# CPACC Study Artifacts

Domain I: Disabilities, Challenges, and Assistive Technologies

Subsection: Basic Disability Concepts → Our Diverse Abilities

- Around 20% of the population has some type of disability. Disabilities are common and normal.

- Disabilities may be visible (e.g., blindness, paralysis) or hidden (e.g., epilepsy, reading disorders, hearing loss).

- Disabilities can be permanent, temporary (e.g., injury), or age-related (vision, hearing, mobility, cognition decline in older adults).

- Web-relevant disabilities are those that affect eyes, ears, hands, or brain.

- Key point: Disability is part of human diversity.

Subsection: Basic Disability Concepts → Accessibility Matters

- “Print disability”: blind users cannot access printed text without alternate formats.

- Traditional solutions: human readers, braille embossers, audio recordings, radio/TV summaries. Limitations include lack of independence, delays, cost, and braille literacy gaps.

- Digital text + screen readers transformed access by enabling independent navigation and reading.

- Challenge: This independence is only possible if content is designed accessibly. Inaccessible digital resources exclude users despite potential technology solutions.

- Accessibility is critical to equal participation.

Subsection: Basic Disability Concepts → Assistive Technologies

- Assistive technologies (AT) are tools/devices that help people with disabilities.

- Examples: wheelchairs, canes, hearing aids, glasses/contacts.

- Digital AT examples:

- Blindness: screen readers, refreshable braille.

- Low vision: screen magnifiers, high-contrast settings, screen readers.

- Color blindness: overlays, EnChroma glasses.

- Deafness: captions, transcripts.

- Motor/mobility: alternative keyboards, head wands, mouth sticks, eye gaze, voice input.

- Cognitive: screen overlays, augmentative communication aids, simplified interfaces.

- Key limitation: AT cannot solve everything—effectiveness depends on environments (digital or physical) being designed accessibly.

Subsection: Basic Disability Concepts → The Digital Accessibility Revolution

- Misconception: wheelchairs “bind” users; reality—they enable mobility. Similarly, the web is an enabling tool, not a barrier.

- The web has revolutionized independence for people with disabilities:

- Blind users can access online information directly with screen readers.

- People with mobility disabilities can shop, work, and communicate from home.

- Independence is the core benefit: reduces reliance on others and increases freedom.

- Caveat: Only accessible design unlocks these benefits; inaccessible content blocks independence.

Domain I: Disabilities, Challenges, and Assistive Technologies

Subsection: Theoretical Models of Disability

Medical Model

- Defines disability as a biological/medical problem caused by disorder, disease, trauma.

- Disability = individual deficit requiring treatment or cure.

- Strengths: Clear diagnostic criteria useful for medicine, law, and determining eligibility for benefits or accommodations.

- Weaknesses: Ignores role of environment; stigmatizes individuals; bureaucratic burden to “prove” disability; risks excluding those who don’t fit strict definitions.

Social Model

- Disability results from barriers created by society, not individual impairment.

- Poor design and exclusionary practices = root cause of “disabling.”

- Strengths: Empowers users; emphasizes human rights; aligns with accessibility and universal design.

- Weaknesses: May understate lived/biological realities; can overlook personal/identity aspects.

Biopsychosocial Model

- Integrates medical and social perspectives.

- Recognizes biological, psychological, and social dimensions.

- Basis for WHO’s International Classification of Functioning, Disability and Health (ICF).

- Strengths: Holistic, good for rehabilitation planning.

- Weaknesses: May dilute focus on medical needs.

Economic Model

- Frames disability in terms of financial impact on individuals, employers, and society.

- Considers employment, productivity, welfare costs.

- Strengths: Highlights work-related implications and policy needs.

- Weaknesses: Risk of stigmatization (viewing people as “burdens”); often tied to narrow legal/benefits definitions.

Functional Solutions Model

- Focus: practical solutions and technology to overcome functional limitations.

- Example: AT devices, innovations, workplace adaptations.

- Strengths: Action-oriented, results-focused, useful for accessibility professionals.

- Weaknesses: Risks ignoring broader social/political context; may overemphasize tech fixes.

Social Identity / Cultural Affiliation Model

- Disability as source of identity and cultural belonging.

- Example: Deaf culture and sign language communities.

- Strengths: Promotes self-acceptance, empowerment, and advocacy.

- Weaknesses: Less useful for legal/technical definitions; sometimes stems from exclusion by mainstream society.

Charity / Tragedy Model

- Disability seen as misfortune requiring pity or charity.

- Promotes unequal giver/receiver dynamic; stigmatizing.

- Strengths: Can inspire empathy and charitable giving.

- Weaknesses: Disempowering, patronizing, slows systemic progress.

Other Models

- Affirmation Model: celebrates disability as identity, pride in embodiment.

- Sociopolitical Model: activist, rights-based focus.

- Religious/Moral Model: disability as punishment, lesson, or divine test.

- Expert/Professional Model: variation of medical model where professionals control decisions.

- Rehabilitation Model: variation of medical model focused on therapy/rehab.

Domain I: Disabilities, Challenges, and Assistive Technologies

Subsection: Categories of Disabilities and Barriers

Visual Disabilities

- Range: low vision, blindness, color blindness.

- Barriers: reliance on visual content without alternatives (images without alt text, poor contrast, missing captions for video).

- Solutions: screen readers, magnifiers, braille displays, high-contrast settings.

- Design must ensure text alternatives, scalable/resizable text, and color-independent information.

Auditory Disabilities

- Range: partial to total hearing loss.

- Barriers: spoken-only audio, lack of captions or transcripts, reliance on sound alerts.

- Solutions: captions, transcripts, visual indicators, hearing aids, cochlear implants.

- Design must avoid auto-play sound and provide text alternatives.

Deaf-Blindness

- Combination of hearing and vision loss; may be partial or total.

- Barriers: information presented only in sight or sound, lack of tactile alternatives.

- Solutions: refreshable braille, tactile sign language, screen readers with braille displays.

- Requires redundancy in modalities (e.g., text + tactile).

Speech and Language Disabilities

- Examples: stuttering, aphasia, inability to produce speech.

- Barriers: voice-only systems, CAPTCHAs requiring speech, lack of text input options.

- Solutions: augmentative and alternative communication (AAC), text-based interfaces, speech-to-text for those with limited voice control.

- Accessible systems must allow keyboard and text entry alternatives.

Mobility, Flexibility, and Body Structure Disabilities

- Includes paralysis, arthritis, limb differences, tremors.

- Barriers: mouse-only interfaces, small click targets, drag-and-drop, time-limited input.

- Solutions: keyboard operability, switch controls, eye tracking, voice input, touch adaptations.

- Design must support multiple input methods and avoid requiring fine motor control.

Cognitive Disabilities

- Broad category: dyslexia, ADHD, intellectual disabilities, autism, memory impairments.

- Barriers: complex instructions, cluttered layouts, time-limited tasks, inconsistent navigation.

- Solutions: plain language, consistent design, chunked information, error-tolerant forms, flexible timing.

- Universal design benefits all users.

Seizure Disabilities

- Includes photosensitive epilepsy.

- Barriers: flashing/strobing content.

- Design must avoid flashing more than 3 times per second (WCAG SC 2.3.1).

- Provide warnings for unavoidable flashing content.

Psychological/Psychiatric Disabilities

- Includes anxiety, depression, PTSD, bipolar disorder, schizophrenia.

- Barriers: stressful or distracting interfaces, excessive motion, time-limited tasks.

- Solutions: calm design, clear navigation, options to reduce motion and audio distractions.

- Important to respect stigma concerns and privacy.

