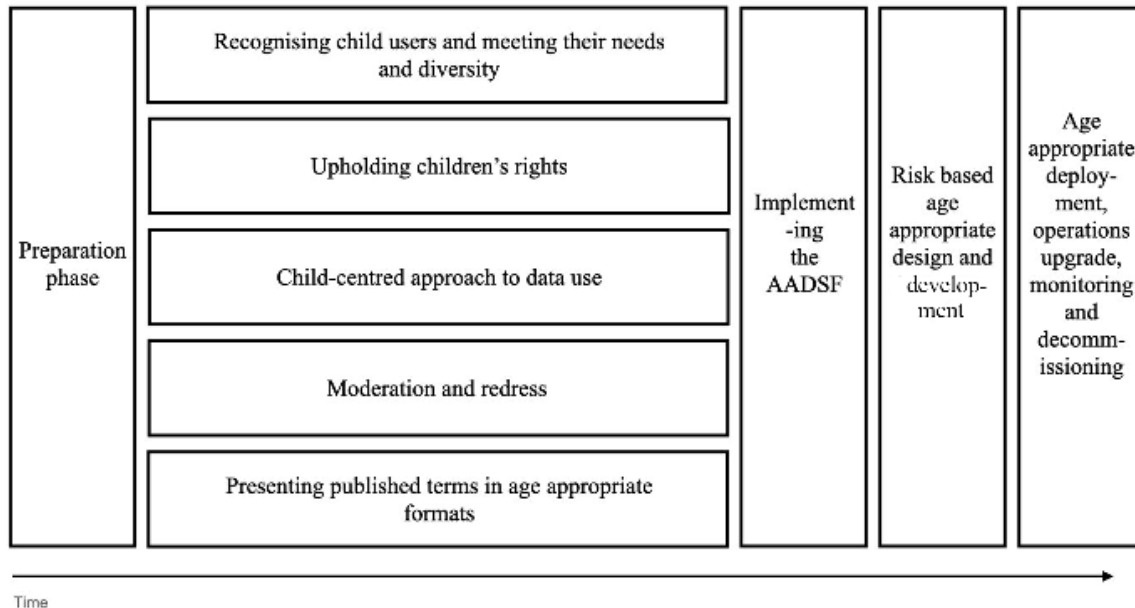


Figure 1—Relationship of processes and stages in IEEE Std 2089-2021

1.5 Word usage

The word *shall* indicates mandatory requirements strictly to be followed in order to conform to the standard and from which no deviation is permitted (*shall* equals *is required to*).^{1,2}

The word *should* indicates that among several possibilities one is recommended as particularly suitable, without mentioning or excluding others; or that a certain course of action is preferred but not necessarily required (*should* equals *is recommended that*).

The word *may* is used to indicate a course of action permissible within the limits of the standard (*may* equals *is permitted to*).

The word *can* is used for statements of possibility and capability, whether material, physical, or causal (*can* equals *is able to*).

2. Normative references

The following referenced documents are indispensable for the application of this document (i.e., they shall be understood and used, so each referenced document is cited in text and its relationship to this document is explained). For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments or corrigenda) applies.

ISO Guide 73:2009, Risk management—Vocabulary.³

ISO 9000:2005, Quality management systems—Fundamentals and vocabulary.

¹The use of the word *must* is deprecated and cannot be used when stating mandatory requirements, *must* is used only to describe unavoidable situations.

²The use of *will* is deprecated and cannot be used when stating mandatory requirements, *will* is only used in statements of fact.

³ISO publications are available from the ISO Central Secretariat (<https://www.iso.org/>). ISO publications are also available in the United States from the American National Standards Institute (<https://www.ansi.org/>).

ISO 9000:2015, Quality management systems—Fundamentals and vocabulary.

ISO/IEC 25010:2011, Systems and software engineering—Systems and software Quality Requirements and Evaluation (SQuRE)—System and software quality models. ^{4,5}

ISO/IEC/IEEE 15288:2015, Systems and software engineering—System life cycle processes. ⁶

ISO/IEC/IEEE 15289:2011, Systems and software engineering—Content of life-cycle information products (documentation).

ISO/IEC/IEEE 29148:2018, Systems and software engineering—Life cycle processes—Requirements engineering.

ISO/IEC/IEEE 42010:2011, Systems and software engineering—Architecture description.

UNCRC General Comment No. 14, Para.4, General Comment No. 5, Para. 12 CESCR General Comment No. 14: The Right to the Highest Attainable Standard of Health (Art. 12).⁷

United Nations Convention on the Rights of the Child (UNCRC), 1989.⁸

United Nations Committee on the Rights of the Child General Comment (25), 2021 on Children’s Rights in Relation to the Digital Environment.⁹

Universal Declaration of Human Rights (General Assembly resolution 217 A), United Nations General Assembly, 10 December, 1948. ¹⁰

U.S. Code 230—Protection for private blocking and screening of offensive material, US Communications and Decency Act, 1996.

In addition to the normative references listed above, consideration needs to be given to meeting the relevant national and regional legislation and industry standards, in the jurisdictions(s) in which the service or product will be offered, but there are instances where the law does not go far enough and so this standard sets the baseline to prioritize the rights of children and may go beyond the requirements of the law. See also [Annex E](#) for examples of regulations at the time of publication of the standard.

⁴ISO/IEC publications are available from the ISO Central Secretariat (<https://www.iso.org/>). ISO/IEC publications are available in the United States from the American National Standards Institute (<https://www.ansi.org/>).

⁵IEEE publications are available from The Institute of Electrical and Electronics Engineers, 445 Hoes Lane, Piscataway, NJ 08854, USA (<https://standards.ieee.org/>).

⁶The IEEE standards or products referred to in this clause are trademarks of The Institute of Electrical and Electronics Engineers, Inc.

⁷Available at: https://www2.ohchr.org/English/bodies/crc/docs/GC/CRC_C_GC_14_ENG.pdf.

⁸See <https://www.ohchr.org/en/professionalinterest/pages/crc.aspx>.

⁹Available at: https://tbinternet.ohchr.org/_layouts/15/treatybodyexternal/Download.aspx?symbolno=CRC%2fC%2fGC%2f25&Lang=en.

¹⁰Available at: [https://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A_RES_217\(III\).pdf](https://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A_RES_217(III).pdf).

3. Definitions, acronyms, and abbreviations

3.1 Definitions

For the purposes of this document, the following terms and definitions apply. The *IEEE Standards Dictionary Online* should be consulted for terms not defined in this clause.¹¹

acquirer: A stakeholder that acquires or procures a product or service from a supplier.

NOTE—Other terms commonly used for an acquirer are buyer, customer, owner, purchaser, or internal/organizational sponsor.¹²

acquisition: The process of obtaining a product, service, or system.

activity: A set of cohesive and purposeful tasks of a process.

age appropriate: Something that is suitable or appropriate for a person of a particular age. This concept is often, but not exclusively used in relation to children—a demographic who develop rapidly over a short space of time.

NOTE—In the digital context, the concept of age appropriate is most associated with the UK’s Age Appropriate Design Code that sets out data protection measures to benefit children [B3]¹³.

age appropriate register: An information repository created for clarity, unambiguity and traceability reasons for your product or service that contains data and insights gained in child impact exploration, prioritization, and traceability into product/service requirements.

age assurance: An umbrella term for both age verification and age estimation solutions. The word “assurance” refers to the varying levels of certainty that different solutions offer in establishing an age or age range.

age estimation: A process that establishes a user is likely to be of a certain age, fall within an age range, or is over or under a certain age. Age estimation methods include automated analysis of behavioral and environmental data, comparing the way a user interacts with a device with other users of the same age, and metrics derived from motion analysis or by testing their capacity or knowledge.

age verification: A system that relies on hard (physical) identifiers and/or verified sources of identification that provide a high degree of certainty in determining the age of a user. It can establish the identity of a user but can also be used to establish age only.

agreement: Mutual acknowledgment of terms and conditions under which a working relationship is conducted, for example, a contract or memorandum of agreement.

architecture: See ISO/IEC/IEEE 42010:2011.¹⁴

audit: See ISO/IEC/IEEE 15288:2015.

NOTE—The scope includes professional and industry codes of practice.

¹¹*IEEE Standards Dictionary Online* is available at: <http://dictionary.ieee.org>. An IEEE Account is required for access to the dictionary, and one can be created at no charge on the dictionary sign-in page.

¹²Notes in text, tables, and figures of a standard are given for information only and do not contain requirements needed to implement this standard.

¹³The numbers in brackets correspond to those of the bibliography in [Annex F](#).

¹⁴Information on references can be found in [Clause 2](#).

balancing: Where one right comes into conflict with another, they should be balanced so that the “best interests” of the child is paramount.

best interest: See: UNCRC General Comment No. 14, Para.4, General Comment No. 5, para. 12.

benefit: A positive outcome that is voluntarily or involuntarily created by an act, system or process.

NOTE—Benefits correspond to one or more underlying desired values.

child: For the purposes of digital services provided within the context of this standard, a child means every human being below the age of 18.

child-centered design: A design approach that prioritizes children's rights and needs in service design and governance, bearing children's best interests at the heart of any design process.

children’s rights: A framework of legal and other obligations and ethical values covering civil, political, economic, social, and cultural rights afforded to every child.

NOTE—Documented in the United Nations Convention on the Rights of the Child.

concept of operations: A verbal and/or graphic statement, in broad outline, of an organization’s assumptions or intent in regard to an operation or series of operations.

concern: See ISO/IEC/IEEE 42010:2011.

context of use: Intended operational environment for a system.

NOTE 1—The environment determines the setting and circumstances of all influences upon a system, including not only other systems but also people, settings, social, and ecological factors, etc.

NOTE 2—Context of use can be captured using a Context of Use Description (See ISO/IEC 25063.3 [B2]).

control: The ability to determine the nature, sequence and/or consequences of technical and operational settings, behavior, specific events and/or experiences.

NOTE—Control includes cognitive control; that is being informed about activities; decisional control: having choices over actions; and behavioral control; receiving feedback from actions.

design: (verb and noun) See ISO/IEC/IEEE 15288:2015.

environment: See ISO/IEC/IEEE 42010:2011.

NOTE—Also applies to products and services.

ethical: Supporting the realization of positive values or the reduction of negative values.

