



# The Great Canadian Quest for an Inclusively Rich Experience

by Corey Timpson

**Corey Timpson** is Director, Exhibitions and Digital Media at the Canadian Museum for Human Rights in Winnipeg, Manitoba. He may be contacted at [corey.timpson@humanrights.ca](mailto:corey.timpson@humanrights.ca).

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In the fall of 2010, four full years before the grand opening of the Canadian Museum for Human Rights (CMHR), the exhibition team had a watershed moment. We had presented the design development for the program to the Council of Canadians with Disabilities (CCD) and various activists, stakeholders, subject matter experts, and leaders from a number of accessibility, inclusive design, and disability communities and organizations. Their response was what no designer ever wants to hear: they unleashed a barrage of criticism. But their criticisms were what led us to a bold shift in the development of Canada’s newest national museum and a new way of considering museology. Across all areas of the museum enterprise, we would employ an inclusive design methodology. The museum was being built from scratch. The time to engage in such ambition was never better.

### Laying the Groundwork

In the fall 2010 CCD session, the exhibitions were at the “Design Development 2 40 percent (DD2 40%)” stage. This is a phase of the design process in which design intent has been locked down to a modest level of detail. All the large areas of an exhibition are mapped out, schematics are fairly well detailed, and generally all the prerequisites from the building to the gallery spaces (such as the exhibition’s demands on the structural, mechanical, electrical, or data systems) have been reciprocally managed with iterative design and redesign sessions back-and-forth between construction and exhibition teams. When we presented these designs to the Council of Canadians with Disabilities and specially invited guests, the reaction was that while the

exhibitions were great in intent, they left much to be desired for visitors with disabilities. Fortunately for the museum, because the DD2 process was only at 40 percent, there was ample time to modify the designs. Seizing this opportunity was a critical threshold in the history of the project.

What came next was an institutional mandate. With the president and CEO of the museum, we discussed the concept and implications of applying an inclusive design methodology across all departments of the institution. We quickly agreed that as a human rights museum we would absolutely need to be a leader in inclusive design and accessibility. Armed with an institutional mandate from the CEO that all departments would participate in a working group, we moved to establish a national advisory committee. Our goal was to establish inclusive design as a mandatory criterion for all areas of museum practice at the CMHR. While certain departments—for example, finance and procurement—were not as directly impacted by the implications of creating such a practice, their involvement in the working group, along with exhibitions, public programs, education, facilities, communications, and other departments, was important in building institutional awareness and understanding and in creating ambassadors amongst our staff. The CMHR could only truly be a leader in the field if and when inclusive design became a key characteristic of our corporate culture.

Working with the CCD, we established the “Inclusive Design Advisory Council” (IDAC) of the CMHR. IDAC is a council

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of 11 members. The members are diverse: they have varying abilities and expertise; come from across the nation; and include speakers of both of Canada's official languages, French and English. The role of the council is to help the museum make informed decisions. The council members also act as liaisons to their individual communities, both formal and informal—among them the Deaf community, the Canadian National Institute for the Blind, and accessibility and Universal Design experts and practitioners. This liaison role has enabled CMHR teams to tap a vast number of additional resources, collaborators, and subject matter experts in quick response to various project needs.

Creating the IDAC fit well within the CMHR practice, as the museum had previously founded and operated the “Content Advisory Committee” (CAC)—a multidisciplinary group that helped museum staff members to frame the initial content for exhibitions. Since two members of the CAC also sit on the IDAC, we've been able to share knowledge and ensure congruency between storytelling and how storytelling is conveyed.

Through regular group meetings and the working protocols that have emerged from them, we've been able to inform decision making in important ways, not only in exhibition design but also in all matters of museum program and policy development. It has been extremely rewarding to see the transformation of some of our most vocal critics as they become key collaborators and some of our most vocal supporters.

