

SugamyaWeb

Enabling accessible web experience of the Indian Governments websites

Edited by MOHAN DAS VISWAM



In India, ensuring equal access to internet technology and digital experiences is crucial, where around 2% of the population faces disabilities. Web Accessibility is essential for individuals with disabilities to access information and resources online. Inaccessible websites create barriers that hinder effective internet usage, impacting work, communication, learning, and social participation.

Conventional testing approaches with manual validation and reliance on multiple formats and isolated systems can introduce inaccuracies and human errors. The absence of futuristic technologies like Artificial Intelligence limits growth, competitiveness, and cost-effectiveness.

To overcome these challenges and enhance the accessibility of the Indian Government Websites, the Ministry of Electronics & Information Technology (MeitY) launched an Innovation Challenge in 2021-22 for Startups. This challenge aimed to develop a Cloud-based Web Accessibility Reporting System. Several Indian startups participated, progressing through ideation, building a Minimum Viable Product (MVP), and ultimately developing a functional product.



SugamyaWeb is a cloud enabled Web Accessibility reporting platform, which provides end-to-end web testing. The tool classifies and prioritizes accessibility issues based on end user impact along with recommendations on how to fix the issue. So, as to enable the teams to target the right to fix, instead of being buried in the bug reports.



During the ideation stage, a distinguished selection panel shortlisted five startups based on their innovative ideas. These selected teams were then tasked with developing the MVP. Eventually, two teams were chosen to build the Functional Product, and Sumatak Technologies was selected as the winner by the Grand Jury.

The final tool, SugamyaWeb, was developed in consultation with NIC and was deployed at the NIC Cloud in December 2022. It leverages automation and system intelligence to streamline testing and decision-making processes, ensuring accuracy. It generates comprehensive audit reports with guidance, recommendations, root cause analysis, and advanced visualization capabilities.

Key Features & Technology

Comprehensive Testing: SugamyaWeb uses advanced test rules and human-like scanning to assess web pages for accessibility. It evaluates websites based on GIGW 3.0 and WCAG 2.1 guidelines, promptly reporting any accessibility issues for resolution. It also supports periodic tests to ensure ongoing accessibility readiness as websites evolve.

Smart Reporting, Insights & Analysis: Unlike typical accessibility tools, SugamyaWeb prioritizes issues based on impact and provides

SugamyaWeb, is for the Divyangjan Sisters and brothers who need support and facilities to prevent discrimination. It is a noble initiative by NIC as inclusivity and accessibility have always been our underlying principles.



Alkesh Kumar Sharma

Secretary
Ministry of Electronics and IT

guidance for resolving them. User-specific dashboards display accessibility scores, trends, and outstanding issues. It generates alerts for delayed resolution of non-compliant issues.

Intuitive and easy-to-use interface: This tool offers a user-friendly interface, reducing the learning curve and increasing productivity. The accessibility reports include fix recommendations, expediting accessibility compliance.

Integration with Parichay SSO and the NIC ecosystem: SugamyaWeb seamlessly integrates with Parichay and the NIC ecosystem, streamlining the workflow from user onboarding to reporting and monitoring. It also allows API-based



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integration with existing systems for website onboarding, test triggering, and accessing results.