NOTE—In this definition, a system can be ethical or unethical in the sense that it bears value dispositions to cater to positive value creation or negative value prohibition.

evolving capacity: As children acquire enhanced competencies, there is a greater capacity to take responsibility for decisions affecting their lives.

fair terms: A concept that the terms of use for a product or service do not put the consumer at a disadvantage.

functional requirement: A statement that identifies what results a product or process shall produce.

harm: (noun) A negative event or negative social development entailing damage or loss to people.

harm: (verb) Acting with negative value effects for self or others, within a respective product or service, organization, or beyond.

hazard: A condition with a potential for causing harm.

human rights: See Universal Declaration of Human Rights, United Nations General Assembly, 10 December 1948 ([General Assembly resolution 217 A](#)).

information item: See ISO/IEC/IEEE 15289:2011.

life cycle: Evolution of a system, product, service, project, or other human-made entity from conception through retirement.

life cycle model: A framework of processes and activities concerned with the life cycle that may be organized into stages, which also acts as a common reference for communication and understanding.

nonfunctional requirement: A requirement that describes not what the system will do but how the system will do it.

operational concept: See ISO/IEC/IEEE 15288:2015.

NOTE 1—The concept of operations is produced at an early conceptual stage in describe system functions and relationships from a user's point of view. The operational concept details how the system will be operated in production.

NOTE 2—The operational concept should include all major product, service, or system elements and/or system components, boundaries, and directly adjunct elements beyond boundaries, internal, and external input elements (i.e., databases and/or applications serving the system that may be outside of the product or service's boundaries) and output elements (i.e., databases and/or applications serving the system that may be outside of the product or service's boundaries).

NOTE 3—The operational concept should preferably be visualized.

operator: An individual or organization that performs the operations of a product, service, or system.

NOTE 1—The role of operator and the role of user can be vested, simultaneously or sequentially, in the same individual or organization.

NOTE 2—An individual operator combined with knowledge, skills and procedures can be considered as an element of the service or system.

NOTE 3—An operator may perform operations on a product or service that is operated, or of a product or service that is operated, depending on whether or not operating instructions are placed within the product or service's boundary.

opportunity: A condition or state with a potential to lead to a benefit or gain.

organization: A group of people and facilities with an arrangement of responsibilities, authorities and relationships, for example, corporations, firms, enterprises, institutions, charities, a sole trader, associations, or parts or combinations thereof.

NOTE—An identified part of an organization (even as small as a single individual) or an identified group of organizations can be regarded as an organization if it has responsibilities, authorities, and relationships. A body of persons organized for some specific purpose, such as a club, union, corporation, or society, is an organization.

parent: The legal guardian of a child.

NOTE—For the purposes of this standard, “parent” can mean parents, legal or state appointed guardians, or, in certain limited circumstances, another adult in a position of authority, such as an educator, consistent with all applicable laws and regulations for the relevant jurisdiction.

persona: An archetypal user of a product, service, or system.

NOTE 1—Personas represent the needs of a larger group in terms of their goals, expectations, and personal characteristics. They help to guide decisions about system design and design targets.

NOTE 2—The term “persona” stems from the field of usability design where personas are typically described in a storytelling exercise. Project teams put themselves in the shoes of their potential stakeholders. They bring personas to life by giving them names, personalities, and photos.

problem: A difficulty, uncertainty, or otherwise realized and undesirable event, set of events, condition, or situation that requires investigation and corrective action.

process: See ISO 9000:2005.

product: The result of a process.

NOTE—There are four agreed generic product categories: hardware (e.g., engine mechanical part), software (e.g., computer program), services (e.g., transport), and processed materials (e.g., lubricant). Hardware and processed materials are generally tangible products, while software or services are generally intangible.

program: Related projects, subprograms and program activities managed in a coordinated way to obtain benefits not available from managing them individually.

project: An endeavor with defined start and finish criteria undertaken to create a product or service in accordance with specified resources and requirements.

published terms: *Any* document that sets out rules or basis upon which a child and an organization engage with each other, including but not limited to community standards, terms and conditions, and a privacy notice.

quality assurance: See ISO 9000:2015.

quality management: See ISO 9000:2005.

requirement: See ISO/IEC/IEEE 29148:2018.

resource: An asset that is utilized or consumed during the execution of a process.

NOTE 1—Includes diverse entities, such as funding, personnel, facilities, capital equipment, tools, and utilities, such as power, water, fuel, and communication infrastructures.

NOTE 2—Resources include those that are reusable, renewable, or consumable.

reward: A positive outcome arising from an opportunity.

NOTE 1—Similar but opposite to the concept of risk, reward is characterized by the likelihood of attaining some beneficial outcome and the magnitude of the gain.

NOTE 2—Reward is expressed in terms of combination of the likelihood and extent of a benefit being realized.

risk: See ISO Guide 73:2009.

NOTE 1—An effect is a deviation from the expected—positive or negative. A positive effect is also known as an opportunity.

NOTE 2—Objectives can have different aspects (such as financial, health and safety, and environmental goals) and can apply at different levels (such as strategic, organization-wide, project, product, and process).

NOTE 3—Risk is often characterized by reference to potential harmful events and consequences, or a combination of these.

NOTE 4—Risk is often expressed in terms of a combination of the consequences of an event (including changes in circumstances) and the associated likelihood of occurrence.

NOTE 5—Uncertainty is the state, even partial, of deficiency of information related to understanding or knowledge of an event, its consequence, or likelihood.

risk treatment: The process, procedures, methodologies, and means that provide a basis for and facilitate the reduction or elimination of an intolerable risk.

service: The performance of activities, work, or duties. This includes freemium services.

NOTE 1—A service is self-contained, coherent, discrete, and can be composed of other services.

NOTE 2—A service is generally an intangible product.

stage: A period within the life cycle of an entity that relates to the state of its description or realization.

NOTE 1—Stages relate to major progress and achievement milestones of the entity through its life cycle.

NOTE 2—Stages often overlap.

supplier: An organization or an individual that enters into an agreement with the acquirer for the supply of a product or service.

NOTE 1—Other terms commonly used for supplier are contractor, producer, seller, or vendor.

NOTE 2—The acquirer and the supplier sometimes are part of the same organization.

system: A combination of interacting elements organized to achieve one or more stated purposes.

NOTE—A construct or collection of different elements that together produce results not obtainable by the elements alone. The elements, or parts, can include people, hardware, software, facilities, policies, processes and documents; that is, all things required to produce systems-level results.

system characteristic: Attributes or distinguishing features pertaining to a system.

system element: A member of a set of elements that constitute a system. For example, hardware, software, data, humans, processes (e.g., processes for providing service to users), procedures (e.g., operator instructions), facilities, materials, and naturally occurring entities or any combination.

NOTE—A system element is a discrete part of a system that can be implemented to fulfill specified requirements.

task: A required, recommended, or permissible action, intended to contribute to the achievement of one or more outcomes of a process.

trade-off: A decision-making action that selects from various requirements and alternative solutions on the basis of net benefit to the stakeholders.

top management: A person or group of people who direct and control the organization at the highest level.

NOTE—Top management can be the owner of an organization, majority shareholders, senior manager in the organization, or members of the governing board.

unfair terms: Terms that do not meet the definition of “fair terms.” *See also:* **fair terms.**

user: See ISO/IEC 25010:2011.

NOTE—The role of user and the role of operator are sometimes vested, simultaneously or sequentially, in the same individual or organization.

validation: See ISO 9000:2015.

NOTE—A system is able to accomplish its intended use, goals and objectives (i.e., meet stakeholder requirements) in the intended operational environment. The right system was built.

value: Something desirable that influences the selection from available modes, means and ends of action. Examples of positive values include love, privacy, security, transparency, accountability, generosity, dignity, courage, and fairness. Examples of negative values include bias, ambiguity, absence of privacy, selfishness, and greediness.

value lead: The person assigned to coordinate and conduct related to value elicitation and prioritization and traceability of values through the requirements and design artifacts.

verification: See ISO 9000:2005.

5Rights Principles: A framework developed with young people by the 5Rights Foundation that sets out five principles that establish children’s entitlement in the digital world. This includes the right to remove, the right to know, the right to safety and support, the right to informed and conscious use, and the right to digital literacy.

3.2 Acronyms and abbreviations

AADSF	Age Appropriate Digital Service Framework
AAR	Age Appropriate Register
CCCM	Change Control and Configuration Management
CSEA	child sexual exploitation and abuse
UNCRC	United Nations Convention on the Rights of the Child

4. Conformance

The processes in this standard allow an organization to construct a life cycle and/or design and develop methodologies appropriate to make its product and services age appropriate.

This standard can be used in one or more of the following modes:

- *By an organization:* to help establish appropriate processes. These processes can be supported by an infrastructure of policies, methods, procedures, techniques, tools, and trained personnel to support the organization to perform and manage its projects and systems through each of their life cycle stages. In this mode this standard is used to assess if the organization is conducive to age appropriate outcomes.
- *By a project team:* to help select, structure, and employ the elements necessary to provide age appropriate products and services. In this mode, this standard is used to determine the project's requirements and assess if the project's outcome is age appropriate for an end user that is a child.
- *By an acquirer and a supplier:* to help develop an agreement concerning processes and activities that are age appropriate. Via the agreement, the processes and activities in this standard are selected, negotiated, agreed to, and performed. In this mode this standard is used for guidance in developing an age appropriate agreement.
- *By process assessors:* to serve as a process reference model for use in the performance of process assessments that may be used to support organizational process improvement for digital services and products that engage with children.

There is only one criterion for claiming full conformance: full conformance to both outcomes and tasks. Full conformance to outcomes and tasks is achieved by demonstrating that all of the outcomes and the required activities and tasks in [Clauses 7](#) through [Clause 15](#) have been achieved. The inputs and outputs shown in clauses [Clauses 7](#) through [Clause 15](#) are not requirements except as specifically required in the activities and tasks. The inputs and outputs are demonstrable predictors of the outcome in each process.

