

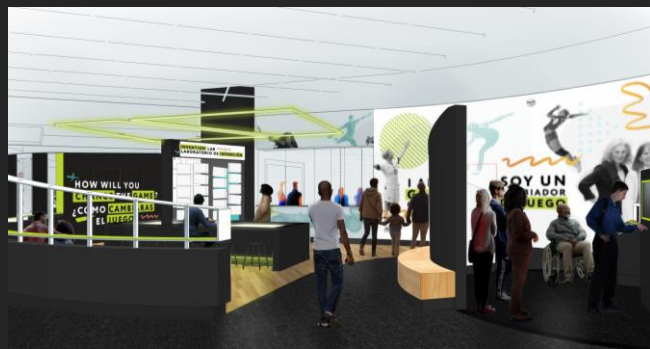
GAME CHANGERS



ALPHA PROTOTYPING
FOR *GAME CHANGERS*
EXHIBITION

PART 2

ACCESS SMITHSONIAN
FINDINGS



RK&A

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EXECUTIVE SUMMARY

With assistance from Access Smithsonian, RK&A conducted prototype testing for the *Game Changers* exhibition with nine adults who **identify as having low vision or limited mobility**. The main takeaways per the study objectives are:

1. Overall reactions to the materials:

- Participants responded positively to the overall concept and content of the Game Changers exhibition. They **were intrigued by using sports as an entry point into invention**. They also liked the variety of people featured, not just athletes.
- **Participants** appreciated the inclusivity of the exhibition, **including the diversity of sports and athletes featured**. They also suggested a few ways that the exhibition could be more inclusive, such as **including Native American and Asian Americans, youth, and sports created by and for those with low vision or limited mobility**.
- Most participants said not featuring “social” and “political” game changers was a “missed opportunity.” They wanted to **see stories about individuals who have increased equity and access** to sports, having a broader impact on society.
- Participants liked the aesthetic design of the exhibition but **found its focus on visual rather than tactile materials inaccessible**, including the digital interactives and objects behind glass.

2. Where individuals are regarding inventive identity formation:

- Participants **saw invention across the exhibition materials**, primarily through featured products and technologies. Some said the materials broadened their idea of inventiveness to include “tinkering” or “small changes.”
- Participants **liked the inclusiveness of everyone being a Game Changer**. However, they were **unclear how the exhibition would help visitors be inventive**. They expected the exhibition to be more interactive and provide a framework to support visitors’ inventiveness.
- Participants hoped the exhibition would **place the stories of invention in a broader context to increase relevance**. They wanted to know the implications for society, including how many people were helped by an invention or whether it increased equity and access.

This report is Part 2 of Alpha Prototyping. Part 1 reported findings from interviews and focus groups with adults, female youth 10-17 years and old, and African American youth 13-14 years old.

RECOMMENDATIONS

Alpha Prototyping with individuals identified by Access Smithsonian (Part 2) surfaced some of the same findings and recommendations as interviews and focus groups with adults, female youth 10-17 years and old, and African American youth 13-14 years old (Part 1). For digestibility and usability, we have highlighted only new recommendations that emerged:

EXHIBITION CONTENT

- Consider stories that feature athletes with different physical and cognitive abilities (e.g., blind athletes, Special Olympians).
- Consider stories of sports created by and for athletes with low vision or mobility (e.g., Beeper Ball).
- Place stories of invention in a broader context and timeline that indicates the impact and implications for society (e.g., number of people who benefited).
- Consider ways to highlight individual inventions or actions (e.g., challenges to existing rules) that increased equity and access for others.

EXHIBITION ACCESSIBILITY

- Use angled rather than flat, embedded touchscreens.
- Provide audio for text and at digital interactives to relay content and instructions.
- Place touchscreens along walls instead of the middle of the room to reduce traffic jams
- Add 3-D models or tactile materials in place of or addition to digital interactives to show:
 - Evolution of invention materials over time
 - Comparisons of sizes and shapes
 - Invention construction (i.e., layers, cross-sections)

INVENTIVE IDENTITY EXPLORATION

- Highlight the characteristics of invention in each story throughout the exhibition to help frame visitors' own ideas for invention in End Zone and the interactives.
- This audience expected to learn about "game changers" who were trailblazers in terms of social justice and universal access. Consider potential opportunities to leverage the dual meanings of game changer. For example, underscoring the social justice and universal access perspective that currently exists within some of the stories through interpretation can increase opportunities for identity exploration.

