Digital India
Power To Empower

इलेक्ट्रॉनिकी एवं
सूचना प्रौद्योगिकी मंत्रालय
MINISTRY OF
ELECTRONICS AND
INFORMATION TECHNOLOGY
सत्यमेव जयते

COMPENDIUM ON

MeitY initiatives on Accessibility

Scan QR Code for digital copy

Table of Contents

Table of Contents **2**
Introduction **4**
1 Indian Standard: Accessibility for the ICT Products and Services **5**
1.1 Objective 5
1.2 About the Standard 6
1.3 Impact 7
2 User Experience for Government Applications (UX4G) **9**
2.1 Objective 9
2.2 What is UX4G Accessibility Widget? 9
2.3 How to Implement? 10
3 Guidelines for Indian Government Websites (GIGW) **11**
3.1 Objective 11
3.2 Impact 12
3.3 About the guidelines 13
4 Checklist for testing of Website Accessibility **15**
5 Content Management Framework **22**
5.1 Objective 22
5.2 About CMF 22
5.3 Impact 24
6 Secure, Scalable and Sugamya Website as a Service (S3WaaS) **25**
6.1 Objective 25
6.2 About S3WaaS 25
7 Enhancement & Management of Websites of Ministries / Departments **27**
7.1 Objective 27
7.2 About the project 27
7.3 Impact 28
8 Punarjjani **30**
8.1 Objective 30
8.2 Advantages of Punarjjani™ 31
8.3 Unique Features of the Punarjjani 32
9 DISAAA: Development of an Integrated Solution for Automatic Assessment of Autism **33**
9.1 About the project 33
9.2 Salient Features 33
9.3 Impact 33

10 Making State Government Websites Accessible 35
11 Virtual-Reality-based Assistive System for Learning and Assessment of Persons with Intellectual Disabilities 36
11.1 About the project 36
11.2 Need of the project: 37
11.3 Key achievements: 37
12 Accessibility of private websites 38
13 Capacity Building Program 39
13.1 Objective 39
13.2 About the program and detailed agenda 40
13.3 Impact 40
14 Cloud-based accessibility reporting tool (SugamyaWeb) 41
14.1 Objective 41
14.2 About the project 41
14.3 Features 41
15 Sign Language Accessibility for e-Governance services 43
15.1 Objective 43

Introduction

The Constitution of India ensures justice, equality, liberty and fraternity and it assures the dignity of the individual as well as equality of status and opportunities to all its citizens, including differently abled persons.

In the electronics age, Information & Communication Technologies (ICTs) are used in all areas of life such as education, health, employment, entertainment, banking etc. ICTs can mitigate the barriers faced by differently abled persons as well as help them to participate independently in day-to-day life. It is imperative to ensure that ICTs are accessible to differently abled so that they act as an enabler for providing equal opportunities to the differently abled.

The National Policy on Universal Electronic Accessibility released by MeitY in 2013 and the Rights of Persons with Disabilities Act, 2016 recognize the need to eliminate the discrimination based on disabilities and to facilitate equal access to Electronics & ICTs.

- ✓ The National Policy on Electronic Accessibility recognizes the need to eliminate discrimination based on disabilities and to facilitate equal access to Electronics & ICTs.
- ✓ India ratified the United Nations Convention on the Rights of Persons with Disabilities (CRPD) in 2007 and passed the Rights of Persons with Disabilities Act (RPwD act) in December 2016 which came into effect from 19th April 2017. As per the RPwD Act 2016, twenty-one (21) types of disabilities have been recognized and listed under physical disabilities. As per the Rights of Persons with Disabilities (RPwD) Act, 2016, the key sections pertaining to ICT Accessibility are Section 40: Accessibility; and Section 42: Access to Information and Communication Technology.

MeitY has been at the forefront of promoting inclusivity and accessibility for people with disabilities in the ICT ecosystem and has made sustained efforts to provide a common platform to Indian citizens to access ICT products and services.

This compendium aims to provide an overview of the various initiatives and highlight the significant progress made in improving the lives of people with disabilities in India. Through sustained efforts and collaborative partnerships, the Government of India continues to pave the way for a more inclusive and equitable society, where every citizen has equal opportunity to thrive.

1 Indian Standard: Accessibility for the ICT Products and Services

1.1 Objective

Under the provisions of the Rights of Persons with Disabilities Act, 2016 and as per the directions of the Cabinet Secretariat, the Central Ministries/Departments were to formulate the Accessibility Standards/guidelines pertaining to the sectors under their control, in consultation with the office of Chief Commissioner of Persons with Disabilities (CCPD).

India has been laying down guidelines for accessibility of websites and mobile apps, through inclusion of mandatory accessibility guidelines by the National Informatics Centre (NIC) and the Department of Administrative Reforms and Public Grievances (DARPG) for government sites, by adopting the Guidelines for Indian Government Websites (GIGW) in conformity with WAI/WCAG guidelines.

In response to the RPwD Act, 2016, many sectors such as telecom, broadcasting, urban development, education, banking, and other concerned ministries have been conducting stakeholder consultations to either formulate new or update existing accessibility requirements in respect of their sectoral applications of ICT. As a result, some of them have already announced updated policies, standards, and guidelines as in the cases of the Department of Telecommunications (DoT)/Telecom Regulatory Authority of India (TRAI), Ministry of Information and Broadcasting (MoI&B) (including in respect of content), Ministry of Urban Development and Ministry of Education.

In line with global trends towards developing a cohesive, consistent, and cross-cutting standard for accessibility requirements in ICT products and services across all sectors, the matter of formulation of the ICT Accessibility Standard was proactively taken up by MeitY and a project named “Knowledge & Resource Centre for Accessibility in ICT (KAI)” was initiated. The draft ICT Accessibility Standard was shared with public Ministries/Departments, BIS, and other stakeholders for their feedback.

During the preparation of this standard, several consultation meetings and discussions were held with a wide cross section of stakeholders including the Ministry of Electronics and Information Technology (MeitY), the Department of Empowerment of Persons with Disabilities (DEPwD), the Ministry of Housing and Urban Affairs (MoHUA) and the Department of Telecommunications (DoT).

Based on the feedback received and in consultation with the CCPD; the Ministry of Electronics and Information Technology (MeitY) along with Centre for Development of Advanced Computing (CDAC), Pune and the Bureau of Indian Standards (BIS) has published an Indian Standard (IS 17802) for the accessibility of ICT products and services.

The said standard has been incorporated into the RPWD Rules, 2023, wherein, the standard has been legally enforced in the country.

1.2 About the Standard

IS 17802 is a comprehensive standard that applies to a wide range of ICT products and services, including websites and apps, software and hardware, telecommunications equipment, electronic documents, broadcasting services, emergency relay services and documentation.

It focuses on user experience and covers accessibility requirements in terms of functional performance requirements pertaining to various disabilities listed in the RPwD Act 2016 such as usage without vision, usage with limited vision, usage without perception of colour, usage without hearing, usage with limited hearing, usage without vocal capability, usage with limited manipulation or strength, usage with limited reach, minimize photosensitive seizure triggers, usage with limited cognition, language & localization, privacy including compatibility with assistive technologies and accessibility documentation (accessible support and help documentation for ICT products and services). The standard also addresses specific needs of the Indian population, support for multiple Indian languages and ensure compliance with the RPwD Act, 2016.

The standard is harmonized with prevailing National standards, policies and guidelines and aligns with major international standards such as European Standard EN 301 549 v 3.2.1 and guidelines like WCAG 2.1 and ADA Section 508 ensuring global compatibility.


