



ENHANCING CUSTOMER COMMUNICATION WITH ACCESSIBILITY  
FEATURES IN CCM TOOLS

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*Abstract*

*When we use the word Accessibility, we mean creating a product or service that a vast population of individuals with disabilities and different abilities can use. When we refer to it as software, it means designing a product, software, or website that a unique user can use. In today's world, CCM tools can provide beneficial provisions for everyone to access composed communication, regardless of their disabilities. Customer Communication Management (CCM) tools act as a bridge between businesses and their customers. CCM provides customer communications, ensures security and compliance parameters are met, and provides cost-effective ways by combining security measures to protect sensitive information with cost-effective approaches that optimize resource utilization. CCM delivers automation of workflows, templates that comply with the same standards, and assurance of reliability through constant delivery methods and quality control activities therefore, it is the most efficient way of carrying out a project. Today, beyond just these core skills, the tools in CCM have also been advanced as far as accessibility is concerned whereby all clients can receive and access communications hence the ability of the recipients is not a hindrance to communication. To achieve this feature, it works with assistive technologies, follows accessibility standards, and provides alternative formats when needed, making its communications universal.*

*Keywords -Accessibility, Customer communication management(CCM), disabilities, readability*

**I. INTRODUCTION**

Many people with disabilities face challenges in providing computer input, interpreting output, and reading documentation. Various technologies have been created to diminish or eliminate these barriers, especially those related to computers and technology[5]. When we refer in terms of software, It includes taking account of imperfections and disabilities; common examples would be eyesight issues (e.g., small fonts are hard to read for many users), color blindness. Various customer communication management tools have accessibility features that are valid for customers with disabilities. CCM tools enable users to access their bills, letters, and invoices without issues by providing these features in composed outputs. In this article, we will majorly go over vision and hearing disabilities and features that are offered in CCM tools to aid users with disabilities in accessing their communications.



## II. UNDERSTANDING DISABILITY

Any condition of the body or mind (impairment) that makes it more difficult for a person to do certain activities is called a disability. Regarding computer science, disabilities refer to principal/minor issues that hinder a user's access to, reading, viewing, or listening to any computer program [4]. This paper focuses on two types of disabilities, visual and hearing, to understand what each means and how the CCM tool can help aid users with such conditions. Visual Impairments include Conditions that affect a person's vision, ranging from partial sight to complete blindness. Blindness, A complete lack of vision, or Low vision, Reduced vision that cannot be fully corrected with glasses or contact lenses or Color blindness means an inability to distinguish specific colors. For low-vision users, a few settings make their lives difficult when using a computer. Low-vision users face issues such as text that cannot be resized for reading or fonts that are too small or hard to read. In the case of color blindness, many times, we assume color blindness means only seeing in black and white, but that is just another misconception. Colorblindness also has another form where the person struggles to differentiate between red and green, yellow and blue. Color blind people and low vision people face difficulties when the screen doesn't show color contrast and when content solely relies on color to convey meaning. Hearing Impairments include Conditions that affect a person's ability to hear, ranging from mild hearing loss to complete deafness, i.e., the Inability to listen to any sound, to difficulty in hearing, i.e., a reduced ability to hear requiring amplification or support.

## III. ACCESSIBILITY

In the world of technology, Accessibility means making something easy for everyone to use [1][2], regardless of their abilities. It's like building a ramp alongside stairs - while some people can climb stairs easily, others may need the ramp, but having both options means everyone can enter the building. When we talk about digital Accessibility, it means creating websites and apps that work well for all people, including those who might have trouble with vision and hearing. Digital Accessibility is the practice and mindset of designing technology to be usable by as broad an audience as possible. Technology has become essential to our daily routine, so we must implement technologies that promote equality and diversity. While designing Accessibility features, unique users' needs are considered. The main aim is that people with special needs or impediments should be able to access technology without any hindrance.