STUDY BACKGROUND

RK&A has been conducting rounds of alpha prototype testing for the *Game Changers* exhibition in May/June 2021. The exhibition is being developed by the Lemelson Center for the Study of Invention and Innovation at the Smithsonian Institution's National Museum of American History with the firm Roto. The objectives for the alpha prototyping are to explore:

1. Overall reactions to the materials:
 - What about the exhibition materials do people find most/least compelling, and why?
 - What are people's affective reactions to the exhibition materials (e.g., do the materials feel jarring/negative/unappealing, or do they make people feel curious/optimistic)?
 - What barriers exist to people engaging with the exhibition materials (including accessibility issues, concepts that are confusing, inclusivity of stories or people, etc.)?
2. Where individuals are regarding inventive identity formation:
 - How do they see invention in the exhibition materials?
 - What barriers exist to people connecting the exhibition materials with invention?
 - What barriers exist to people considering themselves inventive?

This document presents findings from the second part of alpha prototyping. RK&A conducted nine, one-on-one interviews via Zoom with adults who identify as having low vision and/or limited mobility. They were recruited by Access Smithsonian. The evaluator showed participants materials from Roto's 35% design packet with some preliminary text written by the Lemelson Center and asked open-ended questions about what they had seen. Materials were adapted from earlier prototyping for accessibility to his with low vision (e.g., alt text added to images, and the evaluator provided more visual descriptions in the interviews). The evaluator took handwritten notes during the interview. Participants were paid \$50 for their time (approximately 60 minutes).

REACTIONS TO DESCRIPTIVE TEXT

Who can be a Game Changer? Everyone.

We're all Game Changers. We use our inventive skills, abilities, and interests to solve problems, overcome obstacles, and make things better for ourselves and others.

Come meet women and men, athletes and engineers, designers and scientists, who changed sports for the better. These Game Changers invented new technologies that help athletes win, make sports safer, ensure fairness, and make sports welcoming and fun for more people.

Who is a Game Changer in sports and in life? You are.

What will YOU invent?

- Most participants liked the title “Game Changers” and were **intrigued by using sports as an entry point** into invention. They also liked that different people would be featured—engineers, designers, scientists—and not just athletes.
- At the same time, some participants said the **text was vague**, and they were **not entirely sure what kinds of inventions, people, and stories would be featured** considering the topic of sports is broad.
- Most participants also **liked the inclusiveness of emphasizing that everyone can be a game changer**, but they also were **not sure how that idea would be featured** in the exhibition.
- Some **wondered if the phrasing “What will YOU invent?” indicated a hands-on experience** and others were unsure.

“ I think [the description] is very encouraging to young people who read it, people who don't have a place and haven't been included, think it is a really good statement to let everyone know they are unique and important and that you can change the world. I think it is welcoming and fun for people of all abilities.”

REACTIONS TO LOOK & DESIGN

What do you think about the look and design of the space? Does it look like a space you would like to visit?

Many participants **liked the overall aesthetic design** of the space but had **concerns about accessibility**, particularly the exhibition design's focus on visual rather than tactile experiences. Specifically:

- **Heavy focus on digital interactives:** Participants liked the idea of some of the digital interactives—that you could design a swimsuit or protective gear, for example—but they warned they may not be accessible overall. They **highlighted problematic aspects of the interactives**, including that:
 - **Flat, embedded touchscreens are less accessible** than angled touchscreens for those with limited mobility.
 - Digital interactives are heavily reliant on visual cues. Thus, **audio would need to be used** for those who are blind or have low vision to provide instructions and indicate the design choices available to them.
 - **Placing digital interactives in the middle of the room creates issues** for how people, especially those with limited mobility, move through the exhibition, given that interactives tend to attract crowds that linger.
- **Objects displayed behind glass:** Participants liked seeing original objects like protective gear and wearable technology but said having them behind glass makes them inaccessible, especially to those with vision loss. Many **suggested 3-D models or tactile versions** to accompany or replace the objects on display. Examples included:
 - Understanding the **evolution of the object or material over time**—for example, being able to touch the different materials used for the various iterations of skateboard wheels to see how they evolved.
 - **Comparing** the **different sizes and shapes** of gear—for example, feeling the different sizes and shapes of helmets used in various sports.
 - Revealing construction by **showing cross-sections of materials**—for example, feeling (and seeing for those who can) the different layers of materials used in the construction of helmets, padding, flooring/fields, etc.

INTERESTING ASPECTS

What did you see that was interesting to you?

- Most participants generally **liked the idea of “themed” sections** and the topics that were chosen, primarily Competitive Edge, Health + Safety, and Fairness + Accuracy because they **could see a natural tie-in to sports** (i.e., “makes sense”).
- Many liked the **variety and diversity of athletes and inventors** presented in the materials, particularly the para-athletes featured throughout. For example, one participant said it was nice to see “inclusiveness” and “representation of the entire human family” which is “indicative of the progress that has been made.”
- Many also liked **hearing stories of less well-known individuals** (rather than famous athletes) because it is **more relatable** and aligns with the exhibition’s message that everyone can be a game changer.
- Similarly, many **liked that materials presented a mixture of “traditional”** (e.g., football) and **“non-traditional”** (e.g., swimming) sports.