भारतीय मानक
Indian Standard
IS 17802 (Part 1) : 2021
आइसीटी उत्पादों और सेवाओं के लिए अभिगम्यता
भाग 1 अपेक्षाऐं
Accessibility for the ICT Products and Services
Part 1 Requirements
ICS 35.240.80, 11.180
© BIS 2021
भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS
मानक भवन, 9 बहादुरशाह जफर मार्ग, नई दिल्ली - 110002
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI-110002
www.bis.gov.in www.standardsbis.in
December 2021
Price Group 16
भारतीय मानक
Indian Standard
IS 17802 (Part 2) : 2022
आइसीटी उत्पादों और सेवाओं के लिए अभिगम्यता
भाग 2 अनुरूपता का निर्धारण
Accessibility for the ICT Products and Services
Part 2 Determination of Conformance
ICS 35.240.80, 11.180
© BIS 2022
भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS
मानक भवन, 9 बहादुरशाह जफर मार्ग, नई दिल्ली - 110002
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI-110002
www.bis.gov.in www.standardsbis.in
April 2022
Price Group 16

Figure 1: IS 17802 Part 1 and Part 2

Two-Part Structure:

Part 1: Requirements

This standard provides a set of accessibility requirements specifying how to make content accessible, primarily for people with disabilities, as well as for all end users. The Gazette notification for Part 1 of Standard (IS 17802) was published in December 2021.

This standard (Part 1) specifies the needs of people with visual, auditory, speech, physical and neurological disabilities and those with limited cognition, language, and learning, applicable to ICT products and services in terms of functional performance statements. It also covers the generic technical requirements for various types of ICT products and services to meet functional performance statements. In line with the *RPwD Act* 2016, this standard addresses a wide range of ICT products and services related to information and communication, including telecom services, web-based services, electronic and print services, digital and virtual services. This standard is intended to be used in the context of web-based technologies, non-web technologies and those that use both. It covers software, hardware, and content as well as services.

Part 2: Determination of Conformance

This Standard comprises of 308 controls and provides detailed procedures for evaluating the compliance of any product and/or service against Part 1 of the Indian Accessibility Standard. The Gazette notification for Part 2 of Standard (IS 17802) was published in May 2022.

This Indian Standard (Part 2) specifies the test procedures and evaluation methodology for the accessibility requirements of ICT products and services outlined in Part 1 of this standard. This standard (Part 2) also provides guidance on preparing the accessibility conformance report for ICT products and services against each requirement.

1.3 Impact

In May 2023, the Rights for Persons with Disabilities Rule Amendment made IS 17802 legally enforceable, making it mandatory for all government websites and mobile applications to comply with its accessibility requirements.

ICT is an all-encompassing aspect of daily life, enabling individuals to perform their duties effectively and with ease. The wider adoption of ICT based solutions by various key sectors like governance, commerce, education, and health is happening across the country. Nationwide initiatives such as

Digital India, Smart Cities and Skill India are driving momentum, promoting the adoption of ICT solutions for improved effectiveness, ease of life, and advancement.

It is important that accessibility aspects are adopted by such powerful ICT medium towards inclusive development. IS 17802 is a cross-cutting standard catering to accessibility requirements in various ICT products and services that horizontally cuts across various line ministries. Multiple line ministries/departments such as Departments of Law and Justice, Consumer Affairs and Telecommunication are following the IS17802 within their respective domains for people with disabilities.

*****

2 User Experience for Government Applications (UX4G)

2.1 Objective

To adapt best practices by government Departments in UI/UX (User Interface/User experience) a project named as "User Experience for Government Websites & Apps (UX4G)" also known as UI/UX4G was launched. UX4G aims to assist various government departments in improving the user experience (UX) and user interface (UI) of their digital applications by redesigning and revamping them. The goal is to create a more user-friendly and enjoyable experience for the end-users.

Offerings:

i. **UX Enhancements:** Assistance on better user experience and user interface practices which comprises User Research & UX audits, better UX flows and more.

ii. **Design System:** A digital library of ready-to-use components that improve the end user experience and simplify work. It eliminates duplication of effort and saves time for both designers and developers.

iii. **Design Handbook:** A brief collection of best practices, recommendations, and suggestions to improve User Experience and usability of government applications. This will provide user friendly and personalized design experience across various government applications.

iv. **Capacity Building:** To enhance the understanding of standard UX practices for digital services within government through awareness workshops and advanced training on UX design thinking, audits and implementing design system.

v. **UX Health Self-Check:** A strategic tool to ensure that UX best practices are consistently applied across a website or mobile application. It consists of a detailed checklist that provides a structured approach to ensure compliance at various stages of the design process.

2.2 What is UX4G Accessibility Widget?

The Accessibility Widget by UX4G includes integral features that ensure usability and inclusivity for all individuals. It integrates numerous features that once implemented, allow all individuals with various abilities to use websites with ease.

The widget includes components such as screen reader, options to change fonts /line height/ text spacing/ cursor/colour, hide images, dyslexia friendly, light-dark mode, link highlighting etc. These ready-to-use digital assets are available at https://www.ux4g.gov.in/.

2.3 How to Implement?

For detailed guidance on implementation, it is recommended to visit https://doc.ux4g.gov.in/.

*****

3 Guidelines for Indian Government Websites (GIGW)

3.1 Objective

In recent years, digital technologies have increasingly contributed to economic growth and citizen empowerment. These technologies have become ubiquitous in everyday life and enable people to access various services from the comfort of their homes. The government has established a web presence through multiple websites, web portals, web applications and mobile apps that offer information and services to the public. However, inconsistency in conventions, layout standards, navigation strategies and technologies adopted has affected the effectiveness of websites/apps. This unavailability of such Standards in Indian ecosystem posed challenges amongst "Divyangjan" to access ICT products and services in a more efficient manner.

The GIGW guidelines (Guidelines for Indian Government Websites) were created to address several key issues with government websites in India such as:

i. **Lack of uniformity and quality:**
   Prior to the introduction of GIGW, government websites exhibited significant inconsistencies in design, structure, and content. This made it difficult for users to navigate and find relevant information, regardless of their location or technical expertise.

ii. **Inaccessibility:**
   Many websites were not accessible to people with disabilities, further limiting access to important information and services.

iii. **Inefficient development and maintenance:**
   Government websites often lacked consistency in development approaches and maintenance practices, leading to inefficiency and potential security vulnerabilities.

iv. **Need for citizen-centric approach:**
   There was a growing need to shift the focus of government websites from internal communication to effectively serving citizens. GIGW aimed to create user-friendly websites that met citizens' needs and expectations.

v. **Regulatory framework:**

With the increasing importance of e-governance, there was a need for a set of guidelines to ensure consistency and compliance across different government websites.

3.2 Impact

The Guidelines for Indian Government Websites (GIGW) have several significant impacts:

i. **Improved Accessibility:**
GIGW mandates that government websites comply with accessibility standards, ensuring usability for persons with disabilities. This improves inclusivity and ensures that government services are accessible to all citizens, regardless of their abilities.

ii. **Enhanced User Experience:**
By following GIGW guidelines, government websites are designed to be user-friendly, intuitive, and easy to navigate. This leads to an improved overall user experience for citizens interacting with government services online.

iii. **Increased Transparency and Accountability:**
GIGW encourages government agencies to provide comprehensive and accurate information on their websites. This fosters transparency in government operations and enhances public trust by making information readily accessible to citizens.

iv. **Cost Savings:**
Adhering to GIGW guidelines can result in cost savings for government agencies in the long term. By adopting best practices for website design and development, agencies can avoid costly redesigns and maintenance issues.

v. **Legal Compliance:**
Compliance with GIGW is mandatory for all government websites in India. Failure to comply with these guidelines may result in legal consequences, including fines or other penalties. Therefore, government agencies are incentivized to ensure that their websites meet GIGW requirements.

vi. **Standardization and Consistency:**
GIGW promotes standardization and consistency in the design and content of government websites. This facilitates ease of use for citizens who interact with multiple government agencies online, as they encounter familiar layouts and navigation structures.

vii. **Digital Inclusion:**

By ensuring that government websites are accessible and user-friendly, GIGW contributes to digital inclusion efforts, allowing all citizens, including those with limited digital literacy or access to technology, to benefit from online government services.

viii. **Encouragement of Best Practices:**

GIGW encourages the adoption of best practices in website design, content management, and accessibility. This promotes continuous improvement in the quality of government websites and sets a benchmark for excellence in the field of digital governance.

