How accessibility requirements figure into software systems

Accessibility is an important social issue that impacts computer systems that are designed to interact with people. As such, some aspects of it have become codified in laws and standards

- Section 508 Amendment to the Rehabilitation Act of 1973 (US Accessibility Legal Requirement) (links)
- Blurred lines: Accessibility, disability, and definitional limitations (paper)
- Web Content Accessibility Guidelines (WCAG) 2.0 (web document)
- Code in action: Closing the black box of WCAG 2.0, A Latourian reading of Web accessibility (paper)
- Web accessibility guidelines for the 2020s (paper)
- Disability, human rights, and social justice: The ongoing struggle for online accessibility and equality (paper)

At the design end, this topic is often referred to as inclusive design or universal design

- Inclusive Design (talk)
- Making a difference. One app at a time: Disability, Distinction, and Domestic Access (talk)
- Design Meets Disability (talk) (book)
- Haben Girma: "Designing Technology with Accessibility in Mind" | Talks at Google (talk)
- Universal Design (talk)
- "Making the Digital and Physical Worlds Accessible for People with Disabilities," Eve Andersson (talk)
- User-Sensitive Inclusive Design (paper)
- Inclusive design of ICT: The challenge of diversity (U Oslo thesis)
- Ensuring Universal Design in ICT-Solutions - Towards Identifying Critical Success Factors (Thesis)
- Accessibility for Everyone - An Evening with Laura Kalbag (video)
- Entangled With Books: Two Moments In the Evolution of Accessibility and the Notion of Universal Design (thesis)
- User characteristics and the effectiveness of inclusive design for older users of public access systems (Humboldt-Universität zu Berlin thesis)
- 8 80 Cities (Toronto web site)

As always, there is the question of how to approach quantifying how well the design meets the requirements

- An Introduction to the Theory and Measurement of Self Determination (video)

One issue in design of particular interest here is realizing how the system appears to the user – since at the heart of most accessibility issues was that the programmer viewed the system usage differently than the user does (which is not to say that programmers don't sometimes build systems that they themselves would find hard to use).

- Prejudices, memories, expectations and confidence influence experienced accessibility on the Web (paper)
- Mental Models of Chinese and German Users and Their Implications for MMI: Experiences from the Case Study Navigation System (paper)

One question is how does accessibility related to usability

- Accessibility, usability and universal design—positioning and definition of concepts describing person-environment relationships (paper)
- The relationship between accessibility and usability of websites (paper)
- Bridging the gap: between accessibility and usability (paper)

A tie between systems thinking (which relates to many other nonfunctional requirements) and accessibility requirements is the focus of https://wiki.csd.uwo.ca/display/CS96222017/Usability+as+a+non-functional+requirement

- Systems Thinking in Design: Service Design and self-Services (paper)

While it is important for software to take advantage of the physical properties of the system where it runs, it is also useful to be able to interface with devices that might be added to the default system by a user with special access needs.

- Braille Displays (note)
- Russell Couper : CANUTE, The worlds first working refreshable multiline braille display. (talk)
- Switch Access for Android (talk)
- Telekineitic Control of Android and Other Wonders of the Modern World (talk)
- SpeakYourMind: Aaron typing with his eyes! Powered by EyeTribe and Microsoft (demo)
- CES 2015: The Eye Tribe (interview)
- Tecla Access - Reading an e-book (talk)
- Why the Dvorak keyboard didn't take over the world (talk)
- the first mouse (demo)

And at the other end of the development process, the question of how do we know that an accessibility requirement is being met is also an issue.

- Auditing Web accessibility: The role of interest organizations in promoting compliance through certification (paper)
- Evaluation and Enhancement of Web Content Accessibility for Persons with Disabilities (U Pittsburgh Thesis)
- Paul J. Adam: Web Accessibility Testing Tools and Techniques Paul Bohman (talk)
- Testing for Accessibility Linux.conf.au 2014 -- Perth, Australia (talk)
- The Effectiveness of the Web Accessibility Audit as a Motivational and Educational Tool in Inclusive Web Design (U Dundee thesis)
- Web accessibility: Filtering redundant and irrelevant information improves website usability for blind users (paper)

Some work has been focused on design for specific access issues

- Mobile Gesture-Based User Interfaces for People with Disabilities (talk)
- Iterative Design and Field Trial of an Aphasia-Friendly Email Tool (paper)
Although we usually think of accessibility in terms of human computer interactions, but computers also play an interesting accessibility role in human human interactions.

