Citizen First Experiences
Full Life Cycle Website & PDF Testing For Digital Accessibility & Usability

Presented by

OPTIMAL
SOLUTIONS GROUP, LLC

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Optimal at a Glance

- Policy Research and Data Science Firm
- Enables Real-Time Data-Driven Decision Making
- University of Maryland Discovery District
- CMMI Level 3 in Services & Software
- 20+ years of conducting evidence-based and actionable research
- 300+ projects - HHS, SBA, ED, NIST, USDA, USAID, DHS, State, local & non-profits

Revelo Software at-a-Glance

Automated end-to-end data transformation platform
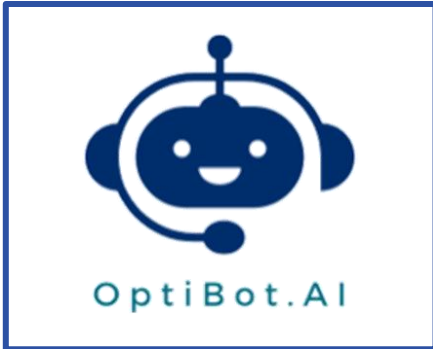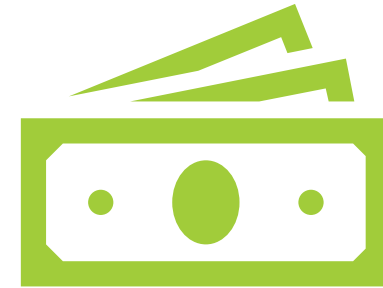
In this Presentation

- Recent and Updated Accessibility Legislation
  - M-24-08 Strengthening Digital Accessibility and the Management of Section 508 of the Rehabilitation Act
  - 21st Century IDEA
  - Technology Modernization Fund
- Preparing Public-Facing Websites
- Automated and Manual Digital Accessibility and Usability Testing
- Demonstration and Forms Discussion

Recent and Updated Legislation
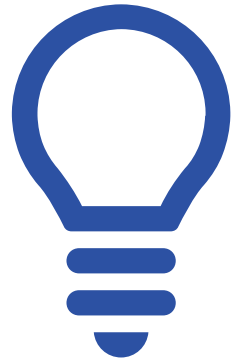
21st Century IDEA

TMF Fund

M-24-08

Strengthening Digital Accessibility and the Management of Section 508 of the Rehabilitation Act (12/23)

"Within 180 days of issuance of this memorandum, agencies shall conduct a comprehensive assessment of agency policies to ensure that ICT accessibility considerations are incorporated in all relevant agency functions; develop a plan to update agency policies to align with the requirements of this memorandum, as needed; ensure any changes to policies are also updated in agency digital strategies; and make ICT accessibility policies publicly available."

Source:

https://www.whitehouse.gov/omb/management/ofcio/m-24-08-strengthening-digital-accessibility-and-the-management-of-section-508-of-the-rehabilitation-act/#_ftn40

Streamlined Technology Modernization Fund (TMF)

In addition to the TMF Criteria, there are four project areas for priority implementation:

- Design and delivery of cross-agency life experiences, as sponsored by the President's Management Council.

- Improvement of one or two HISP services, as designated for priority improvement through the annual OMB Circular A-11, Section 280 process.

- Design and delivery of self-service digital tools and services that directly decrease customer call center volume.

- Technology projects that reduce public and administrative burden, as outlined in OMB M-22-10, Improving Access to Public Benefits Programs Through the Paperwork Reduction Act, or technology projects that advance agencies' equity action plans, as outlined in Executive Order 13985, Advancing Racial Equity and Support for Underserved Communities Through the Federal Government.