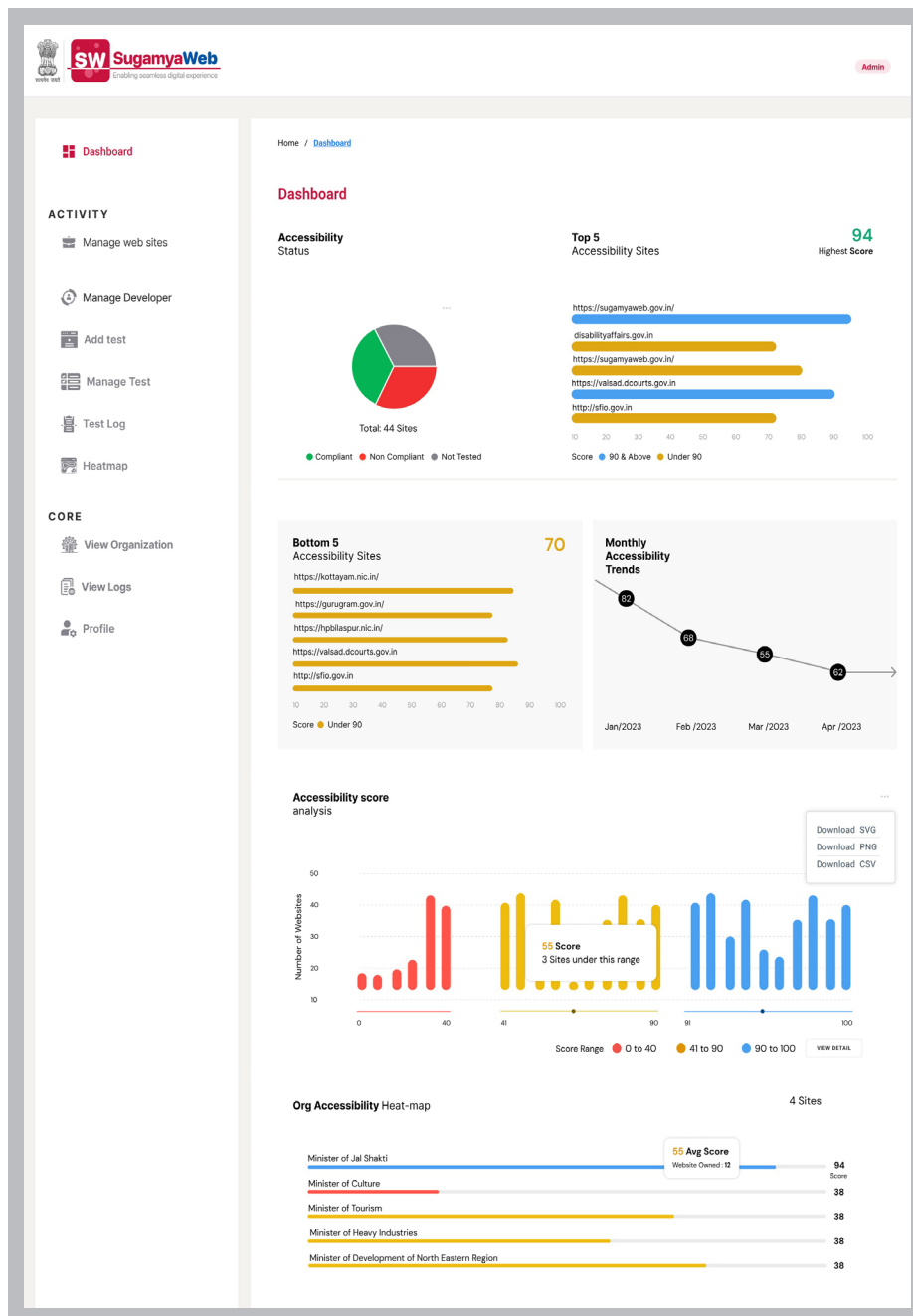
Role based access: It provides role-based access to Web Information Managers (WIMs) and QA Testers

Comprehensive accessibility testing: The tool has a test suite consisting of 170+ tests in 14 categories to assess accessibility criteria. These categories include keyboard, semantics, parsing, Accessible Rich Internet Applications (ARIA), name-role-value, color, structure,

forms, language, time-and-media, sensory-and-visual-cues, text-alternatives, tables, and experimental. Each web page undergoes these tests to evaluate its accessibility readiness.

Test Impact: Tests are categorized as minor, moderate, serious, or critical-based on their impact on users with disabilities. Minor impacts cause frustration, while moderate impacts hinder content access. Serious impacts lead to screen reader inconsistencies, and critical impacts render core content and features inaccessible.

▼ Fig 10.1 : SugamyaWeb Dashboard



The global market for assistive technology is estimated to be worth 32 billion dollars. In India, the current market size stands at around INR 5000 crores. It is delightful to witness that MeitY is promoting Startup Ecosystem in the field of accessibility and the innovative contributions made by our young talent.



Rajesh Aggarwal

Secretary
Department of Empowerment of Persons with Disabilities (Divyangjan)

Technology: SugamyaWeb uses a microservices architecture and modern tech stack on open source and cloud computing for scalability. The test framework allows future custom test rules and can aggregate results and generate reports. It can integrate new test rules and framework to enhance its capabilities over time.

Running Accessibility Tests

Set Test Modes: There are 2 test modes – Single Page or Full Site. For a given URL, that page alone can be tested or the entire website with all the pages under that domain can be tested

Set Guidelines: Tests can be configured to run against a specific WCAG Guideline (v2.0 or v2.1) and Level (A or AA or AAA)

Schedule Test: Tests can be scheduled to run once or at a pre-set interval e.g. days, weeks, months