For more details on GIGW 3.0 Guidelines, refer the link- https://guidelines.india.gov.in/introduction/

3.3 About the guidelines

The GIGW guidelines were formulated by National Informatics Centre (NIC) in the year 2009. GIGW aims to ensure quality and accessibility of government guidelines, by offering guidance on desirable practices covering the entire lifecycle of websites, web portals and web applications, right from conceptualization and design to their development, maintenance, and management.

The current version is the third version of the Guidelines for Indian Government Websites (GIGW 3.0). While earlier versions were formulated in-house with external inputs, GIGW 3.0 has been developed in collaboration with the Standardisation Testing and Quality Certification (STQC) Directorate of the Ministry of Electronics and Information Technology and the Indian Computer Emergency Response Team (CERT-In). This collaboration ensured that the experiences of STQC Directorate auditors in assessing conformity, as well as the cybersecurity knowledge and expertise of CERT-In, are incorporated into the guidelines. As in the earlier versions, GIGW 3.0 has also been formulated with input from industry and experts.

The key thrust of GIGW 3.0 is to offer specific guidance to government organisations on how to improve the user interface and user experience (UI and UX), by incorporating features such as intuitive page loading (using AI and analytics) based on user journey and user profile, utilizing a state-of-the-art content management system (CMS), user-centric information architecture (IA), centralised monitoring dashboard to identify and provide alerts on non-conformity and technical enablement of all content creators and publishers.

The guidelines aim to assist government organizations in ensuring that their websites/apps adhere to consistently high standard. This is expected to enhance the trust level of the citizens while accessing government information and availing of services online.

i. Conformity to guidelines:

These guidelines have been framed with the objective to make the government websites/apps conform to the essential prerequisites of the UUU trilogy of usability, user-centricity, and universal accessibility.

These guidelines are based on international standards, including ISO 23026, W3C's Web Content Accessibility Guidelines (WCAG 2.1) Rights of Persons with Disabilities Act, 2016, as well as the Information Technology Act, 2000. These guidelines also form the basis for obtaining the Website Quality Certification from the STQC Directorate. Details of the certification scheme are available at https://www.stqc.gov.in/website-quality-certification-0.

ii. How to use GIGW 3.0:

Government organisations are expected to read, understand, and implement these guidelines on all their web-based initiatives. In other words, all the websites/apps owned by government organisations must comply with these guidelines. It is recommended that browser-based intranet applications should also follow these guidelines. Depending upon their specific requirements, government organisations may draw up short-term and long-term timebound implementation plans for achieving conformity to these guidelines.

*****

4 Checklist for testing of Website Accessibility

The checklist for the testing of website accessibility is mentioned below and is being used by STQC for testing the websites.

S. No.	Accessibility Checklist:	Observation	Remarks
1	All non-text content that is presented to the user has a text alternative that serves the equivalent purpose, except for the situations listed below.		
2	For pre-recorded audio-only and pre-recorded video-only media, the following are true, except when the audio or video is a media alternative for text and is clearly labelled as such: • Pre-recorded Audio-only: An alternative for time-based media is provided that presents equivalent information for pre-recorded audio only content. • Pre-recorded Video-only: Either an alternative for time-based media or an audio track is provided that presents equivalent information for prerecorded video-only content.		
3	Captions are provided for all pre-recorded audio content in synchronized media, except when the media is a media alternative for text and is clearly labelled as such.		
4	An alternative for time-based media or audio description of the pre-recorded video content is provided for synchronized media, except when the media is a media alternative for text and is clearly labelled as such.		
5	Captions are provided for all live audio content in synchronized media.		
6	Audio description is provided for all prerecorded video content in synchronized media.		
7	Information, structure, and relationships conveyed through presentation can be programmatically determined or are available in text.		
8	When the sequence in which content is presented affects its meaning, a correct reading sequence can be programmatically determined.		
9	Instructions provided for understanding and operating content do not rely solely on sensory characteristics of components such as shape, color, size, visual location, orientation, or sound.		
10	Content does not restrict its view and operation to a single display orientation, such as portrait or landscape, unless a specific display orientation is essential.		

S. No.	Accessibility Checklist:	Observation	Remarks
11	The purpose of each input field collecting information about the user can be programmatically determined when: • The input field serves a purpose identified in the Input Purposes for User Interface Components section; and • The content is implemented using technologies with support for identifying the expected meaning for form input data.		
12	Color is not used as the only visual means of conveying information, indicating an action, prompting a response, or distinguishing a visual element.		
13	If any audio on a Web page plays automatically for more than 3 seconds, either a mechanism is available to pause or stop the audio, or a mechanism is available to control audio volume independently from the overall system volume level.		
14	The visual presentation of text and images of text has a contrast ratio of at least 4.5:1, except for the following: • Large Text: (18 pt. or 14 pt. bold) Large-scale text and images of largescale text have a contrast ratio of at least 3:1. • Incidental: Text or images of text that are part of an inactive user interface component, that are pure decoration, that are not visible to anyone, or that are part of a picture that contains significant other visual content, have no contrast requirement. • Logotypes: Text that is part of a logo or brand name has no contrast requirement.		
15	Except for captions and images of text, text can be resized without assistive technology up to 200 percent without loss of content or functionality.		
16	If the technologies being used can achieve the visual presentation, text is used to convey information rather than images of text except for the following: • Customizable: The image of text can be visually customized to the user's requirements. • Essential: A particular presentation of text is essential to the information being conveyed.		
17	Content can be presented without loss of information or functionality and without requiring scrolling in two dimensions for: Vertical scrolling content at a width equivalent to 320 CSS pixels. Horizontal scrolling content at a height equivalent to 256 CSS pixels. Except for parts of the content which require a two-dimensional layout for usage or meaning.		

S. No.	Accessibility Checklist:	Observation	Remarks
18	The visual presentation of the following has a contrast ratio of at least 3:1 against adjacent colour(s): • User Interface Components: Visual information required to identify user interface components and states, except for inactive components or where the appearance of the component is determined by the user agent and not modified by the author. • Graphical Objects: Parts of graphics required to understand the content, except when a particular presentation of graphics is essential to the information being conveyed.		
19	In content implemented using markup languages that support the following text style properties, no loss of content or functionality occurs by setting all of the following and by changing no other style property: Line height (line spacing) to at least 1.5 times the font size. • Spacing following paragraphs to at least 2 times the font size. • Letter spacing (tracking) to at least 0.12 times the font size. • Word spacing to at least 0.16 times the font size. • Exception: Human languages and scripts that do not make use of one or more of these text style properties in written text can conform using only the properties that exist for that combination of language and script.		
20	Where receiving and then removing pointer hover or keyboard focus triggers additional content to become visible and then hidden, the following are true: • Dismissible: A mechanism is available to dismiss the additional content without moving pointer hover or keyboard focus unless the additional content communicates an input error or does not obscure or replace other content. • Hover-able: If pointer hover can trigger the additional content, then the pointer can be moved over the additional content without the additional content disappearing. • Persistent: The additional content remains visible until the hover or focus trigger is removed, the user dismisses it, or its information is no longer valid.		
21	All functionality of the content is operable through a keyboard interface without requiring specific timings for individual keystrokes, except where the underlying function requires input that depends on the path of the user's movement and not just the endpoints.		
22	If keyboard focus can be moved to a component of the page using a keyboard interface, then focus can be moved away from that component using only a keyboard interface and, if it requires more than unmodified arrow or tab keys or other standard exit methods, the user is advised of the method for moving focus away.		