Source: https://tmf.cio.gov/criteria/

OptiBot.AI
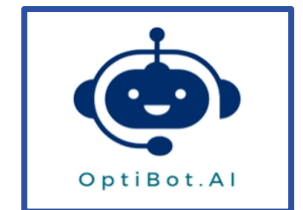
Streamlined TMF

OMB M-23-22
21st Century IDEA
Delivering a Digital-First Public-Experience (09/23)

The TMF Board is seeking proposals for projects aimed at implementing the 21st Century IDEA. A new, streamlined process is available for projects that meet the TMF Criteria, and are aimed at implementing two specific areas of the Act:

- Improving web accessibility; and/or
- Digitizing public-facing forms

Includes:

"Digital form" means a web application that has the capability to capture, validate, submit, and process structured information digitally and in an automated manner"

Sources:

○ https://tmf.cio.gov/21century-idea/

○ https://www.whitehouse.gov/wp-content/uploads/2023/09/M-23-22-Delivering-a-Digital-First-Public-Experience.pdf

Evidence-Based Policymaking Act of 2018 (Evidence Act)

"Transparency is a guiding principle for and a key component of scientific integrity. Federal evidence-building activities must be transparent in the planning, implementation, and completion phases to preserve accountability and help ensure that they are not tailored to generate specific findings. Learning Agendas and Annual Evaluation Plans are public-facing documents and should be posted on agency websites in a machine-readable format."

Source: https://www.whitehouse.gov/wp-content/uploads/2021/06/M-21-27.pdf

Presidential Memorandum, OMB M-21-27 Evidence-Based Policymaking: Learning Agendas and Annual Evaluation Plans (June 30, 2021)

Preparing Public – Facing Websites

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┌─────────────────┐     ┌─────────────────┐     ┌─────────────────┐     ┌─────────────────┐     ┌─────────────────┐
│ Create efficient │ →  │ Identifies outdated│ → │ Lays the foundation│ → │ Enhanced User   │ →  │ Content Strategy │
│ website inventory:│    │ or irrelevant    │    │ for strategic content│   │ Experience      │    │ Improvement     │
│                  │    │ content, enhancing│    │ planning and     │    │                  │    │                  │
│                  │    │ user relevance.  │    │ optimization.    │    │                  │    │                  │
└─────────────────┘     └─────────────────┘     └─────────────────┘     └─────────────────┘     └─────────────────┘

┌─────────────────┐     ┌─────────────────┐     ┌─────────────────┐     ┌─────────────────┐     ┌─────────────────┐
│ Efficiency in   │ →  │ SEO             │ →  │ Resource        │ →  │ Risk Mitigation │ →  │ Data-Driven     │
│ Updates and     │    │ Optimization    │    │ Allocation      │    │                  │    │ Decision Making │
│ Maintenance     │    │                  │    │                  │    │                  │    │                  │
└─────────────────┘     └─────────────────┘     └─────────────────┘     └─────────────────┘     └─────────────────┘
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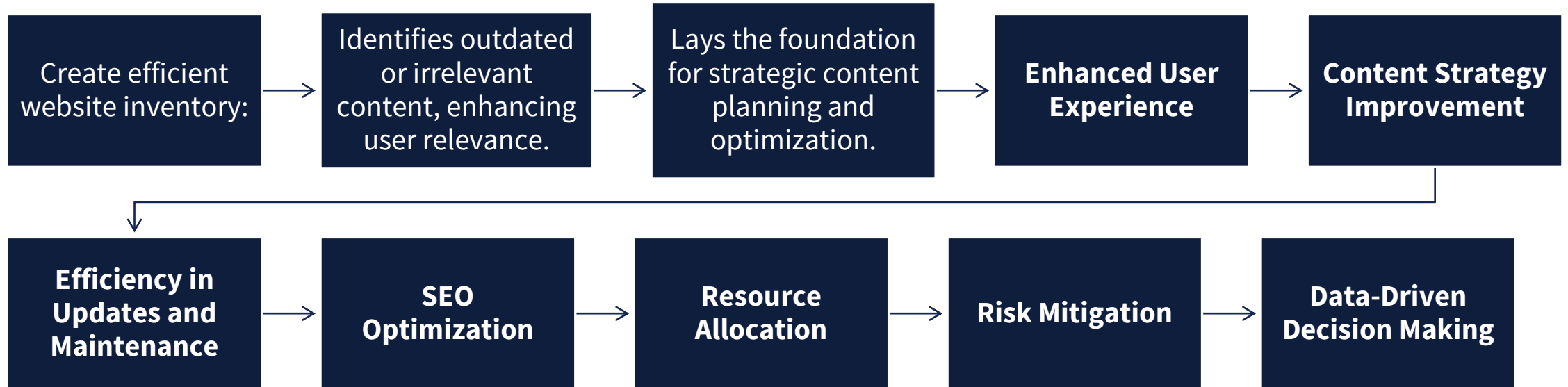
Developing a Governance Structure

Importance

- Establishes guidelines for content creation, ensuring consistency and alignment with organizational goals.