5. Key concepts and application

5.1 General application

This standard is usable by organizations that engage in system and software engineering and product and service design and development. This includes in particular:

- Organizations providing services and products that engage with children or are likely to be accessed by or engage with children, either directly, indirectly, deliberately, or in the course of their operations
- Organizations building a new generic or application-specific product, service, or system from scratch that may engage with children or are likely to be accessed by or engage with children either directly, indirectly, deliberately, or in the course of their operations
- Organizations implementing a major revision on an existing product, service, or system that may engage with children or are likely to be accessed by or engage with children either directly, indirectly, deliberately, or in the course of their operations
- Organizations planning the acquisition of a tailored product, service, or system that may engage with children or are likely to be accessed by or engage with children either directly, indirectly, deliberately, or in the course of their operations
- Research organizations (including universities) that build a new product, service, or system from scratch or adapt an existing entity in the course of their research activities that may engage with children or are likely to be accessed by or engage with children either directly, indirectly, deliberately, or in the course of their operations

5.2 Specified context of use

Many organizations engage with children intentionally, others engage with children in the course of their general activities. Some impact on children without engaging directly with them, and some engage unintentionally. In each case the organization has a responsibility to that child to provide an age appropriate service. Reconfiguring a product or service to be age appropriate means you take steps necessary to offer a product or service that is designed with child users in mind. [Clause 7](#) sets out the methodology of interrogating the service from the point of view of the established rights and needs of children and provides any organization a starting point from which to adapt its service to be age appropriate.

Systems support values relevant to a context of use. For example, with different contexts (school, game, home, public body) come different considerations and impacts. This standard assumes that systems can apply their methodologies and child-centered values to take specific actions that are relevant across different use contexts.

In addition to this, consideration needs to be given to verify relevant national and regional legislation and industry standards in the jurisdiction(s) in which the service or the product will be offered are met, including the following:

- Data protection regulations, including regulations that protect children’s data specifically
- Consumer legislation
- Equality legislation
- Children’s acts or legislation that covers treatment of children (for example, education, health, justice)
- Health and safety legislation
- Such regulations and legislation that protect children and promote their rights in any jurisdiction

5.3 The organization

This standard is intended to be used in systems and software engineering and digital services organizations of all types and sizes, whether they apply a hierarchical or a relatively flat organizational model. It is also usable by components of an organization, such as a product development team or a corporate division, although conformance to the standard will likely require participation across organizations in an integrated value/supply chain. It is intended for local, regional, national, or international use with various cultural values and governance systems. In applying this standard, one person can assume many roles, and one role can be held by numerous individuals or subgroups within the organization. There are no requirements for independence of roles in this standard, but the duties associated with all roles shall be fulfilled.

Design and service provision decisions that impact children are not the sole responsibility of top management, although top management has an undeniable role in setting expectations for organizational values and priorities and establishing control of performance and final outcomes. This standard requires the informed judgment of systems and software engineers while making design decisions about a system under development and may not be left solely to management. Both engineers and others in the organization, including those with responsibility for compliance, can benefit from learning and regularly applying specific processes and methods to make age appropriate choices throughout the life cycle. Just as engineering analyses, decisions, and risk assessments have always involved balancing and trade-offs of priorities and values, in this context, engineers participate as the organization balancing and finding solutions for competing interests (e.g., risks/harms). Although involvement with internal or external experts (e.g. in child rights or child development) may improve outcomes and efficiency, it is not required to engage an expert to conform with the standard.

5.4 Stakeholders

There may be a wide range of stakeholders involved in the products and services that impact children. Internal stakeholders include the many roles required to commission, develop, build, and market products and services. Primary stakeholders include, for example, a child, groups of children, parents, educators—and often adults. There may be third parties that have specific interests, for example, an owner or developer of an app will have an interest and be affected by an app store’s policies and practices, a regulator, a trade association to whom the system owner is accountable, or a data broker or agent that may impact the child in ways that are both visible and unseen. Additionally, there are those who interfere or exploit digital systems, such as hackers, scammers, predators. These groups of stakeholders often have an asymmetric influence on the design of the product. An asymmetric influence means having more power to assert your interests and views. Typically, those connected with the proprietary ownership of the technology are the most influential and the end user may only have the power to reject or accept the product or service in its entirety. In the case of systems that impact a user without their knowledge, for example by obtaining their data from a third party, they may have no influence at all. This power imbalance is particularly acute when the end user is a child. This standard offers a set of processes that engage stakeholders with each other to develop a product or service that prioritizes the rights and needs of children. The person(s) or company building the product or service can, by following this standard, identify the risks and benefits of their system to children and take steps to mitigate risks, amplify benefits, and keep both under review. This set of processes does not seek to undermine engineering realities, nor does it offer an aspirational or perfect world for children, rather it offers actions that, if followed, will make your product or service conscious of and suitable for the children you engage with. They describe a floor of compliance and not a ceiling of ambition. It is anticipated that smaller or newer companies will seek to adopt or purchase age appropriate systems built by others. In that instance they should adopt certified products or products that come from trusted sources.

5.4.1 Children as users

Along with these internal stakeholders and the customer, the class of stakeholders that is intrinsic to age appropriate design is the users, in this instance, a child. Users frequently are categorized by the levels or types of system access and permissions they need to perform various tasks, or have services provided to them. These include the hands-on system operators (often agents of the customer) as well as those who benefit from or are harmed by use of the system, both through direct transactions using the system and through its impact on the environment and their culture. The word “users” here also includes those whose personal data is held in a system, whether they have access to that data or are aware of that data or not. In the case of children, there cannot be a presumption that they are able to assess the risk or benefits of use of any system nor that providing “more information” is a suitable response to offering an age appropriate service, informing them of their rights, or trying to meet their needs. Nor can it be assumed that all children have a parent or adult in loco parentis who is engaged, literate, skilled or able to act on their behalf. The purpose of the standard is to provide children with services and products that consider the vulnerabilities associated with their age and are age appropriate by default. Not all children are the same, and children of different ages, contexts, ethnicity, capacity, and socioeconomic groups may require different levels of support or consideration. By capacity, we mean the cognitive ability to comprehend materials plus the ability to be able to read materials. For example, designers need to take particular care that the system design and algorithms do not unjustifiably favor or select users in certain geographic areas, of certain biometric or demographic characteristics, or based on unvalidated reports and unfairly target or exclude other classes of users.

5.4.2 Who can threaten or support the best interest of the child?

Another class of stakeholders may have interests that oppose the system or may interfere with its use. These include competitors, cybersecurity hackers, or opponents of the organization, system owner, or customer. There is also a significant group of producers and consumers of child sexual abuse material. Other external stakeholders can offer divergent perspectives. Government regulators and external advocacy groups, whose expertise, cultural norms, and values may differ from the system owner, can expose a clash in values or demand a higher bar of safety or benefit for children. These conflicting and often oppositional values may even constrain and/or aid the decisions of the system owners that are a direct threat to the needs, rights, and

values of children. To counteract any threats to children, the organization may consider the use of the third-party assessors, data brokers, and independent verification and validation contractors. These are other types of stakeholders who can point out flaws or unstated assumptions that have influenced or skewed the organization's ethical choices against the needs, rights, and values of children. This standard helps to identify how internal and external stakeholders, users, opponents, and independent authorities can be treated differently when age appropriateness and risks are evaluated. Information about potential system characteristics and performance and the balance of values and stakeholder interests are rarely shared openly with all stakeholders. Therefore, it is one of the goals of this standard to present a set of processes that helps organizations better understand this obfuscated balance of interests and values.

5.5 Stages and processes

This standard allows any organization, systems developer, or digital services provider to achieve the requirements in this standard by means of their own set of standard system development processes, methods and, practices. This standard has distinct processes which can be applied to systems and software engineering and which relate to the general processes in ISO/IEC/IEEE 15288:2015 and ISO/IEC/IEEE 12207:2017 (see [Annex C](#)).

This standard is intended to be suitable for use by organizations and software projects using iterative approaches and methods as well as in those using other formal engineering approaches.

The activities and tasks in this standard are not sufficient by themselves to produce a product or service. They are intended to be an integral part of an organization's comprehensive approach to managing the development of a product or service.

This standard does not prescribe a sequence of processes within the life cycle model. However, many of the activities and tasks logically apply outputs from other tasks, so there is an inherent sequence of activities that can be applied iteratively. The sequence of the processes is determined by project objectives and by selection of the life cycle model. But to conform to the standard all processes shall be undertaken and achieved.

6. Key roles in Age Appropriate Engineering project teams

6.1 General

There are many roles required to successfully complete the tasks and activities outlined in this standard. The roles and their associated competencies that shall be fulfilled are documented in [6.2](#). These roles may be assigned to one or many people so long as the workload, competencies, and accountabilities are all met. There is no requirement for a separate team member for each role.

6.2 Role descriptions

6.2.1 Top Management Champion

The Top Management Champion sets strategic policy and enables work as a leader in the organization, e.g., part of the executive board, Chief Executive Officer, Chief Technology Officer, Chief Information Officer, Chief Operating Officer, Chief Experience/Design Officer, or someone who is responsible for the unit or area in which the system is developed. In the case of a Very Small Entity, the role of the Top-Management Champion may be filled by the entity's owner.

The responsibilities of the Top Management Champion include the following:

- a) Establish corporate commitment to age appropriate products or services
- b) Help project teams to uphold age appropriate priorities

- c) Resolve conflicts in strategies and age appropriate priorities
- d) Uphold these priorities throughout the system's life cycle
- e) Direct communications with leaders of customer, deploying, or acquiring organizations regarding age appropriate outcomes and technical decisions made in system design
- f) Receive and direct responses to concerns and information from project team members or stakeholders about project decisions
- g) Communicate with the board, shareholders, customers, and team both regularly and when needed
- h) Support a culture of age appropriate priorities from hiring values to core business model

6.2.2 System Expert

The System Expert contributes understanding of existing systems, potential capabilities for new systems, and the context for operation of the product or service (the installed base of legacy systems and technologies with which the new system is to be interoperable), e.g., a systems engineer, software engineer, hardware engineer, requirements engineer, business analyst, or systems architect.

The responsibilities of the System Expert include the following:

- a) Listen to stakeholders and team members to understand concerns and potential solutions rather than jumping to a readily available technical solution
- b) Develop system/software requirements that enable age appropriate design
- c) Evaluate alternatives and trade-offs for suitability to the context of operation and the organization's long-term strategy while maintaining the commitment to age appropriate design and the best interests of the child
- d) Optimize technical solutions to support age appropriate values among a range of system requirements

6.2.3 Age Appropriate Lead

The Age Appropriate Lead focuses on the identification, analysis, and prioritization of age appropriate outcomes and their incorporation in the system/service design. The Age Appropriate Lead contributes subject matter expertise and facilitative skills, bridging gaps between engineering, management, and age appropriate outcomes in a constructive way. The Age Appropriate Lead also leads the identification, analysis, and mitigation of risks to age appropriate outcomes for an organization or project.