Multiple/Complex Disabilities

- Individuals may experience combinations of above categories.

- Accessibility must be flexible and redundant (multi-modal).

- Example: deaf-blind user may require both braille and haptic alerts.

Domain I: Disabilities, Challenges, and Assistive Technologies

Subsection: Assistive Technologies and Adaptive Strategies

Visual Disabilities

- Screen Readers: convert digital text to speech or braille (e.g., JAWS, NVDA, VoiceOver).

- Screen Magnifiers: enlarge content (e.g., ZoomText).

- Refreshable Braille Displays: tactile braille output from digital text.

- Adaptive Strategies: keyboard shortcuts, customized color/contrast themes, simplified page views.

Auditory Disabilities

- Hearing Aids and Cochlear Implants: amplify or replace auditory signals.

- Captioning: real-time (CART) or prerecorded for media.

- Transcripts: full-text versions of audio.

- Visual Alerts: substitute for audio cues (flashing light instead of beep).

- Adaptive Strategies: preference for text-based communication, apps with speech-to-text.

Deaf-Blindness

- Braille Displays with Screen Readers: tactile access to digital text.

- Tactile Sign Language: hand-over-hand communication.

- Adaptive Strategies: redundancy across multiple modalities; reliance on refreshable braille.

Speech Disabilities

- Augmentative and Alternative Communication (AAC) Devices: symbol boards, voice synthesizers.

- Text-to-Speech Software: allows typed text to be spoken.

- Adaptive Strategies: use of chat or messaging tools; non-verbal methods for input.

Mobility/Flexibility/Body Structure Disabilities

- Alternative Keyboards: customized layouts, larger keys, single-switch scanning systems.

- Pointing Devices: head pointers, mouth sticks, eye-gaze tracking systems.

- Voice Recognition Software: Dragon NaturallySpeaking, built-in OS speech input.

- Adaptive Strategies: re-mapped controls, dwell-clicking, accessible desk setups.

Cognitive Disabilities

- Tools for Focus: distraction filters, simplified interfaces.

- Reading Supports: text-to-speech, screen overlays, symbol-based augmentative communication.

- Memory Aids: reminders, digital organizers.

- Adaptive Strategies: breaking tasks into smaller steps, consistent layouts, error forgiveness.

Seizure Disabilities

- Strategies: avoiding flashing content, using anti-glare screens.

- Device Features: operating system settings to reduce motion and flashing.

- User Techniques: disabling animations, dimming screens.

Psychological Disabilities

- Apps for Mental Health: guided meditation, stress reduction, reminders.

- Adaptive Strategies: preference for calm, uncluttered interfaces; ability to control sensory input.

Multiple/Complex Disabilities

- Combination of tools: e.g., screen reader + voice recognition; braille display + AAC device.

- Adaptive Strategies: layered redundancy to address overlapping barriers.

Domain I: Disabilities, Challenges, and Assistive Technologies

Subsection: Disability Demographics & Statistics

- Global prevalence: ~1 in 5 people experience disability; ~16% of world population (WHO, World Bank).

- Disability prevalence increases with age; aging populations drive higher percentages.

- Most common categories: visual, hearing, mobility, and cognitive impairments.

- Many disabilities are preventable or arise from environmental, social, or medical causes (e.g., blindness preventable with medical care).

- Digital divide: people with disabilities are less likely to have internet access, employment, or higher education opportunities compared to non-disabled peers.

- Data is essential for policy, funding, and program design but varies widely by country/region.

- Trends:

- Growth of non-communicable diseases (diabetes, stroke) → increase in disability rates.

- War, poverty, and environmental disasters contribute to disability rates globally.

- Disability disproportionately affects women, older adults, and those in low-income countries.

Domain I: Disabilities, Challenges, and Assistive Technologies

Subsection: Disability Etiquette

General Principles

- Treat people with disabilities with respect and dignity.

- Focus on the person, not the disability (people-first language is often preferred, though identity-first is also valid depending on context/community).

- Offer assistance only if requested or accepted.

- Speak directly to the person, not through an interpreter or companion.

Visual Disabilities

- Identify yourself when approaching.

- Offer your arm for guidance, don’t grab theirs.

- Describe obstacles or environmental changes.

- Do not pet or distract service animals.

Auditory Disabilities

- Gain attention before speaking (tap shoulder, wave).

- Face the person so they can lip-read if desired.

- Use clear speech; avoid exaggerated lip movements.

- Provide communication options (e.g., captions, writing).

Mobility Disabilities

- Do not lean on or move someone’s wheelchair without permission.

- Ensure physical spaces have clear paths and accessible seating.

- When speaking with someone seated, position yourself at eye level if possible.

Speech Disabilities

- Be patient; do not finish sentences for the person.

- Ask clarifying questions respectfully if you don’t understand.

- Offer alternative communication methods (writing, AAC devices).

Cognitive or Psychological Disabilities

- Provide information in clear, simple language.

- Allow extra time for processing and response.

- Avoid patronizing tone; treat adults as adults.

- Respect privacy and individual coping strategies.

Cross-Disability Etiquette

- Avoid assumptions about ability or limitations.

- Use inclusive, respectful language.

- Recognize that preferences (e.g., person-first vs. identity-first language) vary by individual and culture.

Domain II: Accessibility and Universal Design

Subsection: Individual Accommodations vs. Universal Design

Individual Accommodations

- Reactive solutions designed for a specific person’s needs.

- Examples: providing a sign language interpreter for a meeting, installing a ramp upon request, producing a braille version of a document after the fact.

- Strengths: tailored to unique individual requirements.

- Weaknesses: often costly, time-consuming, and limited in scope; can create dependence on constant retrofitting.

Universal Design (UD)

- Proactive design that anticipates a broad range of abilities and needs.

- Goal: environments, products, and systems usable by as many people as possible without special adaptation.

- Examples: captioning on all videos, ramps and elevators built into design, websites that meet WCAG standards, lever door handles.

- Strengths: inclusive, efficient, reduces need for case-by-case accommodations, benefits everyone (curb-cut effect).

- Weaknesses: may not cover all extreme or specialized needs; some individuals may still require specific accommodations.

Key Distinction

- Accommodations = individual-level fixes, typically reactive.

- Universal Design = systemic, anticipatory, benefits widest audience.

- Both approaches are necessary: UD reduces need for accommodations but does not eliminate them.

Domain II: Accessibility and Universal Design

Subsection: Benefits of Accessibility

For Individuals

- Enables independence, autonomy, and equal participation.

- Removes barriers to education, employment, healthcare, and civic engagement.

- Reduces stigma by normalizing inclusion.

For Organizations

- Expands customer base to include people with disabilities, families, and aging populations.

- Improves employee productivity and retention by supporting diverse needs.

- Reduces legal risks by complying with disability rights laws and standards.

- Enhances brand reputation and corporate social responsibility profile.

For Society

- Increases workforce participation of people with disabilities.

- Promotes inclusion, diversity, and equity.

- Reduces costs associated with unemployment, dependency, and exclusion.

- Universal benefits: captioning helps language learners and people in noisy environments; curb cuts help parents with strollers as well as wheelchair users.

Key Takeaway

- Accessibility is not only compliance or altruism—it delivers measurable social, economic, and cultural benefits.

Domain II: Accessibility and Universal Design

Subsection: Accessibility Principles in ICT (WCAG 2.1)

WCAG Framework

- Organized around 4 principles (POUR): Perceivable, Operable, Understandable, Robust.

- Conformance levels: A (minimum), AA (industry standard), AAA (enhanced).

- Applies to websites, apps, documents, and digital media.

Perceivable

- Information must be presented in ways users can perceive with at least one sense.