- Rupal Patel: Synthetic Voices as unique as fingerprints (talk)
- Roger Ebert: Remaking My Voice
- Prof. Simon King - Using Speech Synthesis to give Everyone their own Voice (talk)
- “Speech Synthesis,” Kim Silverman (talk)

Much work on accessibility is currently focused on the design of web applications/sites

- Guiding Novice Web Workers in Making Image Descriptions Using Templates (paper)
- Making the web easier to see with opportunistic accessibility improvement (paper)
- YOW! West 2017 Ann Mwangi - Accessibility: Is it another checkbox to be ticked? (talk)
- The challenges of Web accessibility: The technical and social aspects of a truly universal Web (paper)
- Stanford Seminar - Building an Accessible Web (talk)
- Beyond Web Content Accessibility Guidelines: Expert Accessibility Reviews (paper)
- A Knowledge-Based Framework for Improving Accessibility of Web Sites (paper)
- Measuring website usability for visually impaired people-a modified GOMS analysis (paper)

Of particular interest is automating accessibility testing:

- Writing Automated Tests for Accessibility (blog entry)
- Why you can't test a screen reader yet! (blog entry)

Google has been involved in some interesting developments in this area, particularly regarding its Android systems

- Inclusive design and testing: Making your app accessible - Google I/O 2016 (talk)
- Google I/O 2015 - Improve your Android app's accessibility (talk)
- GTAC 2015: Automated Accessibility Testing for Android Applications (talk)

One question is how do existing projects handle accessibility requirements

- Accessibility for Sakai (open source educational software)
- Accessibility of Atlassian Products
- Accessibility Western (web site)
- Accessibility London Ontario Canada (web site)

Some major publications and blogs on accessibility issues (particularly for IT)

- ACM Transactions on Accessible Computing (TACCESS) (journal web site)
- ASSETS ACM SIGACCESS Conference on Computers and Accessibility (Proceedings web site)
- List of Accessibility Blogs (link) and A11Y Project (resources)
- Gov UK Accessibility blog (blog)
- The Accessibility Hub (blog, Canada)
- Web Axe -- blog and podcast on web accessibility (blog)

Some theses on the topic:

- A Support System for Graphics for Visually Impaired People (UWO Thesis)
- Accessibility of E-Commerce Websites for Vision Impaired Persons (UWO Thesis)
- Examination of the Usability of the IPAD Among Older Adult Consumers (UWO Thesis)
- Redesign of Johar: a framework for developing accessible applications (UWO Thesis)
- Eyes-Free Input on Mobile Devices (thesis)
- Collaborative, Multimedia Solutions for Improving Educational Access for Deaf and Hard of Hearing Students (thesis)
- Activity Analysis of Sign Language Video for Mobile Telecommunications (thesis)
- Real-Time Sign Language Video Communications over Cell Phones (thesis)
- Non-Visual Mainstream Smartphone Camera Interactions for Blind and Low-Vision People (thesis)
- Optimizing Video Presentations for Deaf and Hard of Hearing Participants in Mainstream Classrooms (thesis)
- Human-Centered Optimization of Mobile Sign Language Video Communication (thesis)
- Rate-Distortion-Complexity Optimization of Video Encoders with Applications to Sign Language Video Compression (thesis)
- Communicating Through a Brain-Computer Interface: Towards the Assessment of Quality of Life in Minimally Conscious and Covertly Aware Vegetative State Patients (UWO Thesis)
- Towards the Development of a Wearable Tremor Suppression Glove (UWO Thesis)
- Development of a Novel Handheld Device for Active Compensation of Physiological Tremor (UWO Thesis)
- Design and Study of Emotions in Virtual Humans for Assistive Technologies (U Waterloo thesis)
- An Assistive Handwashing System with Emotional Intelligence (U Waterloo thesis)

There is a literature on how this topic should be taught
• Best Practices for Teaching Accessibility in University Classrooms: Cultivating Awareness, Understanding, and Appreciation for Diverse Users (paper)
• Principles and Practice of Assistive Technology (MIT OpenCourseware)