In the fall of 2010, after the eye-opening CCD session, we regrouped as an

exhibition design team. Moving forward, we would unilaterally push the boundaries when it came to accessibility. We would employ an inclusive design methodology, versus designing something and then adapting it to be accessible. This mandate was fully embraced not only by the in-house teams, but also by our exhibition design firm, Ralph Appelbaum Associates. Each design challenge was now viewed as an opportunity to provide a better experience for all, and to push the field.

### **Design Standards**

Based on our schedule and the hierarchy of design tasks, we began by developing design standards. As our first task, we undertook a global, environmental scan. Building on what we learned from such other institutions as the Smithsonian Institution in Washington, D.C., Musée de la civilisation in Quebec City, and the Science Museum in London, as well as from such national organizations as the Canadian National Institute for the Blind and the CCD, we crafted our approach and applied these standards to the built environment, then moved into media.

The following points highlight some of the steps we took and decisions we made during the process:

Typographic studies led us to land on Univers and Utopia as our fonts. They married our aesthetic preference and technical requirements, being both beautiful and accessible in a way that we felt we could consistently apply them across all media for optimal accessibility.

We determined optimal reading distances at various elevations;

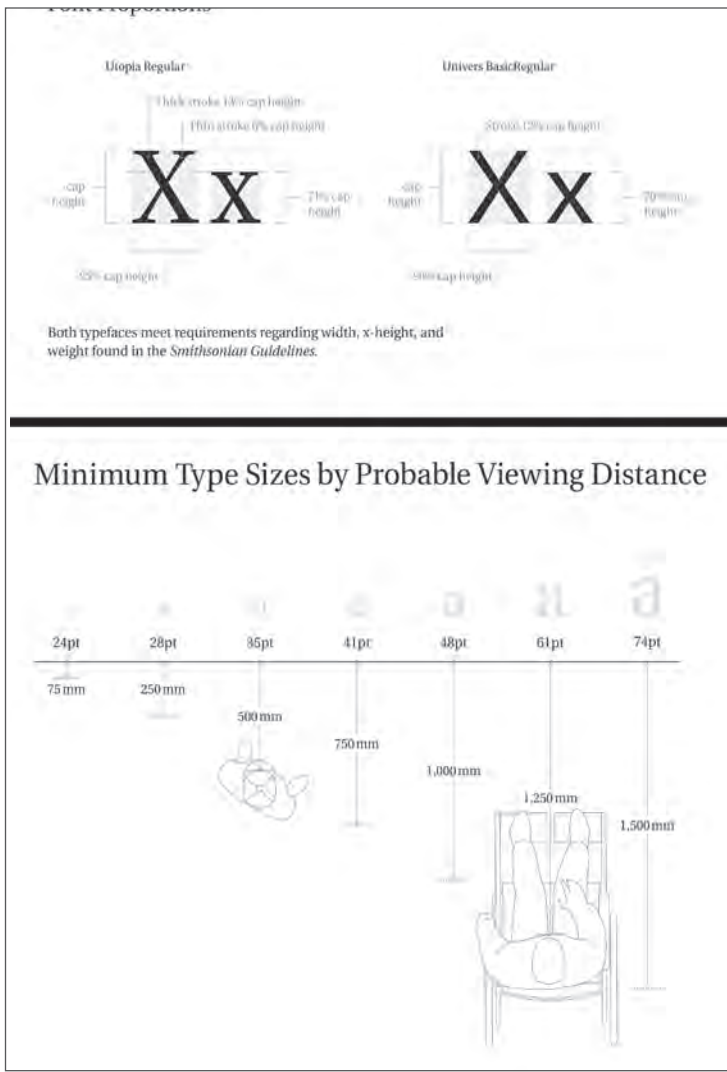


Fig. 1. Typographic studies, analysis, and testing on reading distances/heights. Courtesy of the Canadian Museum for Human Rights

standardized relevant sizes (physical size of fabricated or screened letters and character counts at various sizes, distances, and elevations), and determined the best contrast ratios between foregrounds and backgrounds. These approaches were substantiated through iterative design, prototyping, and testing charrettes (fig. 1).