- Techniques: text alternatives for non-text content, captions and transcripts for media, adaptable layouts, sufficient contrast, scalable text.

Operable

- Users must be able to interact with controls and navigation.

- Techniques: full keyboard accessibility, enough time for tasks, no seizures from flashing content, navigable structures (headings, landmarks).

Understandable

- Information and operation of interface must be clear and predictable.

- Techniques: readable text, consistent navigation, clear labels/instructions, error prevention and recovery support.

Robust

- Content must be reliable across current and future technologies, including assistive technologies.

- Techniques: valid code, proper ARIA use, compatibility testing with AT.

- Ensures long-term accessibility across platforms.

Key Success Criteria Examples

- SC 1.1.1: Text alternatives for non-text content.

- SC 1.2.x: Captions, transcripts, audio descriptions for time-based media.

- SC 1.4.3: Minimum contrast ratio.

- SC 2.1.1: Keyboard operability.

- SC 2.3.1: Three flashes or below.

- SC 3.3.1: Error identification.

- SC 4.1.2: Name, role, value of UI components.

Domain II: Accessibility and Universal Design

Subsection: Accessibility Principles in the Built Environment

Core Principles

- Accessibility must extend beyond ICT to physical spaces where people live, work, and interact.

- Built environment accessibility ensures independence, safety, and participation in society.

Key Features

- Entrances: step-free, wide doorways, automatic or lever handles.

- Pathways: ramps, elevators, tactile paving for navigation, handrails.

- Facilities: accessible restrooms, adjustable-height counters, adequate turning space for wheelchairs.

- Signage: high-contrast, tactile, and braille options; clear wayfinding.

- Acoustics/Lighting: minimize background noise, ensure sufficient lighting without glare.

Barriers

- Stairs without ramps or elevators.

- Narrow hallways, heavy doors, cluttered layouts.

- Poor signage or reliance on visual-only indicators.

- Inaccessible public transport, parking, or restrooms.

Universal Design Application

- Design spaces from the start for all users.

- Example: curb cuts serve wheelchair users, parents with strollers, delivery workers.

- Universal bathrooms, visual/auditory alerts, flexible seating arrangements.

Legal/Standards References

- ADA (US), Equality Act (UK), AODA (Canada), ISO/ANSI standards.

- Many countries adopt building codes mandating minimum accessibility features.

Domain II: Accessibility and Universal Design

Subsection: Principles of Universal Design

Seven Principles (Center for Universal Design)

1. Equitable Use – design useful to people with diverse abilities (e.g., captioning benefits deaf users and those in noisy areas).

2. Flexibility in Use – accommodates range of preferences/abilities (e.g., multiple input methods: mouse, keyboard, touch).

3. Simple and Intuitive Use – easy to understand regardless of experience, knowledge, or language (e.g., clear icons, plain language).

4. Perceptible Information – communicates effectively through multiple modes (visual, auditory, tactile).

5. Tolerance for Error – minimizes hazards and adverse consequences of mistakes (e.g., undo functions, confirmation prompts).

6. Low Physical Effort – usable efficiently with minimal fatigue (e.g., lever handles, responsive design for short reach).

7. Size and Space for Approach and Use – appropriate for all users, regardless of body size, posture, or mobility (e.g., wide hallways, adjustable-height workstations).

Applications

- ICT: accessible websites/apps, scalable text, customizable color contrast.

- Built Environment: curb cuts, elevators, tactile signage.

- Products: ergonomic tools, packaging with easy-open features.

Key Takeaway

- Universal design anticipates diversity and integrates accessibility from the outset.

- Benefits extend beyond disability: useful for aging populations, temporary impairments, and situational limitations.

Domain II: Accessibility and Universal Design

Subsection: Universal Design for Learning (UDL)

Concept

- Framework for designing educational environments to accommodate learner diversity.

- Originated in cognitive neuroscience; formalized by CAST.

- Goal: reduce barriers and provide multiple pathways for learning.

Three Core Principles

1. Multiple Means of Representation – provide information in different ways (text, audio, video, tactile). Supports diverse perception and comprehension.

2. Multiple Means of Action and Expression – allow learners to demonstrate knowledge in varied ways (written, oral, visual, interactive). Supports motor and communication differences.

3. Multiple Means of Engagement – offer varied ways to motivate and involve learners (choice of topics, gamification, collaborative vs. independent options).

Applications

- Accessible digital materials (captioned videos, alt text for images, screen-reader compatible documents).

- Flexible assessments (oral presentations, projects, written exams).

- Inclusive teaching practices (clear goals, scaffolding, timely feedback).

Distinction from Accommodations

- UDL = proactive framework embedded in curriculum for all learners.

- Accommodations = reactive adjustments for individual students.

Key Takeaway

- UDL complements universal design by applying its concepts specifically to educational contexts.

- Benefits not only students with disabilities but all learners.

Domain II: Accessibility and Universal Design

Subsection: Usability and User Experience (UX)

Definitions

- Usability: how effectively, efficiently, and satisfactorily a user can interact with a system to achieve goals.

- User Experience (UX): broader concept encompassing usability, accessibility, emotional satisfaction, and overall interaction quality.

Relationship to Accessibility

- Accessibility ensures people with disabilities can perceive, operate, and understand systems.

- Usability ensures systems are intuitive and efficient for all users.

- Overlap: accessible design often improves usability (e.g., clear navigation helps everyone).

- Distinction: a system may be technically accessible but still unusable if poorly designed (e.g., long, confusing forms).

Key Concepts

- Consistency: familiar patterns reduce cognitive load.

- Error Prevention & Recovery: clear error messages, undo functions.

- Feedback: visible and audible cues for actions.

- Flexibility: multiple ways to complete tasks (keyboard, mouse, voice).

- Efficiency: minimize unnecessary steps; support shortcuts.

Examples

- Good accessibility + good usability: A site with high-contrast text, clear headings, simple navigation.

- Accessible but poor usability: An alt-tagged form with fields but confusing layout and unclear instructions.

Key Takeaway

- Accessibility and usability must be integrated.

- Optimal user experience requires both compliance (accessibility) and good design (usability).

Domain III: Standards, Laws, and Management Strategies

Subsection: International Declarations & Conventions

Universal Declaration of Human Rights (UDHR, 1948)

- Foundational UN document affirming dignity and equal rights of all people.

- Basis for subsequent human rights instruments, including disability rights.

- Article 1: all humans are free and equal in dignity and rights.

- Provides philosophical foundation for accessibility as a human right, though not disability-specific.

Convention on the Rights of Persons with Disabilities (CRPD, 2006, UN)

- First comprehensive human rights treaty of the 21st century focused on disability.

- Ratified by 180+ countries.

- Promotes full participation, equality, and accessibility.

- Article 9: mandates accessible ICT, transport, facilities, services.

- Article 24: right to inclusive education.

- Article 27: right to work and employment.

- Legally binding for ratifying states.

- Shifts perspective from charity/medical to rights-based model.

Marrakesh Treaty (WIPO, 2013)

- Addresses access to published works for people who are blind, visually impaired, or otherwise print-disabled.

- Requires signatory nations to adopt copyright exceptions allowing creation and sharing of accessible-format copies (braille, audio, large print, digital).

- Goal: end “book famine” for people with print disabilities.

- Supported by World Blind Union and other advocacy groups.

Domain III: Standards, Laws, and Management Strategies

Subsection: Regional Instruments

European Union Charter of Fundamental Rights (2000)

- Legally binding within the EU since 2009 (Treaty of Lisbon).

- Article 21: prohibits discrimination on basis of disability.

- Article 26: recognizes rights of persons with disabilities to benefit from measures ensuring independence, integration, and participation.