S. No.	Accessibility Checklist:	Observation	Remarks
23	If a keyboard shortcut is implemented in content using only letter (including upper- and lower-case letters), punctuation, number, or symbol characters, then at least one of the following is true: • Turn off: A mechanism is available to turn the shortcut off. • Remap: A mechanism is available to remap the shortcut to include one or more non-printable keyboard keys (e.g., Ctrl, Alt). • Active only on focus: The keyboard shortcut for a user interface component is only active when that component has focus.		
24	For each time limit that is set by the content, at least one of the following is true: • Turn off: The user is allowed to turn off the time limit before encountering it; or Adjust: The user is allowed to adjust the time limit before encountering it over a wide range that is at least ten times the length of the default setting; or • Extend: The user is warned before time expires and given at least 20 seconds to extend the time limit with a simple action (for example, "press the spacebar") and the user is allowed to extend the time limit at least ten times; or • Real-time Exception: The time limit is a required part of a real-time event (for example, an auction) and no alternative to the time limit is possible; or • Essential Exception: The time limit is essential and extending it would invalidate the activity; or • 20 Hour Exception: The time limit is longer than 20 hours.		
25	For moving, blinking, scrolling, or auto updating information, all of the following are true: • Moving, blinking, scrolling: For any moving, blinking or scrolling information that (1) starts automatically, (2) lasts more than five seconds and (3) is presented in parallel with other content, there is a mechanism for the user to pause, stop, or hide it unless the movement, blinking, or scrolling is part of an activity where it is essential; and • Auto-updating: For any auto-updating information that (1) starts automatically and (2) is presented in parallel with other content, there is a mechanism for the user to pause, stop, or hide it or to control the frequency of the update unless the auto-updating is part of an activity where it is essential.		
26	Web pages do not contain anything that flashes more than three times in any one second period, or the flash is below the general flash and red flash thresholds.		
27	A mechanism is available to bypass blocks of content that are repeated on multiple Web pages.		
28	Web pages have titles that describe the topic or purpose.		

S. No.	Accessibility Checklist:	Observation	Remarks
29	If a Web page can be navigated sequentially and the navigation sequences affect meaning or operation, focusable components receive focus in an order that preserves meaning and operability.		
30	The purpose of each link can be determined from the link text alone or from the link text together with its programmatically determined link context, except where the purpose of the link would be ambiguous to users in general.		
31	More than one way is available to locate a Web page within a set of Web pages except where the Web Page is the result of, or a step in, a process.		
32	Headings and labels describe topic or purpose.		
33	Any keyboard operable user interface has a mode of operation where the keyboard focus indicator is visible.		
34	All functionality that uses multipoint or path-based gestures for operation can be operated with a single pointer without a path-based gesture, unless a multipoint or path-based gesture is essential.		
35	For functionality that can be operated using a single pointer, at least one of the following is true: • No Down-Event: The down-event of the pointer is not used to execute any part of the function. • Abort or Undo: Completion of the function is on the up-event and a mechanism is available to abort the function before completion or to undo the function after completion. • Up Reversal: The up-event reverses any outcome of the preceding down event. • Essential: Completing the function on the down-event is essential.		
36	For user interface components with labels that include text or images of text, the name contains the text that is presented visually.		
37	Functionality that can be operated by device motion or user motion can also be operated by user interface components and responding to the motion can be disabled to prevent accidental actuation, except when: • Supported Interface: The motion is used to operate functionality through an accessibility supported interface. • Essential: The motion is essential for the function and doing so would invalidate the activity. • Functionality that can be operated by device motion or user motion MUST also be operable by user interface components and responding to the motion can be disabled to prevent accidental actuation, except when: • Supported Interface: The motion is used to operate functionality through an accessibility supported interface. • Essential: The motion is essential for the function and doing so would invalidate the activity.		

S. No.	Accessibility Checklist:	Observation	Remarks
38	The default human language of each Web page can be programmatically determined.		
39	The human language of each passage or phrase in the content can be programmatically determined except for proper names, technical terms, words of indeterminate language and words or phrases that have become part of the vernacular of the immediately surrounding text.		
40	When any user interface component receives focus, it does not initiate a change of context.		
41	Changing the setting of any user interface component does not automatically cause a change of context unless the user has been advised of the behavior before using the component.		
42	Navigational mechanisms that are repeated on multiple Web pages within a set of Web pages occur in the same relative order each time they are repeated, unless a change is initiated by the user.		
43	Components that have the same functionality within a set of Web pages are identified consistently.		
44	If an input error is automatically detected, the item that is in error is identified and the error is described to the user in text.		
45	Labels or instructions are provided when content requires user input.		
46	If an input error is automatically detected and suggestions for correction are known, then the suggestions are provided to the user, unless it would jeopardize the security or purpose of the content.		
47	For Web pages that cause legal commitments or financial transactions for the user to occur, that modify or delete user-controllable data in data storage systems, or that submit user test responses, at least one of the following is true: • Reversible: Submissions are reversible. • Checked: Data entered by the user is checked for input errors and the user is provided an opportunity to correct them. • Confirmed: A mechanism is available for reviewing, confirming, and correcting information before finalizing the submission.		
48	In content implemented using markup languages, elements have complete start and end tags, elements are nested according to their specifications, elements do not contain duplicate attributes and any IDs are unique, except where the specifications allow these features.		
49	For all user interface components (including but not limited to form elements, links and components generated by scripts), the name and role can be programmatically determined; states, properties and values that can be set by the user can be programmatically set; and notification of changes to these items is available to user agents, including assistive technologies.		

S. No.	Accessibility Checklist:	Observation	Remarks
50	In content implemented using markup languages, status messages can be programmatically determined through role or properties such that they can be presented to the user by assistive technologies without receiving focus.		

*****

5 Content Management Framework

5.1 Objective

The objective of the Content Management Framework (CMF) is to standardize and improve the presentation and content delivery of the central Government Ministry/ Department websites. CMF enables static websites to be transformed dynamic and feature-rich website / portals. Many embedded modules, which are available in the framework automatically, become available to the Ministries/ Departments as they onboard. Being an open-source distribution developed specifically for the central government departments, CMF is easy to install and configure. The pre-packaged CMS platform complies with Guidelines for Indian Government Websites (GIGW) and provides a full suite of essential website management features which include Responsive Design, Standardized Components, Themes and Templates, Website User Analytics, LDAP Authentication, Translation, Comprehensive Search, etc.

5.2 About CMF

Content Management Framework (CMF) is a web portal framework developed by National Informatics Centre under the Common Minimum Framework Project of Ministry of Electronics and Information Technology, Government of India. This five-year duration project was conceptualized by MeitY as an Early Harvest Programme under the Digital India initiative of Government of India.

A web portal was developed and maintained (URL: https://cmf.gov.in) during the project that enabled the stakeholders, implementing and monitoring agencies to track and highlight the progress of CMF project at various stages. The project team also provisioned a support help desk during the entire project period. A set of technically competent personnel was deployed to address the queries and concerns of all related stakeholders of the project ranging from officials of Ministry/ Departments, empanelled agencies for migration work, security audit agencies and website quality certification agencies.