The responsibilities of the Age Appropriate Lead include the following:

- a) Organize, analyze, communicate, and record age appropriate concepts, concerns, activities, and decisions in a project
- b) Include other stakeholders in an inclusive and timely fashion
- c) Facilitate discussions and age appropriate-related activities to accompany a project in its design efforts
- d) Build benefits to children and organization through practices like participatory design
- e) Apply age appropriate risk evaluation and assessment methodologies for design and development stages
- f) Establish and sustain activities to manage different age appropriate risks and priorities throughout the life cycle
- g) Manage the formation, updating, and integrity of the Age Appropriate Register (AAR) (see [Annex B](#))

6.2.4 Child Rights Advocate

The Child Rights Advocate represents future direct and indirect child users of the system, working with functionally oriented members of the design team.

The responsibilities of the Child Rights Advocate include the following:

- a) Apply a child's rights perspective to products or services with the aim of embedding age appropriate values and resolving conflicts in the best interests of children
- b) Represent stakeholder groups, including children, that cannot be directly involved in project team meetings

6.2.5 Senior Product Manager

The Senior Product Manager in an organization directs the development, supply, or sustainment of one product or a portfolio or products at some part of the product life cycle.

The responsibilities of the Senior Product Manager include the following:

- a) Lead the vision and application of age appropriate development principles for service and product design
- b) Direct the implementation of age appropriate decisions within engineering, user experience design, marketing and outreach, policy compliance, and/or customer support teams

6.2.6 Moderator

The Moderator brings sufficient knowledge of the technical domain and relevant context to moderate discussions with stakeholders, including children.

The responsibilities of the Moderator include the following:

- a) Elicit information, viewpoints, and recommendations from all stakeholders, including children
- b) Encourage fair and equitable consideration of different views without allowing individuals to dominate the discussion
- c) Mediate between different viewpoints and help participants reach thoroughly strategic, practical, and valuable outcomes for children
- d) Articulate the full range of views to superiors including but not limited to the Senior Product Manager and the Age Appropriate Lead

6.2.7 Transparency Manager

The Transparency Manager leads the communication of technical options, decisions, and system functions to stakeholders in a way that is understandable to them.

The responsibilities of the Transparency Manager include the following:

- a) Record decisions in a consistent and as easily retrievable form, including those who are accountable for the decisions
- b) Track and report related decisions in keeping with the principle of transparency
- c) Verify that considerations about transparency are made at regular intervals and crucial milestones
- d) Consider releasing the Exploration of Context for Children, as created in [Clause 7](#)

6.3 Team competency

It is prudent to select for team roles on the basis of competence. In this context, competence is the ability to perform a task correctly, knowledgeably, efficiently, and consistently to a high quality under varying conditions to the satisfaction of the end client. Competency may also be attributed to a group or a team when a task is performed by more than one person in view of the multidisciplinary nature, complexity, or the scale. A suitably competent person or team requires requisite qualities and capabilities, as follows:

- a) Technical domain knowledge: empirical, academic, or a blend of both
- b) The experience of application (knowing what works) in different contexts and the requisite skills
- c) Drive and motivation to achieve the goals and strive for improvement or excellence
- d) Sharing appropriate behaviors, such as teamwork, leadership, and compliance with professional codes
- e) The ability to adapt to changing circumstances and demands by creating new knowhow
- f) The ability to perform requisite tasks efficiently and reduce waste of physical and virtual resources
- g) The ability to understand the needs of stakeholders and deliver high quality service
- h) A commitment to creating an age appropriate product or service

The above capabilities are fundamental to a person or group of people (a team) being competent in achieving the desired outcomes consistently and efficiently, satisfying or exceeding expectations for providing an age appropriate services or products.

7. Preparation phase

7.1 Purpose

The purpose of this process is to undertake an initial overview of your service or product and identify the potential and or known impacts. It is the first step of this standard.

7.2 Outcomes

When you have successfully implemented the Preparation phase, you shall be able to show the following:

- a) Design features and data processing activities in your product or service that impact children, both those manifest by normal operation as well as those that are as a result of misuse and malicious intent are identified
- b) A comprehensive AAR is created (See [Annex B](#))
- c) All hazards, opportunities, and requirements for age appropriate design and operation of the product or service are identified
- d) The steps necessary to embed children's rights needs in the product of service are clarified
- e) The risks associated with a product or service may be available via the initial AAR

7.3 Activities and tasks

The project shall implement the following activities and tasks in accordance with applicable organization policies and procedures with respect to the age appropriate impact exploration and identification as follows:

- a) Undertake an initial exploration of how your product or service affects children
 - 1) Organize your team and appoint role holders and verify that they act in good faith
 - 2) Plan for and identify key stakeholders' engagement for the impact exploration, including the following:
 - i) Forming a representative panel of stakeholders or independent stakeholder advocates with sufficient expertise to represent all parties
 - ii) Creating mechanisms by which a diverse range of children can be consulted directly or with the help of a third party. This may be through participation on your stakeholders' panel or through other means. This could be interviews, focus groups, surveys, or formal participatory and codesign processes, among others
 - iii) Creating mechanisms by which a diverse range of parents can be consulted directly or with the help of a third party. This may be through participation on your stakeholders' panel or through other means. This could be interviews, focus groups, surveys, or formal participatory and codesign processes, among others
 - 3) Identify and record all impact on children and address all the known sources of common hazards or opportunities in addition to identifying further sources of hazards that may be unique to the product or service, verifying that they include the following:
 - i) All functional, non-functional, and operational aspects and scenarios that potentially impact children
 - ii) Both intentional impacts and unintentional impacts
 - iii) Normal and misuse/abuse cases
 - iv) Accounting for the algorithmic nature and impact of machine learning and behavioral adaptation of the product or service
 - v) Accounting for any legislation or protections that pertain to your jurisdiction, including fair terms
 - vi) Accounting for children's rights under the UNCRC, including specifically the UN General Comment 25 on children's rights in relation to the digital environment
 - vii) Accounting for risks arising from your data processing
 - 4) Consult and verify the outcomes with your stakeholder's panel or stakeholder's advocates, including children and parents
 - 5) Verify that children's views are reflected through additional means where necessary, which may involve your diverse range of mechanisms and diverse consultation mechanisms (as required by 7.3.a.1.ii)
 - 6) Document all impacts on children as agreed by your team and stakeholders and children
 - 7) Identify and note all legal, regulatory, and best practice requirements for the product or service that need to be implemented
- b) Establish an AAR
 - 1) Adopt or define an appropriate information structure and platform for an AAR (see [Annex B](#))

- 2) Record all hazards, opportunities, associated preliminary mitigation or fostering measures, as well as legal and best practice requirements
- c) Consider publishing the findings of your Preparation phase and AAR

NOTE—These activities can benefit from close cooperation with stakeholders and the guidance of the age appropriate value lead.

7.4 Inputs

The following resources constitute a suitable, but neither exhaustive nor normative, suite of the process inputs:

- a) A product or service that engages with children directly, indirectly, or unintentionally
- b) A clear understanding of what the service/product does and how it operates (concept of operation) in order to shape the terms of the offer
- c) A route or mechanisms by which you are able to test your terms with children directly or with the help of a third party
- d) Sufficient resources and developer time to mitigate any risks or violations identified by the child impact assessment, including those needed for moderation, redress, and expert advice
- e) Organizational commitment to age appropriate service and upholding published terms at a strategic leadership level and throughout the organization

7.5 Outputs

The following work products constitute a suitable, but neither exhaustive suite of the process deliverables:

- a) An AAR
- b) An agreed process by which to evaluate, assess, mitigate, manage, and test changes
- c) A process through which changes are user tested with a diverse audience of children and iterated to incorporate their views and needs
- d) Published terms that include clear understanding of residual impacts and risks to children
- e) An organizational Age Appropriate Policy Statement

8. Recognizing child users and meeting their needs and diversity

8.1 Purpose

The purpose of this process is to prepare the product or service for child users, and to recognize them when they engage with the product or service, so that the product or service is able to meet needs arising from their age or circumstance.

8.2 Outcomes

When you have successfully implemented the Recognizing Child Users and Meeting their Needs and Diversity process, you shall be able to show the following:

- a) Where relevant, privacy preserving age assurance mechanisms proportionate to the risk and nature of your product or service

- b) A set of steps to identify children to offer them an age appropriate service or, alternatively, a product or service that is appropriate for all users, including children
- c) Published terms that are responsive to the evolving capacity and inclusive of all children and young people

8.3 Activities and tasks

The project shall implement the following activities and tasks in accordance with applicable laws, regulations, organization policies and procedures with respect to the recognition of children.

- a) Consider child age/capacity, which consists of the following tasks:
 - 1) Consider the nature of your service and the appropriate age assurance tools/approach required to establish the age/capacity of users, including age verification, age estimation, and third party confirmation as appropriate.
 - 2) Implement appropriate age assurance measures where necessary.
 - 3) Make your service is appropriate for children.
- b) Offer a service appropriate to the age of the user, which consists of the following tasks:
 - 1) Reduce and address harmful content.
 - 2) Reduce and address harmful contact.
 - 3) Reduce and address harmful conduct as follows:
 - i) Uphold community rules.
 - ii) Offer a high bar of moderation.
 - iii) Offer swift and easy access to expert advice.
 - iv) Offer swift and easy access to redress (see 11.3.b)).
 - 4) Reduce and address harmful contract risks.
 - 5) Offer a high bar of data protection.
 - 6) Reduce automated recommendation of harmful material.
 - 7) Prevent products and services from recommending poor quality information.
 - 8) Protect from design features that extend use, particularly at night.
 - 9) Encourage time off.
 - 10) Require and obtain valid, informed, and meaningful consent that is transparent about the risks associated with the nature and features of product or service. Valid and meaningful consent shall be obtained from children and, where necessary, parents or a responsible adult, consistent with all applicable laws and regulations.
- c) Verify inclusivity, which consists of the following tasks:
 - 1) Offer content in local languages, including moderation and redress.
 - 2) Consider the needs of vulnerable groups and protect specific group's gender, race, ethnicity, or sexuality.
 - 3) Consider the needs of children who may not have active parents or caretakers.
 - 4) Consider the affordability of your product or service.