For built structures—such as the *Global Human Rights Timeline* that spans 88½ feet (27 meters) in width, is nearly 16½-feet (roughly 5 meters) tall, and contains artifacts as well as four digital kiosks—we determined optimal reach distances (from sitting, standing, and at generalized mean heights and lengths) and requirements



Fig. 2. The benches provide back support and arms for increased accessibility—the ability to push up and out of a seat—and fit the aesthetic and design approach. Courtesy of the Canadian Museum for Human Rights

for touchable regions of digital interfaces that would be held within furniture. This would later influence interface design.

Arms and backs for benches were made mandatory (for those who need arms to push themselves up from seating position and backs for support). Since we hadn't designed the benches yet, we were able to accomplish the increased accessibility provisions in a way that meshed seamlessly with the exhibition designs (fig. 2).

We decided to establish a reading level of grade nine across the board. Given the nature of our subject matter, this was a real challenge. In some cases, we opted solely for plain language text—using short sentences, simple structure, and very common words.

Finally, when we felt we were skirting too closely towards compromising

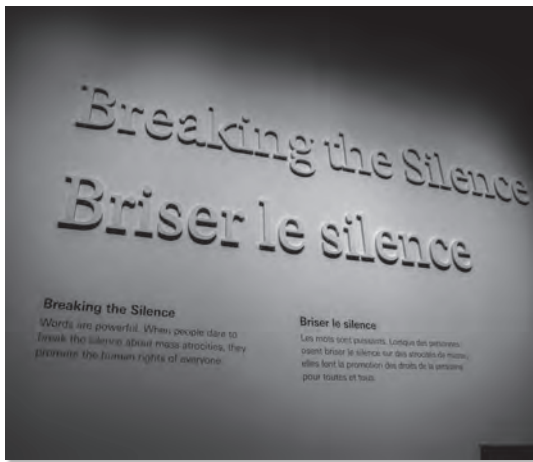


Fig. 3. The title of each gallery appears on an introductory panel and in large raised letters above it. While this kind of redundancy can often appear tacked on as an afterthought, here it was designed to feel seamless. Courtesy of the Canadian Museum for Human Rights

one of our own standards, we opted for redundancy. In fact, in many cases we built redundancy into the fabric of our design. For example, each gallery name is presented through white, embossed, six-inch (153-millimeter) letters on a white background. These titles meet both our contrast ratios and reading sizes due to the manner in which they are lit: the lighting creates heavy drop shadows, which essentially enlarges the words and makes them perfectly legible. However, we felt some visitors with vision impairments might have difficulty given the number of variables that align for this solution to be most effective, so we repeated each title in black on white background, directly above each gallery's introductory text (fig. 3).

### The Digital Media Black Hole

In much of the physical design, our inclusive approach did not affect budget and schedule. The same could not be said of digital media. As a national institution subject to the Official Languages Act of Canada, the CMHR typically provides an English version and a French version of all media. Our inclusive design standards mandate that each English and French production include the following:

- described video (descriptive audio) tracks and audio ducking (audio ducking is when the volume of one audio track is reduced in order to accommodate the audio of another