## IV. CCM'S ROLE IN ACCESSIBILITY

Customer Communication Management (CCM) tools can offer several features and functionalities to improve Accessibility for users with vision and/or hearing impairments. These tools are designed to ensure that communications, whether they are emails, PDFs, printed documents, or other outputs, are accessible and usable by individuals who have limited vision, are blind, or have other vision-related impairments and provide features and alternative methods for individuals with hearing impediments.



## 1. Vision Accessibility in CCM

In the context of CCM, vision accessibility refers to the system's ability to provide output that can be easily consumed by recipients with visual impairments, including those who are blind, have low vision, or experience other vision-related challenges. CCM incorporates various features and best practices to ensure customer communications are accessible to people with different visual needs.

Here are some of the vision accessibility features that can be implemented in CCM tools [6]:

### 1.1. Support for Screen Readers

CCM tools can integrate with popular screen readers like JAWS (Job Access With Speech), NVDA (NonVisual Desktop Access), and VoiceOver. These tools read out the content of a document to users with visual impairments. CCM tools use proper HTML and tagging structures for documents, making it easier for screen readers to interpret and deliver content organized, such as reading headings, paragraphs, tables, and form fields in a logical order.

### 1.2. Alternative Text for Images

Alternative text (alt text) in Customer Communication Management (CCM) systems plays a vital role in making visual content accessible to all users. When properly implemented, alt text provides clear, descriptive text and information and details about images, charts, graphs, and other visual elements within customer communications. Some users are dependent on screen readers or in scenarios where images are not displayed. Alternative text for images plays a crucial role in aiding the user.

### 1.3. High-Contrast Design Options

CCM tools support high-contrast color schemes, which are helpful for users with low vision[2]. Good color contrast helps make text easy to read, like how black ink on white paper is more transparent than gray ink on white paper. For people who see colors differently or have trouble with their vision, having text that stands out from its background is super important - it's like making sure road signs are bright and clear enough to read while driving. The great thing is that people can adjust how things look to match what works best for their eyes. It's similar to how you might adjust the brightness on your phone or make text more prominent on your computer screen. Someone who has trouble seeing specific colors might change the color scheme to one that's easier for them to see, while another person might need larger text - just like how some people need reading glasses while others don't. This facility was created to ensure users can do it effortlessly when they want to read.

### 1.4. Text Size Adjustments

CCM tools make changing text size easy while keeping documents neat and organized. When someone needs larger text to read comfortably, They might use the zoom in or the grow font size options, and everything automatically adjusts to fit perfectly - similar to how your phone's screen adjusts when you pinch to zoom.

This characteristic has an advantage toward reading people who need a larger text in order to read or be careful. However, the most amazing part is that any document in every size will



remain sharp and professionally looking. In other words, no matter what the screen size is, whether on a mobile phone, a tablet, or a computer, the content resizes automatically and gives a perfect display.

### **1.5. PDF Accessibility**

PDFs designed by this system are being tagged correctly and that makes for efficient navigation and reading by the users that depend on screen readers. This includes correct reading order and identifying headers, paragraphs, and lists. Accessibility tags can be customized to instruct the screen reader or text-to-speech converter to skip an object. It can also add alternate text to describe a graphical object, such as a chart or image. Changing the language in which objects can be read can also be controlled using tags, and changing the object's read order is possible. PDF and PDF/A are the supported types of output for providing this feature. An advantage of accessibility tagging is that this setting is made active when developers code the design objects, as once it's applied in the system, this feature is available for the entire outputs created by the CCM tool in a particular production batch, which saves the time to manually open each PDF page for each customer to add or customize accessibility tags.

### **1.6. Customizable Layouts**

When communications are designed considering accessibility requirements, CCM tools can create simple layouts that improve readability. Clean layouts of documents help low-vision users as the document's design consists of uniform header styles, consistent font choices, and appropriate spacing. It allows users with visual impairments to understand the structure of a document with less effort.