- d) Verify accessibility, which consists of the following tasks:
 - 1) Verify that your product or service meets accessibility requirements and standards.
 - 2) Consider the needs of children with different needs (e.g., ensuring that your product or service is fully accessible if it is being integrated into children’s schools or education).
- e) Record all obstacles, unfair terms, hazards, opportunities, and identified requirements to recognizing children in the AAR.

NOTE—these activities can benefit from close cooperation with stakeholders and the guidance of the value lead.

8.4 Inputs

The following resources constitute a suitable, but neither exhaustive nor normative suite of the process inputs:

- a) A product or service for which published terms are necessary

8.5 Outputs

The following work products constitute a suitable but non-exhaustive suite of the process deliverables:

- a) Product or service that is child-centered by design and responsive to the unique developmental capacities of diverse children
- b) Published terms that can respond to the age and capacity of its users
- c) Updated AAR with all child related hazards, opportunities and identified requirements

9. Upholding children’s rights

9.1 Purpose

The purpose of this process is to verify that published terms for the product or service embody children’s rights.

NOTE—Children’s rights have been established and codified for over 30 years; they outline the privileges and protections that a child enjoys in all environments—including the digital environment. Codified in the United Nations Convention on the Rights of the Child (UNCRC), children are afforded widely understood set of interconnected protections, privileges and supports. UN General Comment 25 on Children’s Rights in Relation to the Digital Environment sets out how the UNCRC applies to the digital environment.

9.2 Outcomes

When you have successfully implemented the Upholding Children’s Rights process, you shall be able to show the following:

- a) Children’s rights are realized in the product or service
- b) Published terms that incorporate and realize children’s rights

9.3 Activities and tasks

The project shall implement the following activities and tasks in accordance with applicable organization policies and procedures with respect to the age appropriate presentation of published terms.

- a) Consider your product and service in relation to children’s rights as set out in the UN General Comment 25 on Children’s Rights in Relation to the Digital Environment. In the case of conflicts between rights, the best interests of the child shall be paramount.
- b) Consider relevant domestic legislation that offers protection and provision for children in the jurisdiction where your product or service will engage with children either directly, indirectly, deliberately, or in the course of their operations. See [Annex E](#) for some examples of relevant domestic legislation.
- c) Verify that your product or service reflects any industry codes or norms that offer protection and provision for children.
- d) Where in doubt about standards, local, or national law, verify that your product or services reflect the best interests of the child and refer to competent legal counsel with expertise in the relevant jurisdiction.
- e) Incorporate the views and wishes of children in your product or service on an ongoing basis.
- f) Reflect the rights and views of children in your published terms.
- g) Record all obstacles, unfair terms, hazards, opportunities, and identified requirements to upholding children’s rights in the AAR.

NOTE—these activities can benefit from close co-operation with stakeholders and the guidance of the value lead.

9.4 Inputs

The following resources constitute a suitable but neither exhaustive nor normative suite of the process inputs:

- a) A product or service that engages with children. directly, indirectly or unintentionally
- b) Relevant, legislation that references children’s right in the jurisdictions in which your product or service operates (see [Annex E](#) for examples)
- c) Relevant industry codes and agreements
- d) United Nations Committee on the Rights of the Child General Comment (25), 2021 on Children’s Rights in Relation to the Digital Environment

9.5 Outputs

The following work products constitute a suitable but neither exhaustive suite of the process deliverables, specifically:

- a) A product or service that upholds children’s rights, reflects relevant legislation, industry codes, and children’s views
- b) Record all child-related hazards, opportunities, and identified requirements for implementing the AADSF in the AAR

10. Child-centered approach to data use

10.1 Purpose

The purpose of this process is to verify that best practice data protection regimes are used in relation to child users.

NOTE—Aspects of design that maximize data extraction are very often not in the best interests of children.

10.2 Outcomes

When you have successfully implemented the Commercial Interests and Users Data process, you shall be able to show the following:

- a) The product or service does not employ inappropriate commercial nudging, profiling, or conditioning.
- b) The product or service can provide data protection to children.
- c) The corporate culture recognizes children, children's rights and needs, and prioritizes the best interests of the child over commercial considerations.

10.3 Activities and tasks

The project shall implement the following activities and tasks in accordance with applicable organization policies and procedures.

- a) Behavioral nudging and coercion, as follows:
 - 1) Turn off persuasive features that push engagement by default.
 - 2) Turn off features that lessen privacy by default.
 - 3) Turn off features that have been identified as risky or dangerous and make them unavailable to children.
 - 4) Verify that automated processes optimized for commercial purposes do not infringe on children's rights or undermine their needs.
- b) Commoditization of data, as follows:
 - 1) Meet the data protection regime for children, or equivalent legislation, in the relevant jurisdictions where the product or service is used or is in operation. See [Annex E](#) for examples.
 - 2) Only collect and retain online the minimum amount of personal data you need to provide the elements of your product or service in which a child is actively and knowingly engaged, in line with principles of data minimization.
 - 3) Where children's data is shared with parents or responsible adults, accompany it with age appropriate information that helps explain what data or activities are being shared.
 - 4) Do not disclose, sell, share, or make available children's data unless you can demonstrate a compelling reason to do so, prioritizing the best interests of the child over commercial interests.
 - 5) Protect children's personal data from uses that recommend content or behaviors detrimental to their rights and needs.
 - 6) Exclude children from predictive markets.
 - 7) Provide freemium services free for children; do not exchange them for data.

- 8) Verify that data is used only for purposes for which valid and meaningful consent is given. A child's data shall be used in a way that the child (or parent or responsible adults where relevant) intends or reasonably may expect and not for general commercial purposes, consistent with applicable laws and regulations.
 - 9) Do not profile children for targeted advertising.
 - 10) Children (or parents or responsible adults where relevant) shall be able to retract, correct, and delete children's data, consistent with applicable laws and regulations. These options shall be provided in a way that is accessible and transparent. This includes creating a right to be forgotten.
- c) Creating a corporate culture that realizes children's rights, as follows:
- 1) Implement a policy of zero tolerance on child sexual exploitation and abuse (CSEA) as follows:
 - i) Implement systems that focus on reducing the creation, upload, and sharing of CSEA.
 - ii) Put in place systems that allow for detection, reporting, and take down of CSEA.
 - ii) Commit and publish a shareholder commitment to realize children's rights and needs.
 - iii) Publish a commitment to meet the spirit as well as the letter of relevant regulation and legislation.
 - d) Record all obstacles, unfair terms, hazards, opportunities, and identified requirements to adopt a child-centered approach to data use in the AAR.

NOTE—These activities can benefit from close co-operation with stakeholders and the guidance of the value lead.

10.4 Inputs

The following resources constitute a suitable but neither exhaustive nor normative suite of the process inputs:

- a) Corporate policies and processes
- b) Shareholders' views

10.5 Outputs

The following work products constitute a suitable, but non-exhaustive suite of the process deliverables:

- a) Products and services that are free from behavioral nudges
- b) Published corporate values that protect and promote children's rights and needs
- c) Technical systems that are focused on the reduction, uploading, and sharing of CSEA
- d) Technical systems that detect, report, and take down CSEA
- e) Record all children related hazards, opportunities, and identified requirements in the AAR

11. Moderation and redress

11.1 Purpose

The standard thus far has defined a set of processes that shall create "fair terms" that meet the reasonable expectations of children (and parents). The purpose of this moderation and redress process is to verify that fair published terms are met and legal obligations to children are upheld. This process proactively addresses the reasonable expectations of children and parents/responsible adults to require adequate moderation and redress in order to deliver these fair terms.

11.2 Outcomes

When you have successfully implemented the Offering Fair Terms to Children process, you shall be able to show the following:

- a) The product or service shall uphold fair terms to children
- b) The product or service shall uphold all published terms
- c) The product or service shall be in the best interests of children

11.3 Activities and tasks

The project shall implement the following activities and tasks in accordance with applicable organization policies and procedures with respect to the age appropriate presentation of published standards process.

- a) Terms shall not form an illegal or unfair contract between a product or service and a child
- b) Moderation: Offer oversight of the impacts on children, those that they see and those that they may not be aware of, by use of the following:
 - 1) Trained human moderators
 - 2) Automated systems
 - 3) Investment in moderation that is proportionate to the size, risk and activities associated with your product or service
 - 4) Where relevant, undertake regular evaluation of your moderation systems
- c) Redress, as follows:
 - 1) Provide prominent, accessible, and easy to use tools to help children and parents seek redress
 - 2) Provide children and parents access to expert advice and support where needed
 - 3) Have clear penalties applied fairly and consistently
 - 4) Offer opportunities to appeal decisions and escalate unresolved appeals to expert third parties or regulators
 - 5) Reasonable response times
 - 6) Provide children and parents with the following:
 - i) Opportunity to correct digital profile/footprint
 - ii) Termination rights (user)
- d) Clarity and unambiguity around upholding your published terms, as follows:
 - 1) Inform children of action taken in the redress process
 - 2) Seek and obtain valid, informed, and meaningful consent as required for upgrades and amendments to service
 - 3) Publish your corporate policies
 - 4) Regularly evaluate and report matters that appear in your AAR
- d) Enforce only fair terms as follows:
 - 1) Do not enforce any terms that are unfair nor do not meet the requirements of this standard
 - 2) Where terms are found to be unfair, note them in the AAR and create a “blacklist” so that these terms are not used nor reintroduced at a later point

- e) Record all obstacles, unfair terms, hazards, opportunities, and identified requirements to moderation and redress the AAR

NOTE—These activities can benefit from close co-operation with stakeholders and the guidance of the value lead.

11.4 Inputs

The following resources constitute a suitable, but neither exhaustive nor normative suite of the process inputs:

- a) Industry codes
- b) Corporate policies
- c) Relevant regulation and legislation, see [Annex E](#) for examples
- d) UNCRC
- e) AAR

11.5 Outputs

The following work products constitute a suitable, but non-exhaustive suite of the process deliverables:

- a) Published terms that offer fair terms
- b) Revised corporate policies that commit to fair terms for children
- c) Age appropriate services or products for children
- d) Updated AAR with all child related hazards, opportunities and identified requirements

12. Presenting published terms in age appropriate formats

12.1 Purpose

The purpose of this process is to verify that published terms are presented in an age appropriate manner and are accessible to all children and their parents. Simplifying the content of terms and conditions is only one requirement of age appropriate presentation, and published terms shall be presented in forms, at times, and in ways that children engage with them. The content of the published terms shall also be age appropriate.