“I am a big sports fan but some of the stories were not as well known to me, including the women who designed the wheelchair and the gloves, the football player who made protective gear to help others, those are things I would takeaway and tell other people about. I like that they weren’t so obvious in your face. We have all heard about Tom Brady’s training regime so let’s focus on folks like you and me that are more accessible in real life.”

UNINTERESTING ASPECTS

What was not interesting to you? Or, what was least interesting to you?

- Some participants said **Fun + Access** was less interesting than other themed areas because it **lacked cohesiveness or overlapped too much with other areas**. For example, one participant wondered why the story of Howard Head modifying sports equipment was not featured in Fairness + Accuracy, and another wondered why the story of Marilyn Hamilton and the quickie wheelchair was not featured in Competitive Edge.
- A few said **Fairness + Accuracy** had the **potential to be boring** depending on how interactive it is. This was primarily due to what they perceived as a **lack of clarity for what visitors would do at the interactive** as well as the fact that they **could not envision as many tactile experiences for the technologies** that would be featured (e.g., Hawk-eye line-calling camera).
- A few took **issue with the wording of the questions** in each area. For instance, two said “What would you do to win?” could be interpreted negatively as “winning at all costs” when winning is not the most important thing. Another said that “How safe are you?” and “What do you find fun?” are too vague and not as readily linked to sports.

“ I am not sure about the quickie wheelchair in connection to play [in Fun + Access]. It might be nice to show foundations that are focusing on youth and play, especially some innovations for how kids with and without disabilities play together. Wheelchair basketball and how wheelchairs were transitioned from medical to sports devices could be more in the [Competitive Edge] area.”

SEEING INVENTION IN THE MATERIALS

One of the goals for this exhibition is to help individuals connect with invention. In what ways did you see or think about invention in the exhibition materials?

- Many participants said they **saw invention the most in** Competitive Edge, Healthy + Safety, and Fairness + Accuracy, **areas they thought featured more tangible products and technologies** (which is what they think of as invention).
- Some participants said the exhibit materials overall **broadened their idea of what they think of as “inventive”**. For instance, they said invention does not have to be “one big thing” but can include “adaptation” or “tinkering with” existing ideas (i.e., “small changes”).
- Some said the exhibition **should place the stories and inventions in a broader context to increase relevance to visitors**. For instance, they wanted to know how many people were helped by an invention or what the implications of an invention were on society over time (e.g., Did it broaden access for a particular group? Did it increase equity?)
- After seeing all the materials, some said it was **not clear how the rest of the exhibition experience prepares visitors to be inventive** in End Zone. For instance, they asked, “How will visitors get ideas of what to invent?” and “Will there be a framework of factors that contribute to inventiveness that is presented throughout?”
- A few also said End Zone seemed “thrown together” and that the **idea of inventiveness is made to seem simple when it is a complex, iterative process** (i.e., the interactive simply asks visitors to write down an idea for an invention).

“One of the biggest questions I have is about the opening question, ‘what would you do?’ There are examples of what other people have done. But, I am not sure what they hope visitors picked up in the exhibition that will enable them to demonstrate their own inventions in the final interaction.”

INCLUSIVENESS OF THE STORY-TELLING

Do you have any feedback for the museum on how they could be more inclusive in the stories they tell? Were there certain people you felt were left out of the exhibition materials?

- Many participants said they wanted to see **more about “social” or “political” game changers** and felt not including these ideas would be **“a missed opportunity.”** They cited several examples, including Title X and female athletes who have and are working to increase equity in sports, court cases involving athletes with limited mobility who have broadened access for others (e.g., Casey Martin, professional golfer) and the eligibility of trans athletes.
- Some, particularly those with low vision, said they would like to see **more blind athletes** featured or **sports that were invented specifically by and for those with low vision** (e.g., Beeper Ball).
- A few said the museum should be **careful how they use specific terminology**. For example, one participant wondered about labels such as “para” and said to **consult with athletes to determine how they would like to be identified** (i.e., athletes with different cognitive and physical abilities). Another participant said to **remove “women” and “men”** in the introductory text since gender can be fluid.
- A few said the museum should **include athletes of other races or ethnicities**, including those who identify as Native American and Asian-American, which they did not see featured.
- A few also said that **a range of ages should be included** given that there is inventiveness at all “levels of play,” including youth, college, professional/elite, and geriatric athletes.

“It seems like there could be this opportunity to highlight gamechangers in innovation and social progress through sports. Some of the athletes were pioneers, like Casey Martin who sued to be able to use his golf cart in the PGA. Show how these people not only changed the game with equipment but also through social progress to help anchor the exhibition.”