

GAME CHANGERS

65% DESIGN PACKAGE • OCTOBER 1, 2021



BETA PROTOTYPING
FOR GAME CHANGERS
EXHIBITION

PART 1: INTERVIEWS



RK&A

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EXECUTIVE SUMMARY

RK&A conducted prototype testing for the *Game Changers* exhibition with a general public adult audience (18 years and older). The main takeaways per the study objectives are:

1. Aspects promoting inventive identity exploration:

- The text and story selection were perceived as inclusive.
- The story selections were inspiring and resonated as everyday people.
- The stories prompted people to think broadly about how the innovations may be applied outside of sports (although the downside is that they seemed to bring expectations that every inventive story should have a revolutionary application).

2. Barriers to inventive identity exploration:

- One-third were challenged to find personal relevance in the introductory text either because of a lack of interest in sports or they were unable to connect their profession to the exhibition as described. Consider flipping the content of the first two paragraphs to start by speaking about game changers broadly, then describing how this exhibition focuses on game changers in sports, and end by drawing connections back out to the broader world.

RECOMMENDATIONS

ACROSS THE EXHIBITION

- In testing just a selection of stories, the juxtaposition was sometimes stark. This is a limitation of testing. However, it is a reminder to consider the tone of the entirety of the stories in a section and how they may resonate based on their juxtapositions (e.g., Mike Shultz next to Win Tunnel story made people wonder about application of Win Tunnel for rehabilitation, and timekeeping discussed near gender verification felt like differing levels of topics in terms of seriousness). Therefore, think about how the overall juxtaposition of stories in the exhibition (not just those tested) sit together—will visitors feel disoriented jumping between adjacent stories? How can they transition smoothly across stories in this space.

STARTING LINE

- Consider starting intro text about game changers broadly, then describe sports, then connect it to broader context again (i.e., sandwich approach).

COMPETITIVE EDGE

- Consider rewriting the beginning of the section text without the quotation that emphasizes winning, as one-half had adverse reactions to the quotation.
- Consider rewriting parts of the Win Tunnel text so it does not feel so technical.

HEALTH + SAFETY

- Consider using the alternate section text option as people responded negatively to the initial text that includes the clause about “threaten[ing] the future of the sport.”
- However, consider retaining the last sentence of the initial section text or its sentiment that connects outside of sports as it seems to help individuals think about invention beyond sports.

FAIRNESS + ACCURACY

- Consider revisiting the text about gender verification. Overall, people were pleased to see this story included. However, a few responded negatively to what they considered a one-sided critique of gender verification.

FUN FOR EVERYONE

- Some reacted dismissively of Tahira Reid’s story when compared to some of the other stories. Consider ways to illuminate the significance of Reid’s story in text and with images.

STUDY BACKGROUND

RK&A conducted prototype testing for the *Game Changers* exhibition in October to November 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 beta prototyping are to:

1. Explore aspects of the interpretive text that help visitors explore their inventive identity:
 - Which aspects of the text promote connecting invention to self?
 - Which aspects of the text have welcoming tone?
 - Which stories are relatable?
2. Identify any barriers that prevent the interpretive text from helping visitors explore their inventive identity:
 - Which aspects of the text are confusing?
 - Which aspects make invention feel like something others do (not them)?

RK&A conducted interviews with participants using materials from Roto's 65% design packet with some preliminary text written by the Lemelson Center.

Interviews were conducted one-on-one via Zoom with adult participants recruited from the general public in Washington, DC. The evaluator showed participants materials from the exhibition and asked open-ended questions about what they had seen. The evaluator took handwritten notes during the interview. Participants were paid \$30 for their time (approximately 30 minutes).

PARTICIPANT CHARACTERISTICS

RK&A interviewed 30 adults from the general public over Zoom in October and November 2021.

- Most had visited the National Museum of American History before.
- One-third had visited within the last two years.
- Participants range in age from 22 to 75 years (median = 41 years).
- Two-thirds are female; one-third are male.
- Two-thirds live in DC, MD or VA. The other one-third no longer reside in DC, MD, or VA, having moved to CT, NY, GA, CA, FL, NJ and Argentina.

REACTIONS TO DESCRIPTIVE TEXT

You Are A Game Changer

Game Changers invent solutions to solve problems. In sports, they push athletes to new heights, make sports safer to play, ensure that sports are played fairly, and make sports more fun for more people to play.

But game changers, like you, also invent solutions that help people in every part of daily life – not just sports. Inventors, like you, are everywhere – athletes and scientists, engineers and artists, young and old. The Game Changers exhibition invites you to become an inventor. What challenge do you want to solve? What will you invent? How will you change your game?