- Supports harmonization of accessibility standards across EU member states.

African Charter on Human and People’s Rights (1981)

- Regional human rights treaty adopted by the Organization of African Unity (now African Union).

- Article 18(4): requires states to provide special measures of protection for persons with disabilities.

- Focus on social solidarity and collective responsibility.

- Implementation varies widely across African states.

Inter-American Convention on the Elimination of All Forms of Discrimination Against Persons with Disabilities (1999)

- Adopted by the Organization of American States (OAS).

- Legally binding for ratifying states in the Americas.

- Requires parties to prevent and eliminate all forms of disability-based discrimination.

- Emphasizes equal opportunity, accessibility, and participation in society.

- First regional treaty specifically addressing disability rights.

Domain III: Standards, Laws, and Management Strategies

Subsection: National and Provincial Laws

United States: Americans with Disabilities Act (ADA, 1990)

- Landmark civil rights law prohibiting disability discrimination.

- Titles:

• Title I – Employment.

• Title II – State and local government services.

• Title III – Public accommodations (includes digital services via court interpretation).

• Title IV – Telecommunications (relay services, captions).

• Title V – Miscellaneous provisions.

- Influences global approaches to accessibility law.

United Kingdom: Equality Act (2010)

- Consolidates prior anti-discrimination laws.

- Protects against disability discrimination in employment, education, transport, services.

- Requires “reasonable adjustments” to remove barriers.

- Covers digital accessibility as part of service provision.

Canada: Accessibility for Ontarians with Disabilities Act (AODA, 2005)

- Provincial law mandating phased accessibility requirements in Ontario.

- Covers ICT, employment, customer service, transportation, built environment.

- Sets 2025 as deadline for full accessibility in Ontario.

- Enforcement includes compliance reports and penalties.

Other Examples

- Australia: Disability Discrimination Act (1992).

- EU Member States: implement accessibility laws aligned with EU directives.

- Many countries maintain national/provincial accessibility frameworks modeled on ADA or CRPD obligations.

Domain III: Standards, Laws, and Management Strategies

Subsection: Domain-Specific and Procurement Laws

Domain-Specific Laws

- Air Carrier Access Act (U.S.): prohibits discrimination against passengers with disabilities in air travel.

- Individuals with Disabilities Education Act (IDEA, U.S.): guarantees special education and related services for eligible children.

- Section 504 of the Rehabilitation Act (U.S.): prohibits disability discrimination in programs receiving federal funding.

- Section 508 of the Rehabilitation Act (U.S.): mandates accessible ICT for federal agencies.

- Similar sector-specific laws exist globally (e.g., telecom, education, transportation).

Procurement Laws

- Ensure governments and organizations only purchase accessible ICT products/services.

- U.S. Section 508 refresh (2017): harmonized with WCAG 2.0 AA.

- EU EN 301 549 standard: required for public procurement across EU; covers ICT accessibility beyond WCAG (e.g., hardware, software, documents).

- Goal: drive accessibility industry-wide by making it a condition of doing business with government.

Key Takeaway

- Domain-specific and procurement laws expand accessibility requirements into critical sectors.

- Procurement laws use economic leverage to enforce accessibility compliance.

Domain III: Standards, Laws, and Management Strategies

Subsection: Applying Accessibility Standards to ICT

Key Standards

- WCAG (Web Content Accessibility Guidelines): primary international standard for web/digital accessibility. Current reference version: 2.1 (AA is industry baseline; 2.2 adds further criteria).

- WAI-ARIA (Accessible Rich Internet Applications): defines roles, states, and properties to enhance accessibility of custom controls.

- ATAG (Authoring Tool Accessibility Guidelines): ensures tools used to create content support accessible output and are usable by people with disabilities.

- UAAG (User Agent Accessibility Guidelines): applies to browsers/media players; less widely adopted.

- EN 301 549 (EU standard): harmonized ICT accessibility requirements for public procurement; includes WCAG plus hardware/software requirements.

Application to ICT

- Developers/designers must integrate accessibility from the start, not as a retrofit.

- Accessibility applies to websites, apps, documents, software, hardware, and multimedia.

- Testing with assistive technologies (screen readers, magnifiers, voice input) is essential.

- Accessibility overlaps with usability, security, and privacy requirements in ICT development.

Key Takeaway

- Applying accessibility standards ensures ICT products/services are perceivable, operable, understandable, and robust for all users.

- Standards provide measurable, enforceable criteria for compliance and interoperability.

Domain III: Standards, Laws, and Management Strategies

Subsection: Integrating Accessibility into Organizations

Governance & Policy

- Accessibility must be embedded in organizational mission, policies, and culture.

- Leadership commitment is critical—executive “champions” drive adoption.

- Policies should align with laws (ADA, AODA, Equality Act, CRPD) and industry standards (WCAG, EN 301 549).

Maturity Models

- Organizations progress from ad hoc efforts → repeatable processes → optimized accessibility programs.

- Accessibility Maturity Model (Business Disability Forum, W3C, etc.) helps assess and improve.

- Mature programs integrate accessibility into procurement, design, QA, HR, and communications.

Implementation Practices

- Establish accessibility teams and governance structures.

- Train staff across roles (developers, designers, managers, HR).

- Integrate accessibility into project lifecycles (requirements, design, testing).

- Include accessibility in procurement contracts and vendor requirements.

- Perform regular audits, user testing with people with disabilities, and continuous monitoring.

Workforce & Culture

- Recruit and hire people with disabilities to strengthen inclusion and ensure lived-experience input.

- Provide reasonable accommodations for employees.

- Promote awareness and etiquette training for all staff.

Communications & Public Relations

- Transparent accessibility statements and reporting build trust.

- Poor accessibility can lead to reputational damage and legal risk.

- Effective communication of accessibility initiatives enhances brand value.

Key Takeaway

- Integration requires sustained leadership, cross-department collaboration, and continuous improvement.

- Accessibility is both a compliance requirement and a driver of innovation and inclusion.

Domain I: Disabilities, Challenges, and Assistive Technologies

Subsection: Disability Etiquette → Core Practices

- People first, always: recognize individuals with hopes, routines, and autonomy; avoid stereotyping or treating disability as defining the person.

- Talking about disabilities: prefer people-first phrasing (“person with a disability,” “person with epilepsy”); be aware that some prefer identity-first (e.g., “Autistic person”)—ask and use the individual’s preference; regional norms vary.

- Talking to people with disabilities: speak directly to the person (not to a companion/interpreter); use normal tone/pitch; give people with speech disabilities time to finish; ensure people who are deaf/hard of hearing can see your face; introduce yourself by name to people who are blind.

- Offering help: don’t assume help is needed; ask first and respect a “no”; it’s fine to offer assistance when a need is clear; a friendly greeting is always appropriate.

- Service animals: when working, do not pet, feed, or distract; interact with the animal only with the handler’s permission; remember that trained animals beyond dogs (e.g., miniature horses) may serve as service animals.

- Assistive technologies and devices: treat mobility aids (wheelchairs, canes, etc.) as personal space—don’t touch, lean on, or move them without permission.

- Everyone is different: etiquette is personal; when unsure about terms or assistance, ask for preferences and follow the person’s lead.

Bad Example:

- Saying “What’s wrong with you?” to start a conversation, or addressing a friend instead of the person using an interpreter.

Good Example:

- “Hi, I’m Alex. Would you like any assistance?” (and accepting “No thanks.”)

Domain I: Disabilities, Challenges, and Assistive Technologies

Subsection: Disability Etiquette → Talking About Disabilities

- People-first language: emphasize the person, not the disability (e.g., “person with epilepsy,” not “epileptic”).