12.2 Outcomes

When you have successfully implemented the Age Appropriate Presentation of Published Terms process, you shall be able to show the following:

- a) Published terms can be understood by children of the age or age ranges that are using the service. These terms shall then also be easily understood by parents and caretakers
- b) Published terms are presented in formats that children can understand and relate to
- c) All interactions are geared to ongoing, meaningful engagement at regular intervals and at crucial moments, including every instance where consent is sought or required
- d) Published terms are suitable for children from diverse settings and diverse contexts
- e) Published terms are accessible to children with a wide range of abilities

- f) Published terms are a true reflection of the service
- g) Published terms offered to children render an age appropriate service

The activities and tasks of this process are described and integrated with other tasks necessary for the development of age appropriate presentation of published standards.

12.3 Activities and tasks

The project shall implement the following activities and tasks in accordance with applicable organization policies and procedures with respect to the age appropriate presentation of published terms.

- a) Verifying accessible information. This activity consists of the following tasks:
 - 1) Verify that published terms use accessible language, as follows:
 - i) Establish language and concepts are age appropriate to the age or age range of user, as follows:
 - i) Use language assessment tools.
 - ii) Engage in user testing with a diverse range of children.
 - iii) Engage professional communicators where possible.
 - ii) Make key terms prominent, using bold text or graphics and icons if needed.
 - iii) Make redress and reporting information prominent and accessible, to help children and parents exercise their rights and report concerns.
 - iv) Make information available in bite size pieces.
 - v) Make terms searchable.
 - vi) Ask permissions at times that are proven to encourage engagement with key information.
 - 2) Provide multiple formats, as follows:
 - i) Consult with children on most appropriate formats, including but not limited to, cartoons, video, audio, pictures, subtitles—including those written, presented or co-created with children.
 - ii) Provide more than one format for children of different age ranges and diverse contexts.
 - iii) Provide formats that are accessible to children of all needs by default.
 - 3) Test draft published terms as follows:
 - i) With diverse group of children
 - ii) In diverse scenarios
 - iii) In all formats
 - iv) Iterate terms and retest to verify that they now meet and continue to meet children's views and needs
 - 4) Address diverse audiences as follows:
 - i) Consider the age, gender, race of children.
 - ii) Consider the context: urban, rural, geography, language.
 - iii) Consider the circumstances, for example, sharing devices, cost of connectivity, children without adults.
 - 5) Verify that simplification of language or use of multiple formats does not confuse, change or hide the meaning of terms.

- b) Unbundling consent, as follows:
 - 1) Unbundle consent to allow a child to access only the part of the service they wish.
 - 2) Verify that “unbundled” consent is easy to understand and access.
 - 3) Do not use tick box or unread consent where the end user is a child.
- c) Timing of consent, as follows:
 - 1) Use the timing to obtain meaningful, valid consent. Do not drive ill informed consent, for example getting a child to agree to terms as they register that will not result in their valid informed consent.
 - 2) Embed strategies to capture valid, informed, and meaningful consent at multiple or significant times in the user journey.
 - 3) Obtain meaningful, active, and valid consent again where published terms are updated or revised.
- d) Recognizing children's evolving capacities, where children are unable to validly consent for themselves, a risk-based approach to seeking consent from parents or responsible adult shall be adopted. This may be needed for certain features of your product or service, such as payment features. Children shall not be asked to agree to terms to which they cannot validly and meaningfully consent, or conceptually understand. Where parental or responsible adult consent is required by law, that consent should be meaningful and valid, and steps taken to verify that the parent or responsible adult or other legally authorized person is who they say they are. Parental or responsible adult consent should not be used to lessen protections for children nor silence children’s views or voice.
- e) Design for children’s best interests. Published terms shall not “nudge” in ways that are detrimental to children. For example, privacy settings should be set to high by default. It should not be left to children or parents to find and select the high-privacy settings.
- f) Record all obstacles, unfair terms, hazards, opportunities, and identified requirements to publishing terms in age appropriate formats in the AAR.

NOTE—These activities can benefit from close cooperation with stakeholders and the guidance of the value lead.

12.4 Inputs

The following resources constitute a suitable but neither exhaustive nor normative suite of the process inputs:

- a) A product or service that engages with children directly, indirectly, or unintentionally
- b) A clear understanding of what the service/product does and how it operates, in order to shape the terms of the offer
- c) A route or mechanisms, by which terms can be tested with children and parents, directly or with the help of a third party
- d) Access to language age/capacity testing, translation (into local languages) or creative skills necessary to the production of age appropriate terms

12.5 Outputs

The following work products constitute a suitable but non-exhaustive suite of the process deliverables:

- a) One or more formats of published terms with prominent key terms and age appropriate language that accurately reflects the service

- b) One or more formats for published terms that is compliant with children's rights, fair terms and relevant regulation, and voluntary standards
- c) One or more formats of published terms reflecting diverse settings and incorporating the views of a diverse audience of children
- f) Updated AAR with all child related obstacles unfair terms, hazards, opportunities and identified requirements related to the age appropriate presentation of published terms

13. Implementing the Age Appropriate Digital Service Framework (AADSf), including across your supply chain

13.1 Inputs

The following resources constitute a suitable, but neither exhaustive nor normative suite of the process inputs:

- a) The AADSf standard text
- b) Comprehensive documentation about who are the suppliers across the supply chain
- c) Tools to conduct/review suppliers (e.g., how are they reviewing them to demonstrate due diligence)
- d) Suppliers' compliance register
- e) Resources and/or staff to enforce AADSf
- f) A list of staff and roles, in order to identify training needs

13.2 Purpose

The purpose of this process is to verify that the AADSf that this standard creates is implemented in your organization, and across your supply chain. It shall verify that the protections afforded by Section 230 of the US Communications and Decency Act 1996 (and reflected in similar legislation around the globe) does not prevent you offering an age appropriate service to children.

13.3 Outcomes

When you have successfully implemented the Intermediary Platform Status Considerations process, you shall be able to show the following:

- a) The AADSf standard is explicitly adopted and implemented.
- b) The supply chain in use by a digital service or product is reviewed and also verified as offering age appropriate digital services.
- c) Employees with roles in design, governance, and procurement are identified and training in child compliant design is implemented.
- d) Protections and privileges of childhood and children's rights are understood and routinely applied in design and business decisions throughout services and products as a corporate norm.

13.4 Activities and tasks

The project shall implement the following activities and tasks in accordance with applicable organization policies and procedures with respect to the Platform Intermediary Status Considerations process.

- a) Use suppliers and contractors that uphold the AADSF and have mitigated risks and seek to enhance opportunities identified by the AAR.
- b) Provide staff training on implementing the AADSF.
- c) Demonstrate corporate and management buy-in to providing age appropriate digital services.
- d) Record all obstacles, unfair terms, hazards, opportunities and identified requirements to implementing the AADSF.

NOTE—These activities can benefit from close co-operation with stakeholders and the guidance of the value lead.

13.5 Outputs

The following work products constitute a suitable but non-exhaustive suite of the process deliverables:

- b) A supply chain that offers age appropriate terms to child users and prioritizes the best interests of the child
- c) Staff training materials and staff training register
- d) Updated AAR with all child related hazards, opportunities and identified requirements

14. Risk based age appropriate design and development

14.1 Purpose

The purpose of this process is to evaluate the child-related product/service hazards, opportunities, and requirements identified during the child impact exploration process and noted in the AAR, and to specify and implement technical and operational mitigations for the unacceptable levels of risk while embedding and fostering the relevant children rights and regulatory requirements in the product or service. It is worth noting that the processes described in up until this section have required the knowledge and leadership of the Child Rights Advocate and Age Appropriate Lead. This process is a process of “handover,” where the obstacles, unfair terms, hazards, opportunities, and requirements noted in previous processes are passed over to the technical leads to assess and address.

14.2 Outcomes

When you have successfully implemented the Risk-Based Age Appropriate Design and Development process, you shall be able to show the following:

- a) Activities that impact children are appropriately addressed in the product or service design, ensuring child-centered design and operation
- b) All functional and operational aspects and scenarios impacting on children noted in an AAR are evaluated and suitably addressed through risk assessment
- c) Children’s rights and development needs are given priority in the product or service design
- d) A baselined product, service, or system is defined and placed under Change Control and Configuration Management (CCCM)
- e) Published terms articulating remaining risks to children are published by design

14.3 Activities and tasks

The project shall implement the following activities and tasks in accordance with applicable organization policies and procedures with respect to the risk-based age appropriate design:

- a) Review the AAR for areas of functional and operational impact on children as follows:
 - 1) Plan for age appropriate design activities
 - 2) Verify that both intentional and unintentional impacts are addressed in the design
- b) Identify criteria for risk tolerability of hazards, opportunities, and requirements in each context of use. This enables you to assess the tolerability level for each risk and establish the necessity for further risk mitigation
- c) Assess risks and rewards arising from the identified hazards and opportunities as follows:
 - 1) Assess the risks of each hazard using the evaluated level and the tolerability criteria.
 - 2) Assess the benefits (rewards) arising from opportunities and note the commitment to foster and enhance these in the AAR.
 - 3) Rank the importance of each risk, reward, or requirement.

NOTE—The importance may be derived from the desirability and significance for safety and/or realization of children’s rights and needs, or it may be related to the financial damage if the risk or requirement is unmitigated/untreated.

- 4) Decide how to address each risk or potential reward/benefit of your product or service that you are able to by prioritizing which risks or potential benefits need addressing soonest and recording these decisions about prioritization in the AAR.

NOTE 1—Figure 2 depicts an illustrative matrix that can assist with the prioritization of the treatment options for risk/reward and requirements.