The CMF project core team at the NIC Headquarter, developed the Content Management Framework, designed its themes and elements library. The team carried out the overall coordination of the project with all the stakeholders such as MeitY, NICSI, NIC HoDs of the various Ministries/ Departments and Apex bodies of the Government, empanelled agencies with respect to content migration, security audit etc. and various labs of the STQC. STQC was the government body for testing and certifying

the websites for quality, compliance of GIGW and accessibility. Following are some of the crucial factors of CMF:

i. **Standardization design components:**

To help people navigate easily around the page, header and footer regions of the website must be consistent and identifiable. CMF provides standardized header and footer for all websites. This allows a consistent format for Government Websites; at the same time, the framework is flexible enough to accommodate customizations to be made as per the requirements of the respective Ministry/ Department.

ii. **Web Content Accessibility:**

Web accessibility denotes that people with disabilities can perceive, understand, navigate, interact, and contribute through web. CMF comes with in-built rule sets and checks to ensure that the content migrated to the framework is compliant to the web content accessibility guidelines, making the site accessible to the differently abled users.

iii. **Built on Open Source:**

Content Management Framework, a Government Website based on open-source technology, facilitates standardization and improvement in presentation and content delivery of Government websites. CMF enables static websites to migrate to dynamic portals. A set of functional features along with embedded modules are available for the websites of Ministries/ Departments on adoption of CMF.

iv. **Search:**

An efficient search feature helps the users to find the desired information quickly. CMF provides comprehensive in-built website search facility which enables users to search efficiently within the website.

Other features:

i. **GIGW compliance:** Compliant with mandatory guidelines from the compliance matrix of GIGW.
ii. **Responsive design:** Easily accessible through smart phones, tablets, and desktop pc.
iii. **Website analytics:** Provides a dashboard to check website usage statistics.
iv. **Themes & templates:** Easily configurable themes for visually appealing presentation.
v. **Bilingual:** Made available in Hindi & English.
vi. **Search:** Integrated search to enable easy discoverability of content.

5.3 Impact

The CMF was planned for 100 websites of Central Government Ministries/ Departments to foster the development of citizen centric and universally accessible websites. Out of them, 95 websites have been made accessible. This framework has created a significant impact on Government Departments and Citizens:

i. Government Departments:

CMF scheme is primarily directed towards making Government Websites more usable, user centric and accessible. It shall help Web Managers in developing better understanding of comprehensible web designs & technologies and in turn improved management of their websites and portals. They shall be able to get their high-quality websites developed at lesser cost & efforts.

ii. Citizens:

CMF enabled websites would immensely benefit the citizens, businesses as well as Indian diaspora. With universally accessible citizen-centric websites, users can easily navigate and search for the content they are looking for. Besides information, they can avail schemes/ services on anytime, anywhere basis.

*****

6 Secure, Scalable and Sugamya Website as a Service (S3WaaS)

6.1 Objective

Sabka Saath Sabka Vikas – a major objective of the Government which, can only be realized through barrier free and round the clock delivery of information and services right on the devices of the citizen through this initiative of Digital India.

Districts are the key entities in the government structure where actual execution of schemes and programmes takes place and district level websites are an implicit cyber space and an important link between the administration and citizen. S3Waas was envisaged to bridge this gap and built with an objective to empower the district administration to generate, configure, deploy, and manage secure, scalable, and accessible websites for publishing district specific information and services without much effort and technical knowhow.

6.2 About S3WaaS

S3WaaS- Secure, Scalable and Sugamya Website as a Service is a website development framework based on SaaS (Software as a Service) model hosted on the National Cloud of NIC. It leverages technology to generate secure websites which are highly customizable and seamlessly deployed on a scalable and completely software defined infrastructure. The platform enables government entities to choose from various themes for generating websites as well as customizing and managing the content easily.

Government entities requiring websites that are primarily informational can use S3WaaS framework to generate and host the website under GOV.IN or NIC.IN domain.

Features:

i. **GIGW compliance:** Compliant with mandatory guidelines from the compliance matrix of GIGW.
ii. **Unified Open-Source technology:** Complete SaaS solution, built upon cutting edge Open-Source technology stacks.
iii. **Search:** Integrated search to enable easy discoverability of content.
iv. **Responsive design:** Easily accessible through smartphones, tablets, and desktop PC.
v. **Templates:** Easily configurable templates for visually exclusive presentation

vi. **Infrastructure included:** A framework that expects compute, storage, and networking to be provisioned.

Steps for creating a Website through S3WaaS:

i) **Login at S3WaaS:** Login with official email address (gov.in or nic.in).

ii) **Choose your theme:** Select theme for your feature requirement.

iii) **Add website details:** Provide the website details, technical owner details, and site owner details.

iv) **Customize Site:** Add/edit features, text, images, videos & more.

v) **Make site live:** Get your site live and share it with the public.

For more detailed steps on creating or deploying a website on S3WaaS, please visit https://s3waas.gov.in/more-details/.

S3WaaS assures of service levels in the following areas:

i. **Security** – Automated process for audits & certification

ii. **Scalability** – Assured scaling as per number of visitors

iii. **Technology Updates** – Periodic upgrades & patches

iv. **Disaster Recovery** – Read-only version of website instantly available

v. **Certification** – Accessibility Certification for S3WaaS Websites scheme launched by STQC. Certification process, seamlessly integrated & accessible through a dashboard

S3WaaS supports multilingual websites:

S3WaaS creates multilingual websites with English as the default language, Hindi and 17 regional languages can be selected for interface terms during setup. If a language is not available, website owners must translate the User interface terms and send it to S3WaaS Support for integration at the backend, using the XLS file available for download.

S3WaaS: Rollout Models:

i. **Free of cost:** S3WaaS is offered free of cost for websites of District administration, Raj Bhawan, State Portal, Divisional Commissioner and Chief Ministers.

ii. **Paid Model:** Offered for bulk users in slabs of up to 25, 50, 75 or 100 websites.

If users face any issues, they can contact the 24×7 support desk either by calling the toll-free phone number 1800-111-555 or by sending an email to s3waas.support[at]gov[dot]in.

For more information, please visit: https://s3waas.gov.in/

*****

7 Enhancement & Management of Websites of Ministries / Departments

7.1 Objective

India, the world's largest democracy, is poised to become an ICT Superpower. Given the Government's agenda of Minimum Government and Maximum Governance and Digital India for making governance citizen friendly in the country, it was emphasized in a high-level meeting that all Ministries/Departments must update their websites and put in place a mechanism to ensure their regular updating.

Multiple meetings were convened, and it was decided that all Government Ministries, Departments, and Autonomous bodies in India to review their website design, content, and other parameters, particularly in qualitative terms, in tune with Guidelines for Indian Government Websites (GIGW). Additionally, websites must also be certified by the Standardization Testing and Quality Certification (STQC) directorate.

7.2 About the project

In line with the above, NIC along with NICSI proposed, to proactively facilitate the Ministries / Departments in revamping of their websites as per the scope detailed below:

Improvement of Government Websites:

Improvement of existing Ministries /Departments websites including facilitation of critical aspects such as aesthetic design, responsiveness, content updation, search optimization, security audit, STQC certification, social media interface & visitor analytics etc. as per the following activities:

A. Identification for user interface & user experience requirements of the Ministry / Department:

i. User experience and user interface requirements gathering.
ii. Detailed discussions with concerned Ministry/ Department to understand the overall domain aspects.
iii. Use various ideation methods like brainstorming to solve the user's needs and explore various design approaches to address specific users' requirements.
iv. Conduct a study and analysis of the Ministry/ Department's existing website and Mobile apps and include best practices in draft design.
v. Analysis of the current and future state of the website design.

vi. Preparation of Content Structure/ Information Architecture/ Interaction design for revamping the website.