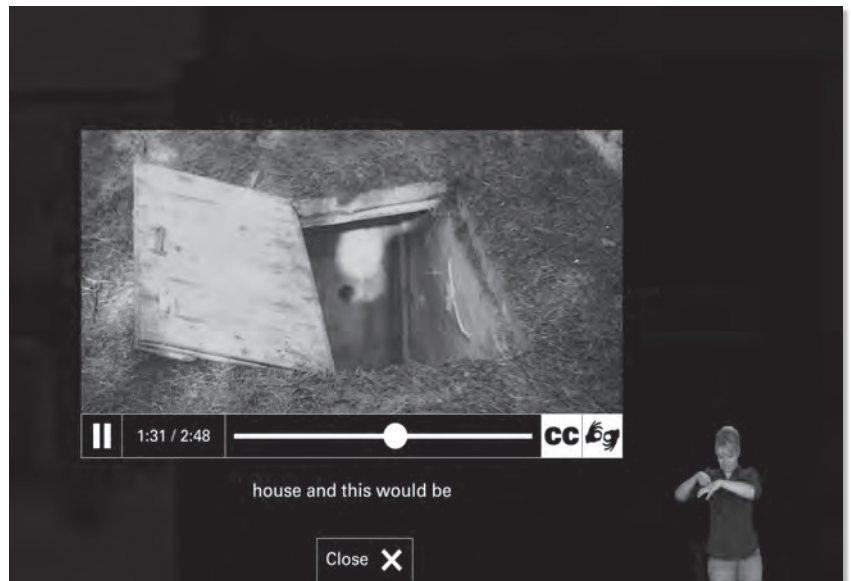


Fig. 4. Media (like this video with captions along the bottom and an interpreter at bottom right corner) available in English and French versions. Each language version includes sign language interpretation (ASL/LSQ), described video (descriptive audio tracks), open captions, and individual volume control via Universal Keypads found in benches or kiosks. Courtesy of the Canadian Museum for Human Rights

track that would compete with it. For accessibility, this means the audio track of a narrator speaking might be reduced while the description of what is happening on screen is heightened);

- sign language interpretation;
- open captions;
- and individual volume control (fig. 4).

From a production standpoint, this is a significant amount of work. Our exhibition contains more than 100 hours of video, which roughly translates into 800 hours of linear media. That said, having taken this approach, we now have entirely accessible media. And, because we created it at the outset, it is completely scalable and changeable.

### Facing Two Significant Challenges

We faced two significant challenges in our approach to complete inclusivity. How could we ensure that digital touchscreens were as usable as they could be? And how could we make the nondigital, static, physical exhibits more accessible? These challenges were the seeds of our innovation.



Visitors are able to navigate any digital kiosk within the museum, use text-to-speech to have content read aloud, control the volume, zoom the screens, and access any and all digital media.



Fig. 5. The UKP (Universal Keypad) is a tactile keypad that uses images, icons, audio, and controls to help users navigate digital systems using text-to-speech; to control volume (via headphone jack); and to screen zoom. Courtesy of the Canadian Museum for Human Rights

Given that we had to write all our text—including all labels and captions—and that all this text would exist digitally, why couldn't we have a system that would read that text aloud for visitors?

**The touchscreen conundrum.** The Universal Keypad (UKP) was a concept we came up with early on (fig. 5). If a person sitting at a computer can use text-to-speech and navigate an interface through a keyboard, then everything we needed in order to solve this problem already existed. We would create and employ a small tactile keypad that would accompany digital touchscreens.

We worked the keypads into early furniture drawings, not yet knowing exactly what their final industrial design of the keypad would be. We presented the concept to the Inclusive Design Research Center (IDRC) at the Ontario College of Art and Design University (OCAD). The team at the IDRC proved this concept out for us. The result of their work was a tested standard for inclusion—number of buttons, shapes of buttons, size and depth of relief, spacing, wrist rests, and direction on semantic code structure, to ensure it would work as intended—to use in detailed design and fabrication processes.<sup>1</sup> We then worked with our audio/video integrator to build the keypad and its circuit board, and our exhibition fabricator to ensure its proper inclusion in the built exhibitions. We had a significant amount of work to do on ensuring software semantics and congruency with the Universal Keypad, especially since we were using a number of different software platforms and nine different media production companies. Visitors are able to navigate any digital kiosk within the museum, use text-to-speech to have content read aloud, control the volume, zoom the screens, and access any and all digital media.