- Enhances collaboration among content creators, improving efficiency and reducing the risk of errors.

- Provides a framework for ongoing evaluation and adaptation to evolving digital needs.

Benefits

- **Consistency Across Channels:**
  - A governance framework ensures consistent messaging and branding across all digital channels.

- **Efficient Collaboration:**
  - Reduces the likelihood of conflicting information and enhances overall productivity.

- **Adaptability and Scalability:**
  - Scalable to accommodate future growth and evolving digital strategies.

- **Compliance and Risk Management:**
  - Facilitates adherence to accessibility standards and other regulatory requirements.

Algorithm Optimization

1.Improved Search Rankings:
- Algorithm optimization improves the website's position in search engine results.
- Increases the likelihood of citizens finding relevant public services.

2.Enhanced Citizen Engagement:
- Higher visibility in search results drives more traffic to public services.
- Encourages citizens to explore and engage with the organization's digital offerings.
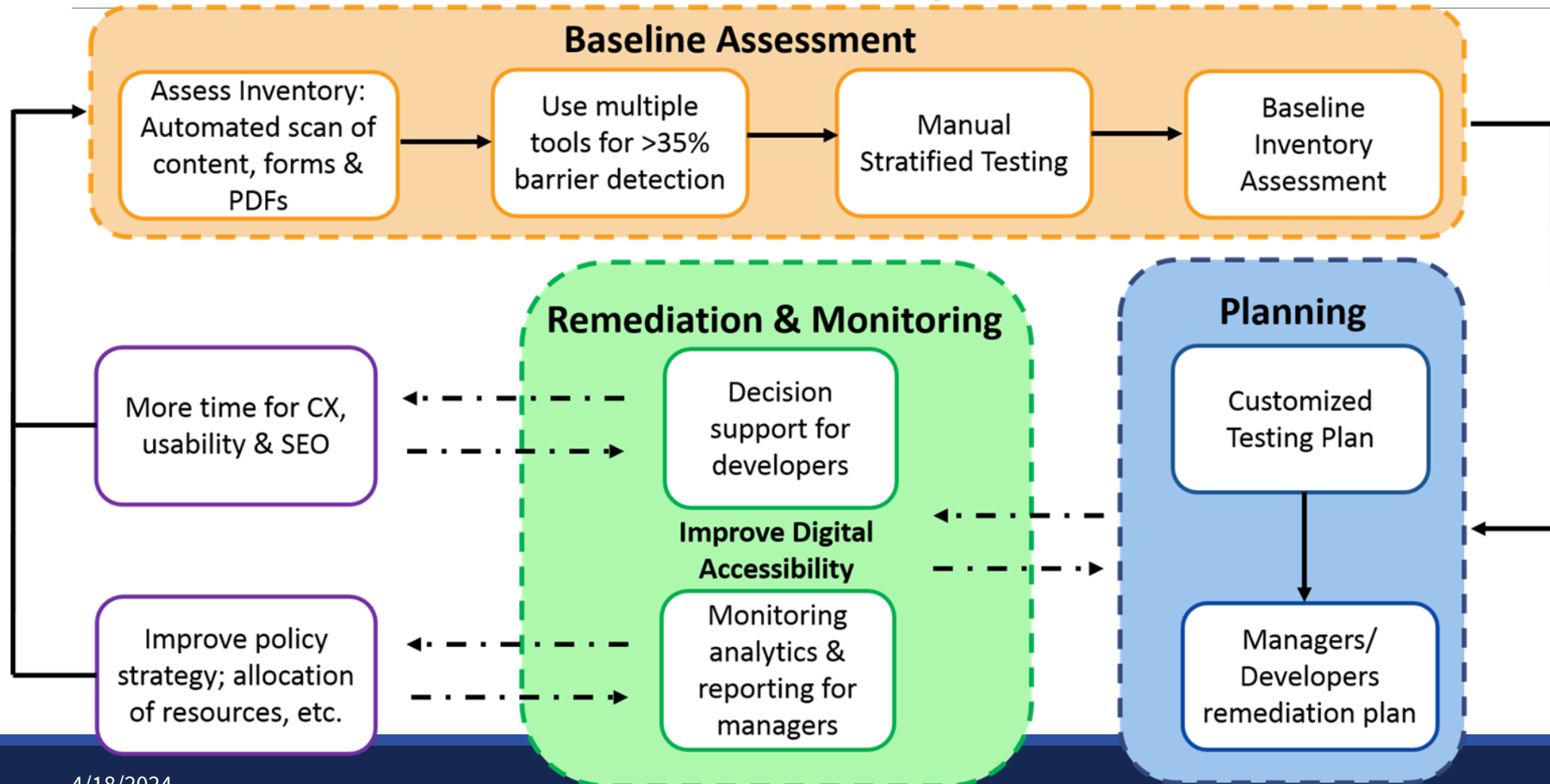
3.Adaptation to Search Trends:
- Ongoing optimization ensures alignment with evolving search engine algorithms.
- Positions the organization as digitally progressive and responsive to technological advancements.