B. Design & Development:

i. Designing of User interface/ Front end for the websites of concerned Ministry/ Department compliant to GIGW guidelines.
ii. Creation of user personas, development of wireframes as per the requirements.
iii. Designing Logos, headers, banners etc.
iv. Development of database driven websites including cross-browser / cross-device compatible UIs, new features, APIs etc.
v. Responsiveness, search optimization.
vi. Mechanism for regular content updating & archiving.
vii. Local Language enablement.
viii. Visitor analytics, integration of social media handles & linking with other websites of the concerned Ministry/Department etc.

7.3 Impact

The said project has several significant impacts:

i. Improved Access to Information:

Enhanced and well-managed websites provide citizens with easy access to information about government policies, programs, services, and initiatives. This fosters transparency and accountability, empowering citizens to make informed decisions and engage with government activities more effectively.

ii. Enhanced Citizen Engagement:

A well-designed, and user-friendly website encourages citizen engagement by providing platforms for feedback, participation in surveys, and access to online services. This facilitates two-way communication between the government and citizens, leading to better understanding, collaboration, and trust.

iii. Efficient Service Delivery:

Ministries and departments can use their websites to deliver services more efficiently by offering online forms, applications, and portals for transactions. This reduces paperwork,

streamlines processes, and improves the overall user experience for citizens accessing government services.

iv. Promotion of Digital Inclusion:

Accessible and inclusive websites promote digital inclusion by ensuring that information and services are available to all citizens, including those with disabilities or limited access to technology. This supports the government's commitment to equity, diversity, and social inclusion.

Overall, the enhancement and effective management of websites of ministries and departments contribute to improved governance, citizen satisfaction, and public trust. By leveraging digital technologies and best practices in website development and management, governments can enhance their effectiveness, efficiency, and responsiveness to the needs of citizens in the digital age.

*****

8 Punarjjani

8.1 Objective

Web-based tool to assist the special teachers in assessment, evaluation and monitoring of children (6-18 years of age group) with intellectual disabilities.

‘Punarjjani™’ has been deployed across multiple schools in various states:

i. Deployment of ‘Punarjjani™’ in 18 Special Schools in Northeastern Region (Assam, Meghalaya, Mizoram, Nagaland, Arunachal Pradesh, Tripura, Manipur, and Sikkim).
ii. Special Teachers / Educators: 80+ Special Teachers from 8 NER States.

The main modules of ‘Punarjjani™’ tool are as follows:

i. **School Registration Module (SRM):** This module deals with the registration of a Special School, and entry of its details etc. The design of this module has been developed considering the national scenario. A school is allowed to use the tool only after the approval.
ii. **Child Registration Module (CRM):** When a child with intellectual disabilities (IDs) joins the school, a Case Record is created with following details:
    a) Child Identification data
    b) Demographic data of Parents/guardian
    c) Available details of intellectual disabilities (IDs)
    d) Pre-Natal history
    e) Natal of Neo Natal history
    f) Post-Natal history
    g) Immunization history
    h) Developmental history
    i) Pedigree details
    j) School history
    k) Sexual history
    l) Home environment
    m) Social environment

CRM facilitates the special teacher to record all the above details, generation of the case record, and placement of child in an appropriate level (Pre-primary, Primary, Secondary, Pre-occupational etc.) vis-vis to his/her age.

iii. **Child Assessment Module (CAM):** All children, who join the special school, are kept under observation for (Normally) two weeks. After observation, the child/student is evaluated to find out his/her level of knowledge/capabilities. Similarly, at the end of each term a student undergoes an evaluation to ascertain the progress made and to decide whether the program/teaching requires any modifications. This module facilitates the initial evaluation & term wise evaluations. It also helps in generating progress reports and graphs.

iv. **Child Goal set Module (CGM):** In Individual Education Program (IEP), each student has a long-term goal set based upon his/her individual needs, level, and capabilities. The long-term goal is further divided into short term objectives. Each short-term objective consists of a number of specific areas. On each specific area, a lesson plan and teaching strategy are generated. CGM helps special teachers in setting long term goals and short-term objectives for each student with intellectual disabilities (IDs). The system also suggests appropriate lesson plan from a built-in lesson plan repository.

8.2 Advantages of Punarjjani™

Special teachers normally maintain detailed assessment & programming records of children with IDs and analyse them manually which is a time consuming and cumbersome task.

i. 'Punarjjani™' empowers special teachers for easy, efficient, quick, and regular assessment, evaluation & monitoring of children with IDs.

ii. School Principals / Admin Officers can add / delete teachers on tool and can view individual as well as general (aggregated) progress reports & graphs of children.

iii. Complete Case Record of each child is maintained.

iv. Facilitates homogeneous grouping of the children Facilitates setting long term (yearly) goals and short term (quarterly) objectives for children.

v. Provides promotion objectivity to next level.

vi. Standard manual methods, widely used for assessment of students with IDs in age group 6 - 18 years in special schools, have been integrated with tool:

a) FACP (Functional Assessment Checklist Programming) including FACP – PMR (FACP Checklist for Children with Profound Mental Retardation)

b) BASIC-MR (Behavioral Assessment Scale for Indian Children with MR) Both developed by National Institute for Mentally Handicapped (NIMH) (an Autonomous Body under MSJE, Govt. of India)

c) MDPS (Madras Development Programming System) -Developed by Vijay Human Services, Chennai

d) Parents / Guardians can also view the progress reports & graphs of their wards.

e) Bilingual: Hindi & English

8.3 Unique Features of the Punarjjani

i. Accessible to all special schools throughout the country round the clock via the Internet

ii. Easy storage and retrieval of assessment data

iii. Automatic generation of charts and graphs on child & class progress

iv. Uniformity in assessment method

v. Development pattern for every individual child

vi. Improved individual programming strategies.

vii. User manual provided to special teachers empowered on usage of the tool.

viii. Video help files integrated.

*****

9 DISAAA: Development of an Integrated Solution for Automatic Assessment of Autism

9.1 About the project

DISAAA is an automatic assessment tool for Autism based on Visual Attention (both Attention Analysis and Eye Gaze), Facial Expression Recognition and Vocal Emotion Recognition using Artificial Intelligence (AI) based latest techniques like Deep Learning implemented by CDAC- Kolkata and NIPID- Kolkata.

DISAAA is based on machine learning algorithms for accurate quantification of intensity (degree) of attention, expression, and emotion for basic prototypic expressions.

The system aims to help, and guide affected persons to learn through stimuli generated based on different emotional situations. The responses captured by the app would assist psychologists in understanding the mental condition of the affected person. It is also a stimulus for intervention program for training of children with Autism. DISAAA is deployable for special schools with Autistic children.