Who can be a Game Changer? Everyone.

Who is a Game Changer? You are.

- **Inclusive approach:** One-third liked the text's focus on a broad audience and set of genres within sports invention. For example, they said it highlighted that "normal Americans . . . can impact the lives of their fellow citizens," that it "gives possibilities to all age groups (young and old)" to be inventors, and it referenced inventors in fields as diverse as sports, science, and art.
- **Uncertain of personal relevance:** One-third said they were unsure how relevant the exhibition would be to them given they are not that interested in sports or did not see themselves as inventors. For instance, a few noted the absence of their profession in the list of inventors ("I am an educator, didn't see myself in that as a game changer.")
- **Emphasis on "you":** One-quarter liked the text's central focus on "you" (them) as a game changer or problem solver, with nearly all of these respondents describing it as "inviting," "interactive," and "intriguing" for them to think about "what service I would be able to provide that people *must* have."
- **Uncertain of the role of sports:** One-quarter were unsure how central sports would be to the exhibition. For instance, a couple said the text began with sports but moved into a broad focus on "changing the world," and another couple noted the exhibition logo "seems more like a logo for video games."

REACTIONS TO COMPETITIVE EDGE

The evaluator showed the participants the exhibition materials section by section and paused along the way for top-of-mind reactions, including what participants liked, found potentially challenging, and wanted to know more about.



Engaging aspects

- One-half liked the story of Mike Schultz, saying it was "inspiring" and showed how one could "take a negative and turn it into a positive."
- One-quarter, most referencing Mike Schultz, liked that the invention "helped others."
- A few liked the "win tunnel" story because of an interest in cycling.

Potentially challenging

- One-half disliked the quote in the introductory text, saying they "disagree[d]" with the idea that winning is the only thing, especially as a message for a young audience. Two also noted the disconnect between this message and the inspiring tone of the Mike Schultz story.
- One-quarter said the Win Tunnel story felt very "technical."

Questions/curiosities

- Mike Schultz: One-third said they wanted to know more about "who Mike Schultz is," with nearly all noting the materials did not state explicitly what sport he played and what "type of athlete" he was. ****Note that his sport is identified in other test not shown in testing.***
- How the Win Tunnel works: A few wondered whether the win tunnel could also "be used for rehabilitation" instead of just training and what the win tunnel looked like in action.

REACTIONS TO HEALTH + SAFETY



Engaging aspects

- One-third liked the focus on “timely” or “relevant” issues in sports (e.g., concussions).
- One-quarter liked connections to other fields (i.e., broad impact). For instance, they said formsense Pro “helps not just the person who invented it, but [also] others” in construction and emergency medicine.
- A few liked the story’s more “global” focus on a boy from India.
- A few were fascinated that the inventor could “get that biofeedback from [a] shirt.”

Potentially challenging

- A few did not like the intro text’s emphasis on the importance of saving the game of football over “saving athletes from serious injury.”
- A few were confused by language, including “trainers” (shoes or people?).
- A few were confused by how the fields of construction and emergency response fit in.

Questions/curiosities

- One-third wanted to know more about how formsense Pro worked (e.g., which injuries it prevents, how the sensors “work to correct improper form”).
- One-quarter wanted to know more about the broader implications of formsense Pro (e.g., how non-athletes would use it, its “future applications”).
- A few had specific questions about concussions (e.g., statistics—number of players).

REACTIONS TO FAIRNESS + ACCURACY



Engaging aspects

- One-half liked that the museum presented stories on controversial topics that would stimulate debate (e.g., cheating, gender verification).
- One-third said they liked that the section and introductory text were addressing relevant and timely topics with which they were familiar (e.g., cheating scandals in sports).

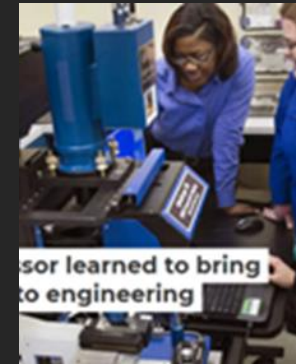
Potentially challenging

- One-third said the gender verification story could be “polarizing” and might “turn off” some visitors, including families and children. Some thought the text did not present “both sides.”
- A few said there was a disconnect between the introductory text about cameras and timekeeping and the more serious nature of the stories presented. **Note that we showed items from the fairness portion of the section only (and not accuracy), thus some of the confusion. However, this finding still speaks to potential difficulty of the juxtaposition of topics perceived with differing levels of significance.*

Questions/curiosities

- One-third wanted to know more about what constitutes an “unfair advantage.” For instance, they wanted to know how prosthetics for disabled athletes could confer “an unfair biomechanical advantage.”
- A few wondered whether competing as a transgender athlete was indeed “unfair.”