4.Competitive Advantage:
- Outranking competitors in search results establishes the organization as a leader in public service delivery.
- Supports a positive perception of the organization's digital capabilities.

Automated + Manual Accessibility and Usability Testing

Baseline Assessment

Assess Inventory: Automated scan of content, forms & PDFs → Use multiple tools for >35% barrier detection → Manual Stratified Testing → Baseline Inventory Assessment

Remediation & Monitoring

Decision support for developers

Improve Digital Accessibility

Monitoring analytics & reporting for managers

Planning

Customized Testing Plan → Managers/Developers remediation plan

More time for CX, usability & SEO

Improve policy strategy; allocation of resources, etc.

Sample Overview of Accessibility Results

Most Frequent WCAG Errors

WCAG Checkpoint Error	Scope of Inspection	Accessibility Barrier Levels (% of Elements Failing Checkpoint)
Alternative Text Alerts and Errors	Partial	Low (3.52%)
Aria Markup Alerts and Errors	Partial	Low (0.08%)
Invalid Titles	Partial	Low (0.07%)
Language Missing	Partial	Low (3.43%)
Table Header Missing	Partial	Low (0.00%)
Very Low Contract Element	Partial	Low (0.00%) Manual testing needed
H1 Missing	Partial	Low (5.06%)
Form Labels Errors	Partial	Low (4.89%)

Category	Code	Problem Clause	Problem Definition
General, Text, NotesAndReferences, Annotations, VersionIdentification	7.1:1.1(14.8), 7.1:5, 7.2:1, 7.9:2.1, 7.18.1:2, 5:1	7.1, 7.2, 7.9, 7.18.1, 5	Text object not tagged, Color contrast, Logical Reading Order, ID missing in 'Note' structure element, Alternative description missing for an annotation, PDF/UA identifier missing
General, Text, Annotations, VersionIdentification	7.1:2.3, 7.1:5, 7.2:1, 7.18.1:2, 5:1	7.1, 7.2, 7.18.1, 5	'Sect' structure element used as root element, Color contrast, Logical Reading Order, Alternative description missing for an annotation, PDF/UA identifier missing
General, Text, Fonts, Graphics, Tables, Annotations, VersionIdentification	7.1:2.4.1, 7.1:5, 7.2:1, 7.21.4.1, 7.3:1(14.8.4.5), 7.3:2, 7.5:2, 7.5:3.2, 7.5:1, 7.18.1:2, 5:1	7.1, 7.2, 7.21.4.1, 7.3, 7.5, 7.18.1, 5	Possibly inappropriate use of a 'Figure' structure element, Possibly inappropriate use of a 'Span' structure element, Color contrast, Logical Reading Order, Font 'TimesNewRomanPSMT' is not embedded, Font 'TimesNewRomanPS-BoldMT' is not embedded, Font 'TimesNewRomanPS-ItalicMT' is not embedded, Font 'ArialMT' is not embedded, Font 'TimesNewRomanPS-BoldItalicMT' is not embedded, 'Figure' element on a single page with no bounding box, Alternative text missing for 'Figure' structure element, Table header cell has no associated subcells, Table summary missing, Irregular table row, Alternative description missing for an annotation, PDF/UA identifier missing
General, Text, Fonts, NotesAndReferences, Annotations, VersionIdentification	7.1:7.1(12.2), 7.1:7.2(12.2), 7.1:2.5, 7.1:2.3, 7.1:2.4.1, 7.1:5, 7.1:6.3, 7.2:1, 7.21.4.2, 7.9:2.1, 7.18.1:2, 5:1	7.1, 7.2, 7.21.4.2, 7.9, 7.18.1, 5	'ViewerPreferences' dictionary missing, 'DisplayDocTitle' entry is not set, Possibly wrong nested 'Span' struct element into StructTreeRoot, Possibly wrong nested 'Link' struct element into StructTreeRoot, Possibly wrong nested 'P' struct element into StructTreeRoot, 'Sect' structure element used as root element, Possibly inappropriate use of a 'Span' structure element, Color contrast, Title is empty in document's XMP metadata, Logical Reading Order, CIDSet is missing or incomplete for font '66', ID missing in 'Note' structure element, Alternative description missing for an annotation,