- Avoid outdated or offensive terms (e.g., “crippled,” “handicapped,” “the disabled”).

- Acceptable phrasing varies regionally: U.S. commonly uses “person with a disability”; UK often uses “disabled person.” Context matters, but the goal is to emphasize dignity and personhood.

- Identity-first language: some individuals prefer to highlight disability as integral to identity (e.g., “Autistic person”). Respect personal preference.

- General rule: if unsure, ask the person which terminology they prefer.

Examples of inappropriate → appropriate:

- “The handicapped” → “people with disabilities”

- “Wheelchair bound” → “wheelchair user” or “person with a mobility disability”

- “Disease/defect” → “condition”

- “The blind” → “people who are blind” or “people with low vision”

- “The deaf” → “people who are deaf” or “hard of hearing”

Key exam point: Etiquette is not about memorizing one “right” phrase, but recognizing respect, accuracy, and flexibility.

Domain I: Disabilities, Challenges, and Assistive Technologies

Subsection: Disability Etiquette → Talking to People with Disabilities

- Speak directly to the person, not to a companion, caregiver, or interpreter.

- Maintain usual pitch, tone, and rhythm—do not raise your voice or speak as if to a child.

- For people with speech disabilities: listen patiently, do not interrupt or finish sentences, and ask clarifying questions if needed.

- For people who are deaf or hard of hearing: ensure they can clearly see your face; do not cover your mouth.

- For people who are blind: introduce yourself by name, not by “guess who” games.

- When conversing with wheelchair users, sit or stand at a level that allows comfortable eye contact.

- Common sayings like “see you later” are fine—people with disabilities understand idiomatic expressions.

Bad Example: Speaking only to a support worker when the disabled person is present.

Good Example: Making eye contact and saying, “Hi, I’m Sarah. How are you today?” directly to the person.

Domain I: Disabilities, Challenges, and Assistive Technologies

Subsection: Disability Etiquette → Offering Help

- Never assume a person with a disability needs help; always ask first.

- Respect a “no thanks.” Independence and self-determination are important.

- Helping without permission can startle or disorient, especially with mobility disabilities.

- Appropriate help: offer when there is a clear need (e.g., if someone drops something and does not notice).

- Neutral acknowledgment (a friendly “hello”) is always appropriate.

Bad Example: Grabbing the handles of someone’s wheelchair to push them without asking.

Good Example: “Would you like a hand with that?” and respecting their reply.

Domain I: Disabilities, Challenges, and Assistive Technologies

Subsection: Disability Etiquette → Service Animals

- Service animals (e.g., guide dogs, miniature horses) are working partners, not pets.

- Do not pet, feed, talk to, or otherwise distract a service animal when it is on duty.

- Always ask the handler’s permission before interacting with the animal, even off duty.

- Distracting a service animal can put the handler in danger by breaking focus.

- Law recognizes several animals beyond dogs, though dogs are most common.

Bad Example: Petting a guide dog in harness without asking.

Good Example: Ignoring the dog and addressing the handler directly.

---

Domain I: Disabilities, Challenges, and Assistive Technologies

Subsection: Disability Etiquette → Assistive Technologies and Devices

- Mobility aids (wheelchairs, canes, crutches, walkers, scooters) are considered personal space.

- Never touch, lean on, move, or borrow an assistive device without explicit permission.

- Respect adaptive tech as extensions of the user’s independence.

- Same applies to communication devices (speech-generating devices, braille displays, eye-gaze tools).

Bad Example: Leaning on someone’s wheelchair while chatting.

Good Example: Treating the wheelchair as part of the person’s personal boundaries.

---

Domain I: Disabilities, Challenges, and Assistive Technologies

Subsection: Disability Etiquette → Everyone is Different

- Etiquette is not one-size-fits-all; individual preferences vary.

- Some people may accept terms or behaviors others reject (e.g., “disabled person” vs. “person with a disability”).

- When unsure, politely ask the person for their preference and follow their lead.

- Respecting individuality is more important than memorizing rules.

Bad Example: Insisting on using “people-first” language when the person explicitly identifies as “Autistic.”

Good Example: Asking, “How do you prefer I refer to your disability?” and using their answer.

Domain II: Accessibility and Universal Design

Subsection: Benefits of Accessible Design → For People with Disabilities

- Accessibility provides independence and equal opportunity to participate fully in society.

- Examples:

• Screen reader support allows blind users to navigate digital content.

• Captions and transcripts allow deaf or hard-of-hearing users to follow media.

• Ramps, elevators, and tactile signage increase physical world access.

- Reduces isolation, stigma, and dependence on others.

---

Domain II: Accessibility and Universal Design

Subsection: Benefits of Accessible Design → For Businesses and Organizations

- Expands market reach: people with disabilities represent over 1 billion consumers globally.

- Reduces legal risk by meeting compliance requirements (ADA, Section 508, EN 301 549, etc.).

- Improves brand reputation and demonstrates corporate social responsibility.

- Accessible design often overlaps with good UX, benefiting all users.

- Accessibility drives innovation (e.g., voice assistants grew from speech recognition technology originally developed for accessibility).

---

Domain II: Accessibility and Universal Design

Subsection: Benefits of Accessible Design → For People Without Disabilities

- Features designed for accessibility often benefit the general population:

• Captions help in noisy environments or when audio cannot be played.

• Curb cuts assist parents with strollers, travelers with luggage, and delivery workers.

• Voice input benefits users multitasking or driving.

- Accessibility = usability improvements for everyone.

Domain II: Accessibility and Universal Design

Subsection: Accessibility Principles in ICT → WCAG 2.1 Overview

- WCAG (Web Content Accessibility Guidelines) defines international standards for web accessibility.

- Four foundational principles (POUR):

• Perceivable — Information and UI must be presented in ways users can perceive.

• Operable — UI components and navigation must be usable via multiple input methods (e.g., keyboard).

• Understandable — Information and operation must be clear and predictable.

• Robust — Content must work reliably with current and future user agents, including assistive tech.

- Success criteria are testable and organized into levels:

• Level A = minimum.

• Level AA = industry/legal baseline.

• Level AAA = enhanced accessibility (not always feasible).

---

Domain II: Accessibility and Universal Design

Subsection: Accessibility Principles in ICT → Practical Applications

- Perceivable examples:

• Provide text alternatives for non-text content (alt text, captions, transcripts).

• Ensure sufficient color contrast between text and background.

- Operable examples:

• All functionality must be available from a keyboard.

• Provide mechanisms to bypass repetitive content (skip links, landmarks).

- Understandable examples:

• Use clear, simple language.

• Consistent navigation and predictable behavior (no sudden context changes).

- Robust examples:

• Use valid HTML.

• Ensure ARIA attributes are applied correctly and consistently.

---

Domain II: Accessibility and Universal Design

Subsection: Accessibility Principles in ICT → Why WCAG Matters

- WCAG provides a unified global benchmark, referenced in laws and policies (e.g., ADA, Section 508, EN 301 549).

- Exam Tip: CPACC expects recognition of POUR and ability to map success criteria to real-world barriers.

Domain II: Accessibility and Universal Design

Subsection: Accessibility Principles in the Built Environment → Universal Design Principles Applied to Physical Spaces

- Physical accessibility is guided by Universal Design (UD) principles and building standards.

- Key features:

• Step-free entrances (ramps, elevators, automatic doors).

• Adequate doorway and hallway width for wheelchair users.

• Lever-style handles instead of knobs for ease of use.

• Visual and tactile signage for people with visual impairments.

• Proper lighting and acoustics to support people with low vision and hearing loss.