Run Test: Tests can be triggered to start immediately or at a specific date-time

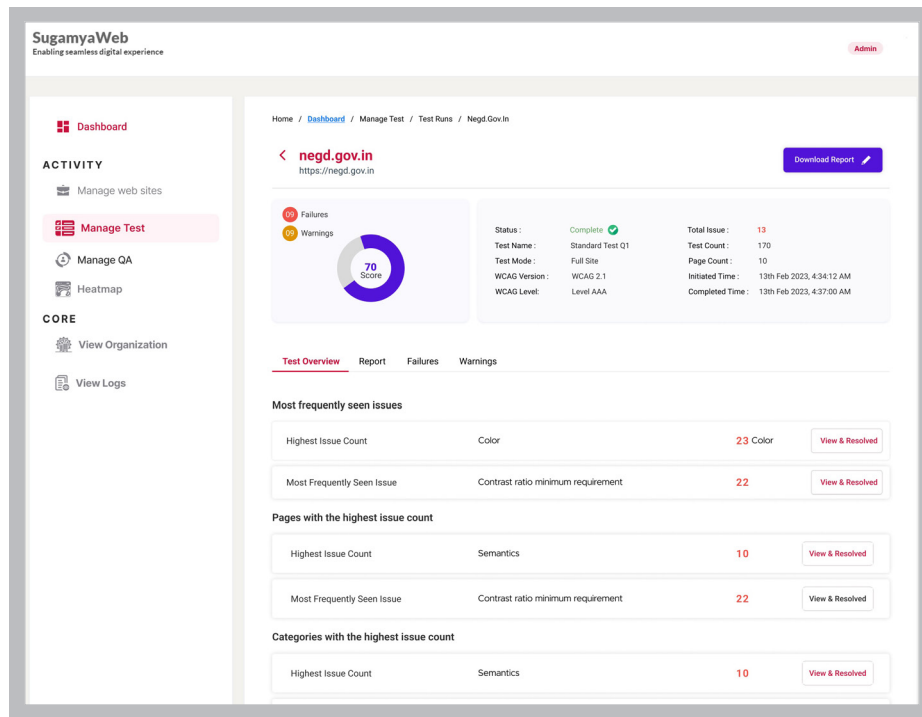
Report Generation

Once the test is completed, every website/page undergoes an evaluation process, resulting in a test score and a summarized overview of the test results. The test score is determined by considering the impact and quantity of failures encountered during the test. A score of 0-39 is considered poor, 40-89 needs improvement, and 90-100 is good. The test report contains failures and warnings including:

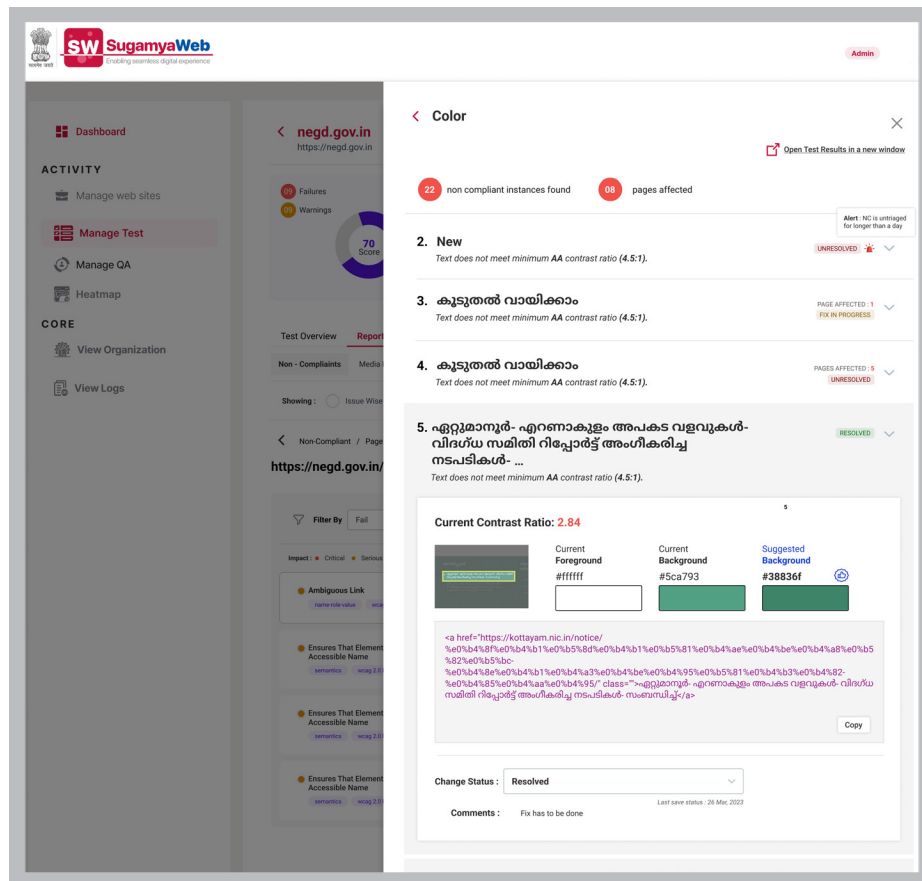
Non-Compliance: Elements on the webpage that don't meet accessibility standards

Snippets: Code blocks of the non-compliant elements that caused failures

Screenshots: Visual representations of non-compliant elements with highlighted markers



▲ Fig 10.2 : Sugamyaweb Test Report Sample



▲ Fig 10.3 : Sugamyaweb Detailed Test Report Sample

Recommendations to Fix: Resources such as test descriptions, reference links, and recommendations to address the issues

Historical Dashboard

The dashboard tracks accessibility improvements by showing the website's overview, trends in accessibility scores, and issue count over time. It helps monitor the progress of accessibility changes implemented on the website.

Limitations

It must be understood that automated tools in general do not identify 100% of the accessibility issues. Manual intervention would be required in some cases to validate the test results.



Anand Kanagraj
Cofounder & Technical Lead
Sumatak Technologies

Conclusion

Sugamyaweb empowers Indian government entities to evaluate the accessibility of their websites, promoting barrier-free access for all individuals. Its impact extends beyond government sites, inspiring private organizations to prioritize Web Accessibility as well. Through the Innovation Challenge and the deployment of Sugamyaweb, MeitY has taken significant steps towards enhancing web accessibility, empowering individuals and fostering inclusivity in the digital realm.

Contact for more details

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