**The nondigital made accessible.** The second great challenge was how to ensure the accessibility of static, nondigital content to museum visitors—especially to those visitors who wouldn't be able to read static/printed text, see an artifact and read its label, view a printed image, or witness the entirety of a gallery.

Like many museums, we knew we'd have an audio program offering supplemental interpretation of the exhibition. Planning for an audio guide began in 2010, and even before we decided to adopt an inclusive design approach, we had decided to use mobile devices for our audio program—not proprietary mobile devices such as wands or one-off players but mobile phones. At this time, the arts and culture industry was still fairly split in terms of audio guide technology, but given that most people were walking around with what is essentially a portable computer in their pocket, we decided to embrace smartphone technology.

Accessibility eventually became the main driver for the CMHR Mobile Program. Given that we had to write all our text—including all labels and captions—and that all this text would exist digitally, why couldn't we have a system that would read that text aloud for visitors? Our board of trustees fully supported our pursuit of the opportunities available to us through mobile media. We began design and production of our mobile project at the same time as we began investigating Near Field Communication (NFC) and other wireless communication protocols. We also began the design and integration of our own unique system—the Universal Access Points (UAP). This

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system necessitated the creation of content hierarchies and menu systems and maps of content across each gallery.

The UAPs (fig. 6) use small, tactile, high-contrast squares, each of which features an embossed number and a braille version of the number. These squares are affixed to exhibition panels, walls, and cases. The squares work in partnership with cane-detectable, high-contrast tactile floor markers and low-energy Bluetooth iBeacons hidden near each square. The floor markers let people know there is a UAP in the vicinity. The square is a tactile and visual representation of the UAP. The iBeacon is coded to a digital content hierarchy sitting in our content management system. Using the mobile app, a visitor can accept the low-energy Bluetooth signal and access the content, or they can type the tactile code into the app and access the content that way. The text-to-speech function of the mobile device reads static content aloud and describes the overall gallery. We also have supplemental content in some instances, such as American Sign Language (ASL) and Langue de signes québécoise (LSQ), as well as additional functions such as Augmented Reality, digital object exploration, and more. The mobile program offers a mode called “Near Me” in which visitors can investigate content that is close to them. The mobile app is built to be scalable in breadth as well as depth. This means we can continually add to the museum’s offerings, both in terms of stories and how we deliver the stories.<sup>2</sup>



Fig. 6. The UAP (Universal Access Point) is a system of components that include a tactile floor marker, a tactile wall square, a low-energy Bluetooth beacon, and the museum’s mobile app. The UAPs provide access to static content that might otherwise be inaccessible to blind or sight-impaired visitors. Courtesy of the Canadian Museum for Human Rights

### An Approach Takes Root

The Canadian Museum for Human Rights’ creation comes at a time when the museum field and visitor expectations are changing at an accelerated pace due to the ubiquity of rapidly changing personal technology. Our approach to inclusive design fit very well with other strategies we needed to employ in order to design and develop a sustainable museum that was accessible to the broadest possible audience. Modularity, scalability, and changeability were all key concepts in the design and development of our exhibitions, our digital ecosystem, our media productions, and our information technology (IT) infrastructure. Inclusive design marries very well within these concepts and is, we believe, an important driver of creative innovation.

These are early days for the CMHR and there will be missteps along the way. The most important accomplishment of all the undertakings is that the seeds of an inclusive design methodology have taken root and are beginning to flourish at the Canadian Museum for Human Rights. ☀

### Endnotes:

<sup>1</sup>A summary of the IDRC portion of the project can be found at the following web address: [https://wiki.fluidproject.org/display/fluid/Canadian+Museum+of+Human+Rights+\(CMHR\)+Kiosks](https://wiki.fluidproject.org/display/fluid/Canadian+Museum+of+Human+Rights+(CMHR)+Kiosks).

<sup>2</sup>For an example demonstrating both the Universal Keypad (UKP) and some of the Universal Access Point (UAP) functions, please see the video at the following link: <https://vimeo.com/136398719>.