### **1.7. Text-to-speech communications**

Some CCM tools-generated documents can be converted to audio or integrated with text-to-speech technologies, allowing users with visual impairments to listen to the document content rather than reading it. This helps users become comfortable with auditory communication rather than visual.

### **1.8. Collaboration for Braille Output**

CCM tools have been involved in a partnership with Braille Works, whose aim is to deliver a comprehensive document accessibility solution that suits the needs of individuals with disabilities. This cooperation makes it possible for companies to hand out documents in different formats; for example, once communication PDFs are submitted to Braille Works, that would change these statements into Braille or a bigger size of the text, taking into consideration the clients' demands.[7]

### **1.9. Colorblind-Friendly Design**

color-contrast tools evaluate the contrast between the text and the background and the degree of legibility for users with visual impairments. In communications design, patterns and text labels that support colorblind customers are preferred. This ensures that users with different



color vision deficiencies can still read and understand the content effectively, as communications are not solely dependent on colors to provide information.

#### **1.10. Web Accessibility**

CCM tools ensure that web-based communications (e.g., emails, online statements, and web forms) are WCAG 2.0/2.1 compliant, adhering to accessibility standards such as proper heading structure, alt text for images, and keyboard navigation. [3] CCM tools can be configured to provide responsive communication design. The responsive feature allows the communication content to be adjusted to various screen sizes and orientations, ensuring the user gets optimal experiences on devices ranging from desktops to smartphones. This is important for users with visual impairments who may rely on different devices with assistive technologies.

#### **1.11. Delivery mode**

Customers can opt for the suitable communication channels provided by CCM tools such as email, FAX, SMS, and print. This flexibility allows businesses to deliver accessible content in formats that best suit their customers' preferences. For visually impaired customers who prefer physical documents, CCM tools can produce accessible print materials, such as large-print documents or Braille.

### **2. Hearing Accessibility in CCM Tools**

Technical advancements in CCM tools provide the capacity to provide features and alternative methods for individuals with hearing impediments to access communications. With the help of this capability, CCM tools can provide accessible communications to such individuals by creating environments to improve customer engagement. The key hearing accessibility features and advantages of CCM tools.

#### **2.1. Text-Based Communication**

CCM tools can compose documents containing videos or multimedia, captions, and subtitles. Such a feature allows customers with hearing disabilities to present information in clear, easy-to-read text. This conveys the message in communication to users without depending on the audio in the document.

#### **2.2. Subtitles and Captions for Audio-Visual Content**

CCM tools allow the capacity to include captions in video-based communications; as the content is made available in text captions, the visual content is available for the person with hearing disabilities. Text for the captions is the textual version of spoken content in the visual, ensuring complete comprehension is included in the caption. CCM tools support the integration of subtitles in multiple languages. This allows businesses to cater to users with impairments in different regions and with varying language preferences, enhancing communication for diverse audiences.



### **2.3. Alternative Formats for Audio-Only Content**

Text transcripts are provided by CCM tools for any technology or method of audio communication. These transcriptions allow hearing-disabled individuals to hear the same audio in text, so that information is not absent. CCM tools can be programmed to automatically present verbal summaries or full transcriptions of recordings of voice messages or calls, thus they also become understandable by the hearing-impaired.

### **2.4. Accessible PDF and Digital Documents**

Accessible PDFs that include text-based communication and descriptions of audio content enable users with listening impairments to access the same information communicated in audio format. For users with hearing impairments, CCM tools can create forms with clear, text-based instructions and ensure that any audio instructions or prompts are replaced with text.

### **2.5. Omni-Channel Communication for Hearing-Impaired Users**

CCM tools support delivering communications across various channels, such as email, SMS, or web portals, ensuring that individuals with hearing impairments can access critical information without relying on audio. User with hearing impairments can specify their preferred communication channels (e.g., SMS, email, or online portals) to receive text-based updates and notifications in a format that best suits them.

## **V. ADVANTAGES OF IMPLEMENTING ACCESSIBILITY IN CCM**

### **1. Broader Customer Reach and Inclusivity**

CCM tools' accessibility features enable businesses to communicate effectively with a broader range of customers, including those with disabilities. This ensures that individuals with visual, auditory impairments can interact with communications as quickly as others.