Forms – PDF and HTML

Screen Readers

What is a Screen Reader?

Screen readers are software programs that allow blind or visually impaired users to read the text that is displayed on the computer screen with a speech synthesizer or braille display.

How it works?

The user sends commands by pressing different combinations of keys on the computer keyboard or braille display to instruct the speech synthesizer what to say and to speak automatically when changes occur on the computer screen

Why is it important to include screen readers in our testing?

Well, you could use tools like aXe, which will scan your site and point out some red flags with its web accessibility. But testing for Screen reader friendliness without actually using a screen reader, is like testing for mobile friendliness without using mobile device. You can't perfectly predict what the user's experience will be like when they're using a completely different interface from the one you're used to.

Screen Readers: Usability Tips

Use Descriptive Headings: The use of on-page headings is one of the most important usability features for screen reader users, as it helps these people more easily understand the page structure

Write Descriptive Link Text: Screen reader users can browse Web pages by calling up a list of on-page links, and activating the link in which they're most interested. As such, non-descriptive link text such as 'click here' should be avoided at all costs: it makes no sense whatsoever when taken out of context. We must hunt through surrounding text to discover the link destination.

Provide Information in Lists: The use of lists within HTML code is extremely useful for screen reader users, as screen readers announce the number of items in each list before reading out the list items. This helps these users know what to expect when hearing a list of items (such as site navigation).

Apply descriptive ALT Text: ALT text is the textual content alternative that's provided for images on a site. ALT text is read out to screen reader users, so any Website that offers even basic accessibility will provide this alternative text.

Write Descriptive Page Titles: The page title is the very first thing that screen reader users hear when they arrive at a Web page, so it's essential that the title is descriptive of the page

Screen Readers: NVDA Shortcut Keys

H	Headings Quick Key

T	Table Quick Key

G	Graphic Quick Key

L	List Quick Key
I	List Item Quick Key

F	Form Quick Key

B	Button Quick Key

Forms

Command	Description
F or **Shift** + **F**	Go to next (or previous) form element
B or **Shift** + **B**	Go to next (or previous) button
Enter or **Insert** + **Space** (when in a form element)	Enter forms mode
Insert + **Space**	Exit forms mode
Tab or **Shift** + **Tab**	Go to next (or previous) form element (or other focusable element, such as a link)
Spacebar	Select and deselect checkboxes
Alt + **↓**	Open Combo Box/Jump Menu/Auto-complete Menu
↑ or **↓**	Select Radio Button
↑ or **↓** or the **First letter**	Select Element in Combo Box
X or **Shift** + **X**	Go to next (or previous) checkbox
C or **Shift** + **C**	Go to next (or previous) combobox
R or **Shift** + **R**	Go to next (or previous) radio button
Enter (when in forms mode) or **Spacebar** (on some submit buttons)	Submit form

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