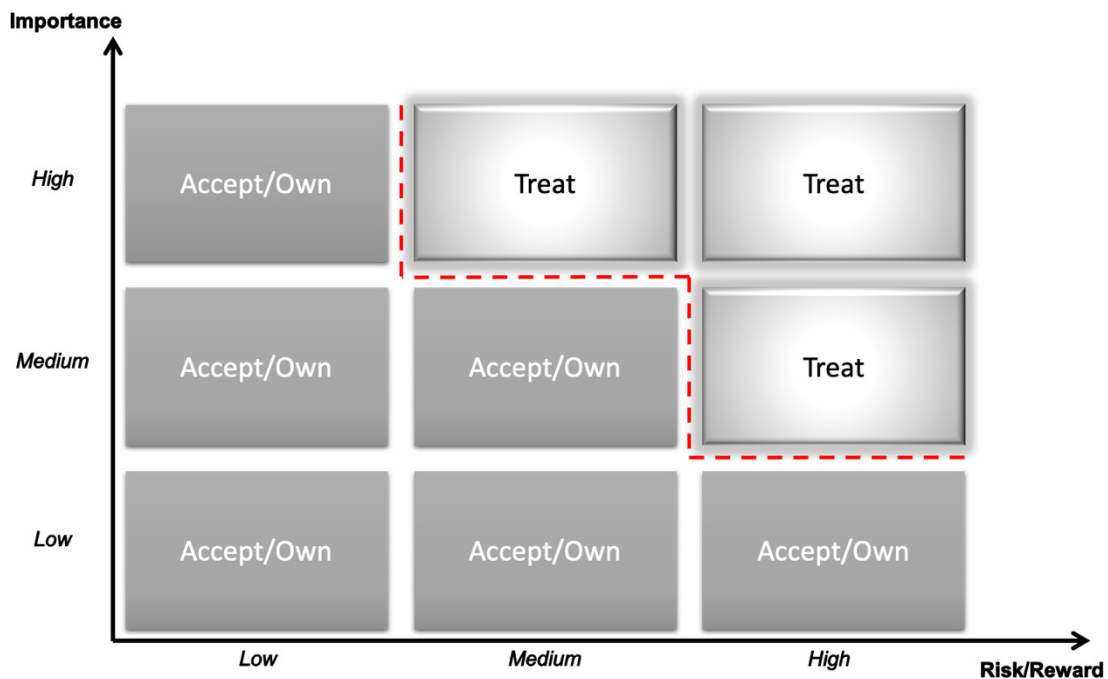


Figure 2—Illustrative analysis and preliminary risk/reward prioritization matrix

NOTE 2—All risks, rewards and requirements prioritized for “Treatment” shall undergo review and identification of technical or procedural measures whereas those classed as “Accept/Own” shall be monitored and reassessed at appropriate intervals.

- 5) Identify how to address the prioritized risks/rewards in a way that mitigates/fosters these to an acceptable level. This could be achieved through functional, procedural, or operational measures.
 - 6) Implement mechanisms to keep children out of the parts of your product or service that are not appropriate for them.
 - 7) Verify that the measures you have implemented to address risks/rewards are acceptable to stakeholders, including children.
 - 8) Record the outcomes of this risk/reward assessment and how you addressed them in your AAR.
- d) Develop technical and operational mitigations as follows:
- 1) Evaluate the design and operational options that optimize solutions with stakeholders, including children.
 - 2) Implement any regulatory requirements, measures needed to mitigate identified risks, and measures needed to foster/enhance benefits into the design of your service or product.
- NOTE—Risk mitigation and opportunity fostering solutions can be technical, operational, procedural, or a combination thereof.
- 3) Record the outcomes of these risk based design decisions in the AAR.
- b) Verify Age Appropriate Design as follows:
- 1) Test the developed design and the Concept of Operations with a group that fully represents stakeholders, including children.
 - 2) Note all the observations and recommendations including additional design modifications in the AAR.
 - 3) Implement the identified design and operational improvements arising from stakeholder trials.
 - 4) Define a CCCM process for the product, service, or system.
 - 5) Define the initial baseline of Age Appropriate Design for your product or service (i.e., where you are starting from) based on the measures you have undertaken so far to make your product or service age appropriate.
 - 6) Draft the Case for Age Appropriate Conformity (see [Annex A](#) for a suggested template).

14.4 Inputs

The following resources constitute a suitable, but neither exhaustive nor normative suite of the process inputs:

- a) AAR

14.5 Outputs

The following work products constitute a suitable, but neither exhaustive suite of the process deliverables:

- a) A completed and documented age appropriate design and operational concept for the product, service, or system of interest
- b) An updated AAR with the risk and reward treatments adopted and the requirements implemented
- c) The outlined Case for Age Appropriate Conformity (see [Annex A](#))

15. Age appropriate deployment, operation, upgrade, monitoring, and decommissioning

15.1 Purpose

The purpose of this process is that the product or service is operated, maintained, upgraded, monitored, and decommissioned in accordance with its age appropriate requirements. It allows the project teams to assess the effectiveness of any steps you have taken to address identified hazards and opportunities and to strategize for further improvements of your risk management processes, policies, and practices.

15.2 Outcomes

When you have successfully implemented the Age Appropriate Deployment, Operation, Upgrade, Monitoring and Decommissioning process, you shall be able to show the following:

- a) Appropriate monitoring that the deployment, operation, maintenance, and upgrades of the product or service are age appropriate
- b) Any child-related issues observed are noted in the AAR and addressed
- c) Where necessary, preparations for standard and risk assessment are repeated for newly identified obstacles, unfair terms, hazards, and opportunities
- d) Disposal and decommissioning are performed in line with age appropriate requirements and guidelines

15.3 Activities and tasks

The project shall implement the following activities and tasks in accordance with applicable organization policies and procedures with respect to the age appropriate design:

- a) Monitor the product or service deployment, operation, maintenance and upgrades with a view to age appropriate requirements. This activity consists of the following tasks:
 - 1) Evaluate whether the product or service has been deployed in consistence with the requirements in the AAR and define a baseline and record in the AAR.
 - 2) At regular intervals, determine whether the product or service is operated, maintained and upgraded in accordance with age appropriate requirements in the AAR.

NOTE—The organization should specify the intervals of revisiting the system in co-operation with stakeholders.
- b) At regular intervals, collect field data and stakeholder feedback and analyze the product or service with a view to the following criteria:
 - 1) The age appropriate risk treatment options implemented retain their effectiveness in the contexts of application.
 - 2) New age appropriate aspects at risk are recognized and addressed in the subsequent redesign or adaptation of the product or service before re-deployment.
 - 3) In the event of inadequacy of risk treatment options, consult stakeholders and either strengthen these or identify new treatment options to maintain the protection demand for each age appropriate requirement in the product or service.
- c) Properly dispose of the product or service. This activity consists of the following task: verify that no children rights, data, or privacy aspects are undermined when disposing of or taking the system out of service, consistent with applicable laws and regulations.

- d) Record lessons learnt in the AAR.

NOTE—If feasible within corporate practice, make lessons learnt available for other organizations.

NOTE—The monitoring is particularly relevant to data driven services and systems and those with emergent behaviors due to machine learning or adaptative behavior.

15.4 Inputs

The following resources constitute a suitable but neither exhaustive nor normative suite of the process inputs:

- a) A functional system designed incorporating age appropriate requirements.
- b) A product or service concept of operation.
- c) Intended and potential context(s) of system use.
- d) An AAR for product or service.

15.5 Outputs

The following work products constitute a suitable but neither exhaustive suite of the process deliverables:

- a) Refined concept of operation
- b) Updated AAR for the product or service life cycle maintenance by the relevant duty holders
- c) Updated Case for Age Appropriate Conformity

Annex A

(normative)

Case for Age Appropriate Conformity

This standard provides advisory and normative requirements for age appropriate aligned design, development, operation and decommissioning activities. It is highly desirable, however, that the effort, resources, and time spent, as well as evidence and outcomes attained in the course of implementing the requirements and the spirit of this standard, are recorded, consolidated, structured, and presented in an adequate, consistent, and coherent narrative: a Case for Age Appropriate Conformity. The case for age appropriate product/service is a project memory and an auditable repository. Similar to a safety case, the Case for Age Appropriate Conformity is intended to provide a structured account of the ethical and technical activities undertaken in the course of pursuing an ethically aligned age appropriate design for the product or service. The Case for Age Appropriate Conformity is a key contribution toward the organizational memory and maturity in ethically aligned design, and a foundational information product for subsequent assessments and potential certification.

The structure, contents, and arguments pertinent to a final claim for an ethically aligned age appropriate product, service, or system of interest should be developed in an evolutionary manner throughout the life of a system. The Case for Age Appropriate Conformity encourages the process outputs, evidence, and outcomes to be recorded at each stage of the ethically aligned age appropriate design, development, and operation to provide a process or project repository and memory as well as a structured argument for the age appropriateness of the product, service, or system. It constitutes indispensable inputs into any subsequent age appropriate assessment for the product or service and the organization.

The following list of contents is recommended for the Case for Age Appropriate Conformity for a given product or service that also serves as a checklist that can be satisfied by the organization's content mapping, templates, and information models. This outline is not intended to address all possible contents or to mandate the title of the information item, nor the order or titles of the sections in documents presenting some or all of the contents of the Case for Age Appropriate Conformity.

- a) Introduction
 - 1) Societal context
 - 2) Key drivers
- b) System of Interest, Scope, and Boundaries
 - 1) Purpose
 - 2) Context: Scope, Boundary, and Interfaces
 - i) Direct and indirect stakeholders
 - ii) Data flows
 - iii) Processes
 - 3) Initial Concepts of Operation
 - 4) Other supporting or dependent systems
- c) Setting the Age Appropriate Context Outcomes
 - 1) Realistic scenario description
 - i) Envisaged market share assumption (as outlined in the business plan)
 - ii) Assumed place(s) of service usage

- iii) Assumed geographic location(s) of service offering
 - iv) Assumed primary user interface(s)
 - 2) Preliminary harms and benefits
 - 3) Key stakeholders involved in consultation
 - 4) Consultation
 - 5) AAR
 - i) List of areas of impact on children
 - ii) Child related hazards and opportunities
 - iii) Value narrative (e.g., scenario or use case illustrating the effect of the value)
- d) Enterprise Age Appropriate Strategy
 - 1) Enterprise Age Appropriate Policy Statement (see [Annex D](#))
 - 2) Enterprise Age Appropriate aligned processes
- e) System Level Age Appropriate Requirements
 - 1) Age Appropriate Values impacted by the product or service
- f) Ethical Age Appropriate Risk Assessment and Management Outcomes
 - 1) Age Appropriate scenarios at Risk, evaluation and tolerability criteria
 - 2) Age Appropriate opportunities sustained or promoted
 - 3) Risk mitigation and control options for Age Appropriate scenarios at Risk
 - 4) Derivation of Age Appropriate functional and non-functional requirements
 - 5) Balancing of Age Appropriate requirements against other system requirements
- g) Age Appropriate functional and non-functional Requirements traced in the System Design
- h) Claims for the Age Appropriate product or service and Conclusions
- i) Principal resources and references

Annex B

(informative)

Illustrative AAR

This standard advocates the adoption or development of an AAR as a repository of all child relevant aspects of a product or service inclusive of all beneficial and detrimental aspects. The AAR is the “medium” that is used to document, communicate, and “handover” between the Child Rights Advocate and Age Appropriate Lead, who steer Processes 7 through 13, and the technical leads, who steer Process 15. An illustrative list of information items for AAR is given in [Table B.1](#).