- Universal Design emphasizes usability for \*all\* users, not just minimum compliance.

- Examples:

• Curb cuts designed for wheelchairs also help strollers and carts.

• Audible and visual alarms benefit people with hearing or vision loss.

---

Domain II: Accessibility and Universal Design

Subsection: Universal Design → Core Principles

Seven Principles of Universal Design (UD):

1. \*\*Equitable Use\*\* — The design is useful to people with diverse abilities.

2. \*\*Flexibility in Use\*\* — Supports a wide range of preferences and abilities.

3. \*\*Simple and Intuitive\*\* — Easy to understand regardless of experience, language, or cognitive ability.

4. \*\*Perceptible Information\*\* — Communicates necessary information effectively (multiple sensory modes).

5. \*\*Tolerance for Error\*\* — Minimizes hazards and consequences of accidental actions.

6. \*\*Low Physical Effort\*\* — Can be used comfortably and efficiently with minimal fatigue.

7. \*\*Size and Space for Approach and Use\*\* — Provides adequate space regardless of mobility or assistive devices.

Exam Tip: Be able to give examples for each principle in both ICT and physical world contexts.

---

Domain II: Accessibility and Universal Design

Subsection: Universal Design for Learning (UDL) → Core Framework

- UDL adapts Universal Design to educational contexts.

- Three core guidelines:

• Provide multiple means of \*representation\* (different ways of presenting content—text, audio, video, tactile).

• Provide multiple means of \*action and expression\* (different ways students can demonstrate learning).

• Provide multiple means of \*engagement\* (different ways to motivate and sustain interest).

- Goal: Create flexible learning environments that accommodate individual learning differences.

- Examples:

• Captioned videos and transcripts.

• Options for oral, written, or visual presentations.

• Adjustable reading levels or scaffolded supports.

Domain II: Accessibility and Universal Design

Subsection: Usability and User Experience (UX)

- Accessibility and usability overlap but are not identical:

• Accessibility = removing barriers so people with disabilities can access and use products.

• Usability = how effectively, efficiently, and satisfactorily a product supports \*all\* users.

- Accessible design contributes to good UX, but a product can be technically accessible while still confusing or frustrating.

- Inclusive UX considers:

• Clear navigation and layout.

• Consistent interaction patterns.

• Reducing cognitive load with simple, intuitive flows.

- Exam Tip: CPACC expects recognition of accessibility as a \*subset\* of usability, with legal/standards-based grounding.

---

Domain III: Standards, Laws, and Management Strategies

Subsection: International Declarations & Conventions

- \*\*Universal Declaration of Human Rights (UDHR, 1948):\*\* established equality and dignity principles but did not mention disability explicitly. Forms human rights foundation.

- \*\*Convention on the Rights of Persons with Disabilities (CRPD, 2006):\*\* UN treaty requiring states to promote, protect, and ensure full human rights for persons with disabilities. Legally binding for signatories.

- \*\*Marrakesh Treaty (2013):\*\* facilitates access to published works for people with print disabilities (e.g., blind, visually impaired) by allowing reproduction and cross-border sharing of accessible format copies.

---

Domain III: Standards, Laws, and Management Strategies

Subsection: Regional Instruments

- \*\*EU Charter of Fundamental Rights (2000):\*\* guarantees equality and prohibits disability discrimination in the EU.

- \*\*African Charter on Human and Peoples’ Rights (1981):\*\* affirms equality and non-discrimination, including disability.

- \*\*Inter-American Convention on the Elimination of All Forms of Discrimination Against Persons with Disabilities (1999):\*\* regional framework to remove barriers and promote equal participation across the Americas.

Domain III: Standards, Laws, and Management Strategies

Subsection: National and Provincial Laws

- \*\*Americans with Disabilities Act (ADA, 1990, U.S.):\*\* prohibits disability discrimination in employment, government, public accommodations, transportation, and telecommunications.

- \*\*Equality Act (UK, 2010):\*\* consolidates anti-discrimination laws; protects against disability discrimination across employment, education, services, transport, and public functions.

- \*\*Accessibility for Ontarians with Disabilities Act (AODA, 2005, Canada):\*\* requires phased accessibility standards for organizations in Ontario; goal of full accessibility by 2025.

- \*\*Other national/provincial laws:\*\* Many countries and states have disability-specific regulations; exam focus is on recognizing their scope and enforcement.

---

Domain III: Standards, Laws, and Management Strategies

Subsection: Domain-Specific and Procurement Laws

- \*\*Domain-specific examples:\*\*

• Air Carrier Access Act (U.S.) — equal access in air travel.

• Section 255 of U.S. Telecommunications Act — accessibility in telecom products and services.

- \*\*Procurement laws:\*\*

• Section 508 of the U.S. Rehabilitation Act — requires federal agencies to procure accessible ICT.

• EN 301 549 (EU) — harmonized accessibility standard for public sector procurement.

- Purpose: ensure that purchased technologies and services are accessible at point of acquisition.

---

Domain III: Standards, Laws, and Management Strategies

Subsection: Applying Accessibility Standards to ICT

- Standards (e.g., WCAG 2.1, EN 301 549) guide organizations in building and evaluating ICT accessibility.

- Practical applications:

• Incorporating WCAG conformance into design, development, and QA.

• Using accessibility conformance reports (e.g., VPAT) to document compliance.

• Testing ICT products with real assistive technologies.

- Exam Tip: Focus on recognizing which standards apply to ICT and how they connect to laws (e.g., WCAG referenced in ADA settlements, Section 508, EN 301 549).

Domain III: Standards, Laws, and Management Strategies

Subsection: Integrating Accessibility into Organizations

- \*\*Governance and Leadership\*\*

• Accessibility must be embedded into organizational policies and strategies, not treated as an afterthought.

• Leadership support and designated accessibility champions are critical for sustained success.

- \*\*Maturity Models\*\*

• Organizations progress from ad hoc or reactive accessibility efforts → structured, proactive, and integrated practices.

• Mature programs monitor, evaluate, and continuously improve accessibility processes.

- \*\*Workforce and Hiring\*\*

• Inclusive hiring ensures representation of people with disabilities.

• Training all employees on accessibility basics builds organizational competence.

- \*\*Communication and PR\*\*

• Transparent communication about accessibility efforts builds trust.

• Accessibility statements and conformance reports demonstrate accountability.

- \*\*Evaluation and Continuous Improvement\*\*

• Regular audits (manual and automated) and user testing with people with disabilities.

• Accessibility metrics and KPIs can be integrated into organizational performance tracking.

Exam Tip: CPACC candidates should understand accessibility not only as compliance but as an organizational culture shift.

Domain II: Accessibility and Universal Design

Subsection: Universal Design for Learning (UDL) → Overview

- UDL is an educational framework that designs curricula to remove barriers and support all learners.

- Core components that can be adapted: instructional goals, methods, materials, and assessments.

- Purpose: improve educational experiences for diverse learners by making content flexible and inclusive.

- Three guiding principles:

• Multiple Means of Representation – offer information in varied formats.

• Multiple Means of Action & Expression – provide different ways for learners to demonstrate knowledge.

• Multiple Means of Engagement – use varied strategies to motivate and sustain learning.

- UDL shifts the focus from retrofitting existing curricula to building flexible systems from the start.

Domain II: Accessibility and Universal Design

Subsection: Universal Design for Learning (UDL) → Learner Diversity

- UDL recognizes that learners are not uniform; each has unique backgrounds, skills, needs, and interests.

- Rejects “one-size-fits-all” instruction — curricula must accommodate diverse learners.

- Neuroscience identifies three primary brain networks involved in learning:

• Recognition networks: perceive and interpret information (e.g., recognizing language, recalling facts).