REACTIONS TO FUN FOR EVERYONE



Engaging aspects

- Many thought the JogBra story was inspiring and show “what ideas and determination can do” to have a broader impact.
- One-third liked that the materials highlighted “wider access to sports” as both a “human rights” issue and promoted by various inventions (e.g., the JogBra as an “important [invention] for women”).
- One-quarter like the focus on fun (e.g., “sports should be fun”).

Potentially challenging

- One-third said the Automatic Jump-Roping Machine seemed “random,” “silly,” and “not as striking” in terms of its broader impact as an invention.
- A few were critical of how the section’s focus on promoting equity and inclusion seemed limited to gender and race or that women’s inventions focused on “bras and jumping rope.”
- A few said there were too many “tech terms” that were “boring.”

Questions/curiosities

- One-third were interested in learning more about the “actual things” (e.g., seeing “a “picture” or a “prototype” of the jump-roping machine “in action”, “Is [the machine] being used anywhere [today?]”).
- A few were curious about the broader social context of these inventions (e.g., whether a “bra [is really] what was holding [women] back”).
- A few were interested in the process and motivation of the inventors (e.g., development of the Jogbra company, career evolution of Tahira Reid.)

THINKING ABOUT INVENTION DIFFERENTLY

One of the goals of the exhibition is to help visitors think about invention in new ways. Which of the stories made you think about invention differently than you had before?

- **Inventing to increase access:** One-third said the stories suggested invention was about solving problems to increase access and make things possible. For instance, some said the story of the Versa Foot and JogBra promoted inclusion and participation in sports among athletes who might not otherwise have access. And, a few said inventors of the mechanical “jump rope,” “prosthetic legs,” and “sports bra” identified a personal challenge to solve that made things better for a broader group of people.
- **Simple concepts as invention:** One-quarter said the materials made them think about inventions they considered “simple,” “everyday,” and otherwise “relatable.” For example, in discussing the JogBra and the formsense Pro, one interviewee said: “I don’t normally think of clothes as invention.” Another, reflecting on the automatic jump-roping machine, stated: “The simplest thing you want to do, you want to find a way to do it easier, you know?”
- **Did not think differently:** One-quarter said the materials presented did not make them think about invention differently, even though a few noted the materials were otherwise “informative” or “interesting.”
- **Adapting existing technologies:** A few said the materials made them think about inventions that were based “on existing tech that is being improved upon,” such as building the JogBra from jockstraps (i.e., tinkering).

THINKING ABOUT RELATIONSHIP TO INVENTION

Using sports as a jumping off point, the museum also wants visitors to think about their relationship to invention in their own lives. Which of the stories most made you think about your relationship to invention?

- **Invention as solving personal problems:** One third said stories of inventions that addressed personal challenges or problems felt relevant. For instance, some discussed Mike Schultz's Moto Knee and Versa Foot as an example of this: "Maybe if I was in a similar situation, I [would not be] waiting for someone else to do something, to invent something, to solve the problem for me."
- **Did not relate to invention:** One-quarter said the stories did not make them think about their own relationship to invention, with a few stating explicitly they did not see themselves as inventors.
- **Issue relevant to their personal life or work:** A few discussed stories that were relevant to their own lives or jobs. For example, one noted that the "piece of clothing with the sensors in it" made her think about her own recurring "knee problems." Another stated that "as a person who works in a high school," debates about gender identity "come up every sports season."

SUGGESTIONS TO ENHANCE THE MUSEUM'S GOALS

Given the museum's goals to help people think about (1) invention in a new way; and (2) their relationship to invention in their own lives, do you have any recommendations for the museum based on what we reviewed together?

- **Diversify the stories told:** One-third suggested diversifying the "experiences," "inventions," and subjects discussed in the show. Some wondered whether the focus on sports was a "bit of a miss," either because not everyone is "sports-driven" and because game changers are "a broader subject than just sports." A few also suggested diversifying representation. For example, one suggested including stories beyond the United States, and another recommended revisiting the assumption that "men engineer things and women design and build clothes."
- **Reveal more about the inventors and their process:** One-quarter suggested enhancing the story-telling aspects of the inventors themselves (rather than the inventions they created) by writing more "character-driven" stories. They also suggested highlighting the inventor's process, including the "smaller things people can do" that would make being an inventor seem "more actionable" or "achievable."
- **Incorporate interactive design elements:** One-quarter said they would appreciate an "interactive" and "visual" design, that explores innovation through "videos," tactile displays, and "prototypes" that would help bring the invention process to life for the visitors.