Use Cases:

i. Autism screening android app for early screening of Autism
ii. Automatic computerized solution for assessment of Autism

9.2 Salient Features

i. Unique registration ID for assessment of ASD child
ii. Stimuli based response capture.
iii. AI based score generation of ISAA parameters.
iv. Visualization tool for understanding of the score.
v. Report generation

9.3 Impact

Here are some potential components and impacts of such a solution:

i. **Automated Assessment Tools:** DISAAA involves the development of automated tools or algorithms for assessing various aspects of ASD, such as social communication skills, repetitive

behaviors, and sensory sensitivities. These tools may utilize machine learning, computer vision, or other technologies to analyze behavioral data and identify patterns indicative of ASD.

ii. **Data Collection and Analysis:** The project involve collecting and analyzing large datasets of behavioral data from individuals with and without ASD to train and validate the assessment algorithms. This data could include information from standardized assessments, clinical observations, interviews, and sensor-based measurements.

iii. **Diagnostic Support System:** DISAAA result in the creation of a diagnostic support system that clinicians can use to assist in the diagnosis of ASD. This system could provide objective measurements and insights to complement the clinical judgment of healthcare professionals, potentially leading to more accurate and timely diagnoses.

iv. **Early Detection and Intervention:** An integrated solution for automatic assessment of ASD facilitate early detection and intervention, allowing children to receive appropriate support and services at a younger age.

v. **Remote and Accessible Assessment:** The development of automated assessment tools enables remote and accessible assessment of ASD, reducing barriers to diagnosis and increasing access to care, especially in underserved or remote areas. This could involve the use of telehealth technologies and online platforms for conducting assessments remotely.

vi. **Personalized Treatment Planning**: By providing objective data on individual strengths and challenges, DISAAA support the development of personalized treatment plans tailored to the unique needs of each individual with ASD. This could improve the effectiveness of interventions and support services and enhance the overall quality of care.

vii. **Research and Innovation:** The project contributes to advances in ASD research and innovation by providing new insights into the underlying mechanisms of the disorder and identifying potential biomarkers or predictors of ASD. This could inform future research directions and the development of novel interventions and therapies.

Overall, DISAAA has the potential to make significant contributions to the field of autism assessment and intervention by leveraging technology to improve the accuracy, efficiency, and accessibility of ASD diagnosis and support services.

*****

10 Making State Government Websites Accessible

As per the RPwD Act 2016 all Indian websites should be accessible to all especially to Divyangjan. So, under Accessible India Campaign, one of the targets is to make all Govt./State Govt websites accessible to all. For this the Department of Empowerment of Persons with Disabilities (DEPwD) funded ERNET India to make state government websites accessible as per the Guidelines for Indian Govt. Website (GIGW) and the International Web Content Accessibility Guidelines (WCAG2.1).

ERNET was given State Government websites to make them accessible to Divyangjan using Content Management System (CMS). Significant progress has been made in converting State Government websites accessible with work on more than 90% of the allocated websites completed.

Awareness as well as hands-on training on the websites developed by ERNET is given on a regular basis at State capitals so that the initiative of developing and maintaining accessible websites is continued and enhanced.

ERNET has setup a captive lab for GIGW Compliance testing, website security testing and WCAG testing of the developed websites to maintain their quality and functionality. This is in addition to getting the websites independently tested and audited by CERT-In Auditors and STQC Certified Labs.

*****

11 Virtual-Reality-based Assistive System for Learning and Assessment of Persons with Intellectual Disabilities

11.1 About the project

Intellectual Disabilities (ID) present considerable challenges for individuals, families, and society at large. In India, the issue of catering to the needs of persons with intellectual disabilities is of national importance, given the considerable number of affected individuals. The Government of India has rolled out a range of acts, policies, and laws to safeguard and uplift these individuals. Against this backdrop, it becomes crucial to bolster the existing educational system to accomplish the goals of inclusive education innovatively and engagingly.

Individuals with intellectual disabilities frequently experience delayed development, cognitive impairments, and adaptive functioning challenges. They often struggle with abstract concepts, have limited attention spans, face memory issues, and encounter language and communication obstacles. Additionally, they may exhibit sensory sensitivities, difficulty in generalization, a lack of motivation, and low self-esteem.

This project's driving force is leveraging research and development opportunities to ensure inclusivity and equality. The project aims to empower these individuals by providing access to groundbreaking educational methods, skill development programs, and caregiver support. This aligns with creating socio-economic benefits that contribute to social harmony, while adhering to legal and ethical norms and global sustainable development goals.

This project proposes the creation of a Virtual-Reality-Based Assistive System, which would integrate elements of the metaverse, 2-D animation, and assistive technologies specifically tailored to meet the learning and assessment requirements of persons with intellectual disabilities in India. This initiative is pivotal in helping them become self-reliant and work towards an independent lifestyle. Concrete examples and diverse teaching strategies will simplify the introduction of abstract concepts.

Background:

Intellectual disabilities comprise a broad spectrum of cognitive impairments affecting an individual's adaptive functioning. Traditional educational paradigms often fall short of addressing the unique needs of this demographic. The proposed system harnesses emerging technologies and best practices to create a more inclusive and effective learning landscape. Intellectual disability impacts individuals in two primary areas:

a) **Intellectual Functioning**: This includes learning capabilities, problem-solving skills, and judgement.
b) **Adaptive Functioning**: This pertains to day-to-day activities such as communication and independent living.

Individuals with intellectual disabilities require a functional curriculum focused on personal adequacy, social competency, and economic independence. The project is engineered to traverse significant milestones, from knowledge acquisition and skill fluency to maintenance of acquired skills, culminating in their generalization to real-world situations.

11.2 Need of the project:

Critical research gaps have been surfaced through an in-depth exploration of existing systems in inclusive education. These gaps encompass diverse challenges, including inadequate records management and transition support, lack of user-friendly interfaces, insufficient teacher training, resource disparities in rural areas, absence of centralized learning content platforms, and difficulties in adapting existing materials to suit diverse needs. Addressing these gaps is crucial for the advancement of inclusive education. Efforts focused on streamlining record-keeping, enhancing system usability, providing comprehensive teacher training, bridging resource gaps in rural regions, creating centralized learning platforms, and facilitating easier adaptation of materials will contribute significantly to fostering accessible and supportive learning environments for individuals with disabilities across their educational journey and societal integration.

11.3 Key achievements:

Framework is under development.

i. No. of Videos prepared: 27.
ii. No. of AR/VR content: 14
iii. No. of Games: 3
iv. No. of Schools visited: 60.
v. Number of workshops/brainstorming sessions/meetings: 45

*****

12 Accessibility of private websites

Accessible India Campaign or Sugamya Bharat Abhiyan is a flagship program launched by the Hon'ble Prime Minister on 3rd December 2015, the International Day of People with Disabilities to serve the differently able community of the country for creating universal accessibility ecosystem including Information Communication Technology (ICT).

To achieve this overarching vision, MeitY developed Guidelines for Indian Government Websites (GIGW) which deal with the entire life cycle, development, management and maintenance of Websites, Web & Mobile application guidelines pertaining to web content accessibility. The guidelines are available and can be accessed at https://web.guidelines.gov.in.

MeitY has taken concrete steps to make Central / States websites accessible for the differently able community in the country through the adoption of GIGW guidelines. On the similar lines, to encourage the website and mobile apps accessibility and its adoption in the private sector, organizations such as NASSCOM, MAIT, COAI, ICEA, BIF, which are actively working in ICT sector through policy advocacy and assisting in setting up the strategic direction for the private sector, have been approached for making the citizen centric private website and mobile applications accessible. Accordingly, letters have been sent to NASSCOM, MAIT, COAI, ICEA, and BIF for creating the ecosystem for accessibility of websites and mobile application in private organizations and requesting them to issue advisories to private organizations regarding accessibility compliance.

It was also recommended that the websites and mobile apps of private organizations can be made accessible by complying with the Web and Mobile App accessibility guidelines as contained within the GIGW. Furthermore, the industry was requested to create more awareness through workshops, campaigns, etc., and relevant advisories may kindly be issued to all private organizations within their ambit.

In addition, MeitY, in coordination with these industry bodies participated in an 'Accessibility Awareness' workshop. Also, workshops have been conducted jointly with DEPwD to raise awareness about website accessibility and GIGW compliance. The Broadband India Forum (BIF) conducted two workshops in coordination with MeitY among private sector organisations.