Table B.1—Example set of AAR information structure

Age appropriate information	Explanation	Comments
Unique reference	A unique identifier for each record in the AAR	
Date	Date for information entry	
System of interest	The name or title of the product, service, or system under consideration	
Aim and purpose	The key purpose of the product or service as a product, service, or system	
Aspect	The particular and referenced aspect of the concept of operation of the product or service under consideration	Can be a technical, functional, or operational aspect
Context	The context of application under consideration	The environment and specific setting for the application
Impact on children	Whether the aspect and context have any relevance and impact on children	
Hazard or opportunity	The type of impact, undesirable/threat, or desirable	
Scale of impact	The estimated scale of impact as hazard or opportunity	This can be qualitative or quantitative
Potential mitigation options	The likely acceptable protection and mitigation solutions	Typically a range of risk controls
Potential fostering options	The likely opportunity fostering and enhancement solutions	These are additional positive actions to enhance the benefit from good features
Risk tolerability criteria	The criteria for acceptability or tolerability of risk factors	These can be qualitative or quantitative
Selected design solution	The specific options chosen for technical or operational modifications of the product or service	
Verification observations	Outcome of checks for correctness and applicability of the risk and reward options and impact	Verification is a local check for relevance and correctness
Validation observations	The outcome of trials of the risk control and reward fostering options with stakeholders and children	Validation is a whole service/product level of fitness for an age appropriate purpose
Deployment observations	Any relevant issues and observations from putting the product or service into use	
Regulation/law	The requirements arising from specified regulations and laws	Requirements to be noted in the AAR
Code of practice	The requirements arising from specified adopted international or national codes of practice for child protection	Requirements to be noted in the AAR
Age appropriate duty holder	The name of the person responsible for the record and risks	Could be the Age Appropriate Lead risk manager
NOTE—These can be implemented in any IT platform or tool that the project finds appropriate.		

Annex C

(informative)

Age appropriate frameworks

A number of age appropriate frameworks are referenced here to set the context for this standard.

- a) Australian Institute of Family Studies - Online Safety resource sheet
<https://aifs.gov.au/cfca/publications/online-safety>
- b) Child Protection Online – OECD
<https://www.oecd-ilibrary.org/sites/796ac574-en/index.html?itemId=/content/component/796ac574-en>
- c) Child Rights Impact Assessment
<https://fra.europa.eu/en/publication/2015/mapping-child-protection-systems-eu/impact-assessment#:~:text=Child%20rights%20impact%20assessment%20is,development%20of%20policies%20and%20laws.>
- d) Child Safety Online
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/487973/ukccis_guide-final__3_.pdf
- e) Children’s Right impact assessment tool
https://www.unicef.org/csr/css/Children_s_Rights_in_Impact_Assessments_Web_161213.pdf and
<https://fra.europa.eu/en/publication/2015/mapping-child-protection-systems-eu/impact->
- f) Education for a Connected World – 2020 Edition
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/896323/UKCIS_Education_for_a_Connected_World_.pdf
- g) Office of the eSafety Commissioner
<https://esafety.gov.au>, <https://www.esafety.gov.au/educators>
- h) Safeguarding Children in a Digital World – Developing an LSCB e-safety Strategy
https://dera.ioe.ac.uk/7372/2/A9R40BD_Redacted.pdf
- i) Safeguarding Children in a Digital World – Wise Kids
http://www.wisekids.org.uk/BECTA%20Publications/safeguarding_digital_world.pdf
- j) UK Council for Child Internet Safety Digital Resilience Framework
<https://www.trustnet.pro/news/dyn/d9498db9-621a-4f5c-b4eb-ebbcd179f1d8>
- l) UK Council for Internet Safety

Annex D

(informative)

Illustrative Age Appropriate Enterprise Policy Statement

The(group name).... values young people and children as being a vital part of the stakeholder community within the context of the (product or service) and desires to see them grow, mature, and be challenged in a healthy and safe digital world.

Purpose

The purpose of(group name).... children and young people’s program is to offer the children a safe and welcoming environment with fun activities where the children can grow and learn. Whether this be through (groups name) activities or through other independent groups working in partnership with(group name)....

Aims

- To provide services and activities for children and young people to help them develop from childhood into adulthood and to provide support for them.
 - To enable the children to express themselves.
 - To assist the children in integrating into the community.
 - To help children/young people appreciate the diversity of their cultures.
- What is age appropriate child protection?
 - Organization (whether group or name) or a partner group/organization)
 - Age Appropriate Child Protection Representative
 - Training
 - What you should do
 - What you should not do

This policy was adopted by the(group name).... on _____

Signed on behalf of the Management Committee by:

Signature _____

Name _____

The policy has been reviewed by the Management Committee on: Date _____

Annex E

(informative)

Examples of regulations

E.1 Data protection regulations, including regulations that protect children's data specifically

- Age Appropriate Design Code, 2020 (UK)
- Fundamentals for a Child Oriented Approach to Data Protection, 2020 (Ireland)
- Children's Online Privacy Protection Rule, 1998 (US)
- Children's Online Privacy Protection Act, 15 U.S.C. 91
- Privacy Rights for California Minors in the Digital World, CA Bus. and Prof. Code § 22580, et seq.

E.2 Consumer legislation

- Federal Competition and Consumer Protection Commission Bill, 2018 (Nigeria)
- The Consumer Basic Act sets, 2000 (Japan)
- Consumer's Defense Code (Código de Defesa do Consumidor), 1998 (Brazil)
- California Consumer Privacy Act, Cal. Civ. Code § 1798.100, et seq.

E.3 Equality legislation

- Gender Equality Act, 2015 (Thailand)
- Promotion of Equality and Prevention of Unfair Discrimination Act, 2000 (South Africa)
- General Act on Equality between Women and Men (Ley General para la Igualdad entre Mujeres y Hombres) 2006 (Mexico)
- Family Educational Rights and Privacy Act, 20 U.S.C. §1232(g)

E.4 Children's Acts or legislation that covers the safety, wellbeing and treatment of children

- Law relating to the rights and the protection of the child, 2012 (Rwanda)
- Law 26061 on the Comprehensive Protection of the Rights of Children and Adolescents (Ley de Protección Integral de los Derechos de las Niñas, Niños y Adolescentes), 2005 (Argentina)
- Juvenile Justice (Care and Protection of Children) Act, 2015 (India)
- Online Safety Act, 2021 (Australia)
- Children's Internet Protection Act, 2000 (USA)

E.5 Health and Safety legislation

- Health and Safety at Work Act, 1996 (Fiji)
- Canada Labour Code (Code Canadien du Travail) 1985 (Canada)
- Industrial Safety and Health Law, 1972 (Japan)

Annex F

(informative)

Bibliography

Bibliographical references are resources that provide additional or helpful material but do not need to be understood or used to implement this standard. Reference to these resources is made for informational use only.

[B1] 5Rights Foundation 5Rights Framework.¹⁵

[B2] ISO/IEC 25063.3, Systems and software engineering—Systems and software product Quality Requirements and Evaluation (SQuaRE)—Common Industry Format (CIF) for usability: Context to use description.

[B3] UK Information Commissioner’s Office, Introduction to the Age appropriate design code.¹⁶

[B4] United Nations Committee on the Rights of the Child General Comment (15), 2013 on The Right of the Child to the Enjoyment of the Highest Attainable Standard of Health.¹⁷

[B5] United Nations Committee on the Rights of the Child General Comment (16) on State Obligations Regarding the Impact of Business on Children’s Rights.¹⁸

[B6] United Nations Department of Economic and Social Affairs, Transforming Our World: the 2030 Agenda for Sustainable Development.¹⁹

[B7] United Nations Guiding Principles of Business and Human Rights.²⁰

[B8] United Nations Millennium Declaration.²¹

[B9] United Nations Principles for Responsible Management Education. The Six Principles for Responsible Management Education.²²

[B10] United Nations Sustainable Development Goals: A Guide for Business and Management Education²³

¹⁵ Available at: <https://5rightsfoundation.com/about-us/the-5-rights/>

¹⁶ Available at: <https://ico.org.uk/for-organisations/guide-to-data-protection/ico-codes-of-practice/age-appropriate-design-code/>

¹⁷ Available at: https://www2.ohchr.org/english/bodies/crc/docs/GC/CRC-C-GC-15_en.doc

¹⁸ Available at: <https://www2.ohchr.org/english/bodies/crc/docs/CRC.C.GC.16.pdf>

¹⁹ Available at: <https://sdgs.un.org/2030agenda>

²⁰ Available at: http://SoI.ohchr.org/Documents/Publications/GuidingPrinciplesBusinessHR_EN.pdf

²¹ Available at: <https://SoI.ohchr.org/EN/ProfessionalInterest/Pages/Millennium.aspx>






²² Available at: <https://www.unprme.org/>

²³ Available at: <https://SoI.un.org/sustainabledevelopment/sustainable-development-goals>



RAISING THE WORLD'S STANDARDS

Connect with us on:

-  **Twitter:** twitter.com/ieeesa
-  **Facebook:** facebook.com/ieeesa
-  **LinkedIn:** linkedin.com/groups/1791118
-  **Beyond Standards blog:** beyondstandards.ieee.org
-  **YouTube:** youtube.com/ieeesa

standards.ieee.org
Phone: +1 732 981 0060