### **2. Improved Customer Experience**

CCM tools enable businesses to deliver personalized communications in multiple formats that can be adapted to meet customers' individual needs. For example, offering documents in larger text, audio formats, or accessible PDFs can ensure customers with disabilities can easily understand the content. The practice of accessible design helps to incorporate a marketing automation platform into a smooth process for customers who are blind or deaf, offering them the experience they need. As a result, a better interaction happens, and the customer is happier with the product.

### **3. Reputation and Customer Loyalty**

Accessible communications reflect a business's commitment to diversity, equity, and inclusion. This improves the brand's image and attracts loyal customers who appreciate socially responsible practices.



#### **4. Customer Retention**

When CCM tools incorporate accessibility features, businesses start to serve and communicate with a larger population, including people with disabilities. This expanded Accessibility can help increase customer retention, as clients appreciate the effort put into making interactions inclusive and straightforward. Accessibility features like larger text and audio options benefit elderly individuals or those with temporary impairments, helping businesses maintain their customer base across different demographic groups.

#### **5. Global Accessibility and Compliance**

CCM tools support various accessibility standards, such as WCAG (Web Content Accessibility Guidelines), helping businesses reach an international audience while ensuring that communications are universally accessible. CCM tools offer accessibility tools that help organizations meet regulatory standards, such as the Americans with Disabilities Act (ADA), Section 508, and WCAG. These regulations require digital content to be accessible, and CCM tools's features ensure businesses remain compliant. Ensuring accessible communication through CCM tools reduces the risk of non-compliance with accessibility standards.

#### **6. Efficiency and Cost benefits**

Accessibility features implemented by CCM tools also provide cost benefits once the communication is live in production. As the communications are presented with self-service options and are clean to read, they help customers understand and resolve issues without requiring assistance. This reduces customer service teams' calls and support needs and minimizes support costs.

#### **7. Productivity improvement**

When designing organizations Accessibility, dealing with the fact that teamwork becomes better. In addition to the elaborate technologies used in the CCM, the team affords the content that is helpful to a company that is inclined to social and gender equality. By the virtue of the use of state-of-the-art tech in CCM tools, teams are capable to make and dispatch accessible communications quicker, which subsequently permits the in-house staff and the customers to get the benefits from the facilitated processes and circumlocutions in a timely manner. The organizations decide on a new Accessibility the company member's morale rises as the workers contribute in a company that respects and values the inclusion and equality.

#### **8. Improved Document Processing and User Interaction**

CCM tools enable the composition of print and electronic driver outputs that provide access to different document formats, namely large print, braille, audio, or PDF, via text-to-speech capabilities, with the help of which adaptation to user's needs is an easy task. A great flexibility is given to users to choose the format they feel comfortable and, thus, enhance their experience. The Broadcast feature gives companies the ability to send the message in multiple ways such as e-mail, web portal, or print.



### 9. Improved Data Insights and Analytics

CCM tools can monitor communications with disabled people and also present information about strange user activities. This analysis data is key for companies to develop how they handle the customer's problems, and thus, ensure that communication remains sensitive to the customer's exacting needs and for the customer's satisfaction. The capability to access and track the performance of communicative actions can yield ideas that are more sustainable for planning user interaction with your system.

## VI. CONCLUSION

1. The adoption of CCM tools with accessibility features will allow companies to send more sensitive, user-friendly messages that accommodate all customers, including those with disabilities.
2. The benefits of Accessibility cover the area of legal compliance, an enhanced customer experience, an improved brand reputation, a reduction of costs, and increased operational efficiency.
3. At the very least, customer centric management tools come to the aid of organizations in the process of establishing more personal connections with their customers, the open door aspect of their work wherein new publics can come and they can be seen as equivalent without favoritism or discrimination, becoming more inclusive to everyone.

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