*****

13 Capacity Building Program

Capacity building and wide-scale awareness creation through training / workshops for various sections of society, including end users and various categories of members (PwD users/developers/service providers/Govt./NGOs /content creators, public procurement officers etc.).

i. **Category 1:** Eight one day public awareness (different segments) programs conducted.
ii. **Category 2:** Four two-day capacity building workshops for developers, implementers, system integrators, content creators conducted.
iii. **Category 3:** Four two-days Train the Trainers (TTT) workshops conducted.

13.1 Objective

To raise awareness among policymakers, developers, and content creators about accessibility best practices. This leads to the design and development of more inclusive technologies and content from the outset. Creating a pool of trained professionals, such as accessibility specialists, testers, and consultants, to ensure that accessibility considerations are integrated throughout the ICT development lifecycle. Equip end users with the knowledge and skills to demand and access accessible ICT to foster digital inclusion and equal participation in society.

India became a signatory to the UNCRPD and subsequently ratified the same on October 1, 2007. The DARE Index is a benchmarking tool that measures a country's progress in making Information and Communication Technologies (ICTs) accessible for all, in compliance with Article 9 of the United Nation's Convention on the Rights of Persons with Disabilities (UN CRPD).

The DARE index measures three categories of variables in each country:

i. country commitments,
ii. country capacity to implement, and
iii. actual digital accessibility outcomes for persons with disabilities.

India Ranks at 45th position as per the latest Digital Accessibility Rights Evaluation (DARE) index report published in 2020. Capacity building events are essential to improve India's rating on the parameter of country capacity to implement.

The first few steps in this regard were taken by MeitY under the "Knowledge and Resource Centre for Accessibility in ICT (KAI)" initiative during the years 2020 – 2022. Several awareness campaigns, capacity building and training-the-trainers' workshops were also conducted. A survey report on Free/Open-Source Software Tools was published and test reports on a representative list of popularly

available websites and products were also brought out. Engagements were also held with some user ministries to help them understand how to leverage the standard to further the adoption of accessibility in their sector.

The objective is to promote IS 17802 adoptions among the chosen ministries identified in consultation with DEPwD, CCPD & Disability Rights Advocacy Groups and end-users. Sensitize the various categories of stakeholders in the process of enabling accessibility from the developer to the procurement officials and the key decision makers in this regard.

13.2 About the program and detailed agenda

Various capacity building events targeting audience of different nature and depth involving preparation of training content and conduction of various trainings are as given below.

a) Wide-scale awareness:

For various sections of society, end user and various categories of members (PwD / users / Govt. / NGOs / Procurement officers etc.). Equipping decision makers and stakeholders with the knowledge and resources on Digital Accessibility including assistive technologies and best practices for navigating the digital world.

b) Developers/Implementers/System Integrators/Content Creators:

The target audience for this training programme includes members involved in software, hardware, firmware development, maintenance, content creation and procurement related activities. The aim is to educate them on accessibility standards, tools, and techniques to create inclusive interfaces and content.

c) Upskilling educators and trainers:

India specific compliance testing for testing agencies, STQC, professional training institutions such as IIPA, academia, industry etc. Enabling them to effectively integrate accessibility into educational programs in their institutions and training centres.

13.3 Impact

Multiple in-person and online events conducted for above categories for audience to educate on the needs of digital accessibility, assistive technologies and IS 17802 standards. This led to adoption of the standard by other ministries of high social impact.

14 Cloud-based accessibility reporting tool (SugamyaWeb)

14.1 Objective

SugamyaWeb drives testing and decision-making processes with unparalleled accuracy and efficiency. It produces comprehensive audit reports enriched with practical guidance, recommendations, and visually appealing data analysis, enabling organizations to recognise and address accessibility challenges with advanced features such as root cause analysis and visualisation; SugamyaWeb is a catalyst for creating a more inclusive digital landscape in India. No organisation can afford to ignore the need for inclusive digital accessibility, and SugamyaWeb provides the necessary tools to ensure that all users can access and interact with web content.

14.2 About the project

The National Policy on Software Products 2019 envisions India's rise as a Software Product Nation, aiming to establish India as a global player in the development, production, and supply of innovative and efficient software products, thus facilitating growth across the entire spectrum of ICT sector.

In the light of these developments, the Ministry of Electronics & Information Technology announced an Innovation Challenge for Development of a Cloud Based Web & Mobile Accessibility Compliance Checking Solution under Digital India Initiative and to enhance the accessibility of the Indian Govt. webspace in 2021-22. Many Indian startups participated in multiple stages of the challenge. The outcome of the challenge created an innovative solution i.e., SugamyaWeb application.

SugamyaWeb plays a crucial role in the pioneering Sugamya Bharat Abhiyan, launched by the Government of India in 2015. This visionary initiative aims to provide access to public infrastructure and services to people with disabilities, with web accessibility being an integral part of its efforts to enhance digital inclusivity.

14.3 Features

The key features of Accessibility tool are mentioned as below:

i. **Accessibility Reports and Recommendations:** SugamyaWeb generates comprehensive accessibility reports with fix recommendations, making it easier for organizations to achieve rapid compliance.

ii. **Comprehensive Accessibility Testing:** The Web Accessibility Scanner assesses web pages like a human, promptly reporting any detected accessibility issues for quick remediation.

iii. **Smart Reporting, Insights & Analysis:** SugamyaWeb unique tools identify, classify, and prioritize website issues based on their impact. Teams receive guidance on how to fix these issues, allowing them to work smarter and avoid being overwhelmed by bug reports.

iv. **Automation & Intelligence:** Powered by AI, SugamyaWeb goes beyond basic syntax in HTML and CSS, uncovering intricate accessibility issues. It paves the way for future innovations in accessibility.

v. **Monthly Accessibility Trend Dashboard:** Stay updated with the latest developments and best practices in accessibility to ensure inclusivity for all individuals.

vi. It has a test suite consisting of 170+ tests in 14 categories to assess accessibility criteria.

vii. It offers a user-friendly interface, reducing the learning curve and increasing productivity.

viii. It provides role-based access to Web Information Managers (WIMs) and QA testers.

ix. Integration with Parichay SSO and NIC ecosystem has streamlined the workflow from user on-boarding to reporting and monitoring.

*****

15 Sign Language Accessibility for e-Governance services

15.1 Objective

National Policy on Universal Electronic Accessibility policy released by MeitY in 2013 and the Right of Persons with Disabilities Act, 2016 recognize the need to eliminate the discrimination on the basis of disabilities and to facilitate equal access to electronics & ICTs. The project being developed by C-DAC Trivandrum in collaboration with Amrita Vishwa Vidyapeetham, Kollam, aims at providing accessibility of e-Governance services, with use case of UMANG which provides numerous services of various government departments on single platform, to differently-abled persons as currently these services are not accessible to them.

Achievements:

- Indian Railways Chat flow and analysis of APIs for form filling – In Progress. (Development is delayed due to access permission in API Setu and NDA submission in progress).
- Deployment of eRaktkosh Chatbot in UMANG Production – In Progress.
- Automatic testing interface with visualization for Analysis – In progress.
- Unified ISL Chatbot for UMANG services for production deployment – In Progress.
- Answer Video recording of Rail madad and UTS – Completed.
- CNN transformer based ISL recognition model training for UTS – Completed.
- Gesture analysis based on timestamp for improving accuracy – Completed.
- Improvisation of AI modelling accuracy of Indian Railways - In progress.
- Experiments of Sentence transformers model and rule based for QA modelling of Rail madad and UTS - In Progress.
- Experiments on state-of-the-art network using Two Stream key points pipeline training – In progress.

*****

Digital Governance Division
Ministry of Electronics and Information Technology
Electronics Niketan,
6, CGO Complex Lodhi Road,
New Delhi-110003