• Strategic networks: plan, organize, and demonstrate skills (e.g., applying knowledge in assessments).

• Affective networks: assign personal meaning and motivation (e.g., engagement, attention, persistence).

- Not all learners process or connect information the same way. UDL embraces this diversity through flexible instructional design.

- Goal: ensure equitable access to knowledge by offering multiple pathways to learning and mastery.

Domain II: Accessibility and Universal Design

Subsection: Universal Design for Learning (UDL) → Multiple Means of Representation

- Principle I: Provide multiple means of representation to address diverse ways learners perceive information.

- Importance: learners vary in perception due to culture, disability (visual, auditory, cognitive), or language background.

- Instruction must be offered in varied formats (print, electronic, audio, visual, tactile).

- Guidelines:

• Guideline 1: Provide options for perception.

- Ensure information is available through multiple sensory channels.

- Checkpoints:

▸ Allow customization (resize text/images, adjust contrast, control audio speed/volume).

▸ Make auditory information accessible (captions, transcripts, speech-to-text).

▸ Make visual information accessible (descriptions of images, tactile models).

• Guideline 2: Provide options for language, mathematical expressions, and symbols.

• Guideline 3: Provide options for comprehension.

- Goal: minimize imperceptibility and maximize access to learning for all students.

Domain II: Accessibility and Universal Design

Subsection: Universal Design for Learning (UDL) → Multiple Means of Action & Expression

- Principle II: Provide multiple means of action and expression to accommodate diverse ways learners demonstrate knowledge.

- Importance: one method of assessment may exclude some learners; variety ensures equity.

- Core approaches:

• Offer both traditional assessments (quizzes, tests) and authentic assessments (projects, portfolios).

• Provide models, clear criteria, and constructive feedback to guide learners.

• Encourage communication and progress tracking between teacher and student.

- Guidelines:

• Guideline 4: Provide options for physical action.

- Remove barriers from print-only worksheets; integrate digital tools and assistive technologies.

- Checkpoints:

▸ Allow varied response/navigation (extra time, alternative input methods).

▸ Ensure compatibility with assistive tech (screen readers, keyboard navigation).

• Guideline 5: Provide options for expression and communication.

• Guideline 6: Provide options for executive functions.

- Goal: enable students to demonstrate mastery in ways suited to their abilities and strengths.

Domain II: Accessibility and Universal Design

Subsection: Universal Design for Learning (UDL) → Multiple Means of Engagement

- Principle III: Provide multiple means of engagement to support motivation and sustained learning.

- Importance: learners differ in what they find meaningful or motivating; one approach cannot engage all.

- Engagement strategies:

• Real-world tasks, projects, experiments.

• Lectures, discussions, and routines (e.g., daily quizzes).

• Group activities and peer collaboration.

- Guidelines:

• Guideline 7: Provide options for recruiting interest.

- Checkpoints:

▸ Promote individual choice/autonomy (let students choose assessment methods, tools, rewards).

▸ Emphasize relevance, value, and authenticity (link learning to real-world applications).

▸ Reduce threats and distractions (safe environment, prepare students for transitions, allow breaks).

• Guideline 8: Provide options for sustaining effort and persistence.

• Guideline 9: Provide options for self-regulation.

- Goal: foster purposeful, motivated learners by creating varied opportunities for personal connection to education.

Domain II: Accessibility and Universal Design

Subsection: Universal Design for Learning (UDL) → Curriculum & Implementation

- UDL defines curriculum through four components: goals, methods, materials, and assessments.

- Curriculum should be flexible and emphasize lifelong learning skills, not static content.

- Effective curriculum design includes:

• Multiple means of representation (varied formats to perceive information).

• Multiple means of action/expression (varied methods to demonstrate knowledge).

• Multiple means of engagement (varied approaches to motivate learners).

- UDL aims to create curricula “smart from the start,” avoiding inefficient retrofitting.

- Benefits extend beyond learners with disabilities; approaches also support English language learners, students with mild learning differences, and students without disabilities.

- Key mindset shift: fix the curriculum, not the learner.

- UDL promotes equity by embedding flexibility and accessibility into instructional design from the beginning.

Domain II: Accessibility and Universal Design

Subsection: Usability and Accessibility → Overview & Definitions

- Usability: measures how easy and effective a product’s interface is for all users.

• Key criteria: ease of learning, efficiency, memorability, error prevention/recovery, satisfaction.

• Common frameworks:

- ISO definition: effectiveness, efficiency, satisfaction in specific context of use.

- Whitney Quesenbery’s “5 E’s”: effective, efficient, easy to learn, error tolerant, engaging.

- Steve Krug’s principle: “Don’t make me think.”

- Usability vs. User Experience (UX):

• Usability = ease of use and proficiency in completing tasks.

• UX = broader; includes usability, usefulness, desirability, accessibility, and credibility.

- User-Centered Design (UCD): emphasizes involving users throughout development, iterative testing, and integrating accessibility testing.

- Accessibility: ensures usability for people with disabilities, often through standards like WCAG.

- Overlap: accessibility increases usability, and usability practices (e.g., clear language, intuitive design) improve accessibility.

Domain II: Accessibility and Universal Design

Subsection: Usability and Accessibility → Commonalities & Differences

- Commonalities:

• Accessibility focuses on usability and satisfaction for people with disabilities, including those using assistive technologies.

• Accessibility practices often improve usability for everyone.

- Example: high-contrast colors help users with low vision and users in bright sunlight.

- Keyboard accessibility benefits blind users, motor-disabled users, and keyboard-preference users.

- Usability practices like plain language support users with cognitive disabilities.

- Differences:

• Usability issues: affect all users regardless of disability.

• Accessibility issues: specifically hinder users with disabilities.

• Sometimes fixing accessibility can reduce usability if poorly executed.

- Example: excessively long alt text makes images technically accessible but harms usability.

• Test reports should clearly distinguish accessibility vs. usability issues, note affected disability groups, and cite failed accessibility standards.

Domain II: Accessibility and Universal Design

Subsection: Myths and Misconceptions about Accessibility

- Myth 1: Accessibility benefits only a small minority.

• Truth: Accessibility benefits a wide range of people (mobile users, older adults, search engines).

• Anyone can acquire a disability at any point in life.

• Disabilities represent ~20% of the population; accessibility is necessary, not optional.

- Myth 2: Accessibility is a short-term project.

• Truth: Accessibility is an ongoing design requirement, like security or privacy.

• Must be embedded across processes: business, design, QA, training, procurement.

• Requires cultural commitment, leadership buy-in, dedicated staff, and inclusive hiring.

- Myth 3: Accessibility should be the last step.

• Truth: Retrofitting is inefficient and leads to poor design and legal risk.

• Accessibility must be integrated from the start (“smart from the start”).

- Myth 4: Accessibility is hard and expensive.

• Truth: Planning early makes accessibility cost-effective.

• Retrofitting is expensive; lawsuits and negative publicity cost far more.

• Maintaining accessibility as standard practice reduces costs long-term.

- Myth 5: Accessibility is ugly.

• Truth: Accessible design can be aesthetically pleasing.

• Example: prosthetic legs as both functional and beautiful.

• Most accessibility features are invisible (alt text, labels, headings, ARIA, reading order).

• Some features affect visuals (contrast, skip links, simplified layouts for cognitive disabilities), but these can be designed attractively.

Domain III: Standards, Laws, and Management Strategies

Subsection: Accessibility Standards and Laws → Overview

- Purpose: laws and treaties reflect political and societal recognition of accessibility as a fundamental human right.

- Categories of accessibility-related laws:

• Civil rights laws – prohibit discrimination and mandate equal access (e.g., ADA).

• Procurement laws – require accessible products/services in government purchasing (e.g., Section 508, EN 301 549).

• Industry/technology-specific laws – regulate accessibility in domains like telecommunications and air travel (e.g., CVAA, ACAA).

- Legal information is informational only; official guidance should come from legal counsel.

Key International Declarations & Treaties:

- Universal Declaration of Human Rights (UDHR, 1948): first international framework for fundamental rights. Basis for later accessibility laws.

- Declaration on the Rights of Disabled Persons (1975): UN statement affirming rights of people with disabilities to equality, protection from abuse, and opportunities to develop abilities.

- Marrakesh Treaty (2013): ensures access to published works for people who are blind, visually impaired, or print-disabled. Creates copyright exceptions to allow accessible formats.

- UN Convention on the Rights of Persons with Disabilities (CRPD, 2006): major global treaty promoting the human rights model of disability. Obligates ratifying states to guarantee accessibility, reasonable accommodation, assistive tech, and universal design. Optional Protocol enables monitoring and complaints.

- Regional Instruments:

• Charter of Fundamental Rights of the EU (2009): includes nondiscrimination and integration of persons with disabilities.

• African Disability Rights Protocol (2018): supplements CRPD, addressing harmful practices and protections in conflict/displacement.

• Inter-American Convention (1999): aims to prevent and eliminate disability discrimination, requiring measures for integration.

National/Regional Laws:

- United States:

• Americans with Disabilities Act (ADA, 1990; updated 2024 Title II to require WCAG 2.1 AA for government sites/apps by 2026–2027).

• Section 508 of Rehabilitation Act: mandates ICT accessibility in federal procurement; refreshed in 2017 to adopt WCAG 2.0 AA.

• CVAA (2010): requires accessibility for modern communications (captions for online video, accessible telecom).

• ACAA (1986): prohibits discrimination in air travel; mandates accessible websites and kiosks for airlines.

• Many states have their own accessibility laws.

- Canada:

• AODA (Ontario, 2005): applies to public and private sectors; mandates accessible goods, services, facilities, and employment.

• Quebec Web Standards: based on WCAG 2.0 AA.

• Federal web standards: government sites must meet accessibility, usability, and interoperability guidelines.

- European Union:

• EN 301 549: harmonized ICT accessibility standard, aligned with WCAG 2.1 AA.

• Directive 2016/2102: mandates accessibility for public-sector websites and apps.

• Directive 2019/882 (European Accessibility Act): applies to private sector (e-commerce, banking, e-books, electronics); enforcement from 2025.

• National laws: e.g., UK Equality Act (2010), France RGAA, Germany BITV 2, Italy Stanca Law.

- Other Regions:

• Australia: Disability Discrimination Act – requires WCAG 2.0 AA compliance for government and private sites.

• Japan: JIS X 8341 standard; Act on the Elimination of Discrimination Against Persons with Disabilities (2013).

• India: Government websites must meet WCAG 2.0 AA.

• New Zealand: Web Accessibility Standard 1.1 (WCAG 2.1) and Web Usability Standard 1.3.

• Hong Kong and other regions also mandate WCAG-based compliance.

Key Takeaways:

- Accessibility law is multi-layered: international, regional, national, and industry-specific.

- WCAG 2.0/2.1 AA serves as the de facto technical standard in many jurisdictions.

- Compliance is both a human rights obligation and a legal risk mitigation strategy.

Domain III: Standards, Laws, and Management Strategies

Subsection: Organizational Governance and Management → Establishing Accessibility Governance

- Organizations must move beyond ad-hoc fixes and embed accessibility into governance, strategy, and management.

- Benefits: reduces costs of retrofitting, avoids legal risk, promotes awareness, and sustains accessibility long-term.

- Key frameworks and guidelines:

• European Agency for Special Needs and Inclusive Education Guidelines:

- Include accessibility in long-term strategy and publish an accessibility statement.

- Designate responsible personnel with resources and authority.

- Provide staff training and create accessible templates/style guides.

- Require accessibility in outsourced work and test outputs before release.

• W3C WAI Recommendations (“Planning and Managing Web Accessibility”):

- Initiate: build awareness, set objectives, develop business case.

- Plan: create policy, assign responsibilities, allocate resources, engage stakeholders.

- Implement: train staff, integrate accessibility goals, test early and often, track progress.

- Sustain: monitor compliance, adapt to new technologies, gather feedback.

• Business Disability Forum Accessibility Maturity Model:

- 10 commitments based on Accessible Technology Charter.

- Executive champions, staff training, procurement requirements, inclusive consultation, continuous improvement.

Maturity Models:

- Capability Maturity Model (CMM) adapted to accessibility:

• Level 1 – Initial: ad hoc, no consistent process.

• Level 2 – Policies in Place: documented processes, basic training, enforcement.

• Level 3 – Defined: standardized, organization-wide accessibility processes.

• Level 4 – Managed: measurable goals and performance tracking.

• Level 5 – Optimizing: continuous, proactive improvement; sharing best practices.

Integration Management:

- Accessibility is both technical and managerial.

- Requires dedicated teams with expertise, executive-level commitment, and cross-departmental participation.

- Accessibility = ongoing program, not one-time project.

Web Development Process Integration:

- Accessibility must be considered at all stages: Plan → Create → Test.

• Planning: include accessibility requirements and user stories in design.

• Creating: build accessible content, code, and multimedia with defined standards.

• Testing: use automated tools, manual testing, and real users with disabilities.

- In agile workflows, accessibility checks must be included in iterative cycles.

Management Considerations:

- Scope Management: define clear goals (innovation, new design, retrofitting, maintenance).

- Time Management: accessibility adds minimal overhead if integrated early; retrofits are costly and slow.

- Cost Management: main expense is staff time; cost of noncompliance (lawsuits, negative PR) far higher.

- Quality Management: QA tests must include accessibility acceptance criteria and bug reporting; real users with disabilities are invaluable testers.

- Human Resource Management: recruit people with disabilities and accessibility experts; provide professional development.

- Communication Management: accessibility must be a shared awareness across the organization; Accessibility Lead must have authority.

- Risk Management: legal, financial, and reputational risks drive prioritization. Public accessibility statements and stakeholder engagement demonstrate accountability.

- Procurement Management: verify vendor claims (e.g., VPATs), require accessibility clauses in contracts, and review products/services for compliance.

- Stakeholder Management: balance input from internal teams, leadership, customers, and legal bodies; lawsuits and complaints highlight urgent stakeholder expectations.

Domain III: Standards, Laws, and Management Strategies

Subsection: Organizational Governance and Management → Conclusion

- Accessibility must be embedded as a continuous, organization-wide commitment, not treated as a one-off fix.

- Governance frameworks (e.g., W3C WAI, European Agency Guidelines, Accessibility Maturity Models) provide structured approaches for integration.

- Strong leadership support and cultural commitment are essential to make accessibility “business as usual.”

- Key practices include:

• Defining accessibility policies and integrating them into long-term strategy.

• Allocating authority and resources to trained accessibility leads/teams.

• Building accessibility requirements into procurement, contracts, and vendor reviews.

• Training all staff, not just technical teams, in accessibility awareness and practices.

• Regularly monitoring, testing, and involving people with disabilities in QA.

• Tracking evolving standards (e.g., WCAG updates) and legislation to remain compliant.

- Organizational payoff: reduced legal risk, lower long-term costs, stronger reputation, improved products, and inclusive workplaces.

- Broader impact: contributes to global movement for digital inclusion, aligning with international human rights frameworks like the UN CRPD.