

# Berkeley Haas

## Case Series

### CASE STUDY

## Inclusive by Design: The Evolution of Google's Product Design Practices



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Date: January 1, 2025

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## Inclusive by Design: The Evolution of Google's Product Design Practices

*A lot of people are afraid to say the wrong thing and don't know if it's their place to say anything. But [product inclusion and equity] flips that. Everyone has a piece in the development process. If people who are historically marginalized don't get involved, change can't happen. Rather, everyone needs to have agency and accountability.*

—ANNIE JEAN-BAPTISTE  
DIRECTOR OF PRODUCT INCLUSION & EQUITY, GOOGLE

In 2015, an engineer at Google, Peter Sherman, was working on a Google Pixel product when he encountered a roadblock. He and his colleague were testing the camera and proximity sensors. These sensors proactively turn the screen on from sleep state when it detects a user's presence in front of the device. He realized they had not tested the technology with a wide array of skin tones. Sherman knew the technology needed to work for everyone—people of all skin tones: “[My colleague and I] looked at each other and said, ‘We’re both white’... I knew it was extremely important to ensure that the product was inclusive, but I didn’t have the tools or the resources to adequately address the need.”<sup>1</sup>

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<sup>1</sup> <https://www.youtube.com/watch?v=9cTzIAfnFo>

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Professor Kellie McElhaney prepared this case study with assistance from Zena Barakat, Ishita Rustagi, Genevieve Smith, Jorge Alajandro Barrios Gonzalez, and Case Writer Susan Thomas Springer as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.

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The poor recording and rendering of darker skin tones was a well-known problem among film camera makers for decades, but it took decades more to address it in digital camera technologies.

Sherman turned to Annie Jean-Baptiste, who had started to explore product inclusion with some of her colleagues on what Google called a “20% Project.” At the time, Jean-Baptiste was a Diversity Programs Manager at Google, focused on creating an inclusive internal culture. She wasn’t working on products, and she didn’t have the resources to help Sherman, however, she had experienced the issue first-hand herself with digital photography.

“I grew up as a first generation Haitian-American woman, and I understand how things like race and gender can affect your experience in the world,” Jean-Baptiste said. “When products that you use every day are built for people who don’t have a background similar to yours, it can be a frustrating experience. For example, I think of social media filtering that automatically lightens my skin tone.”<sup>2</sup>

Jean-Baptiste appreciated Sherman’s proactivity and his willingness to talk about expanding product access by designing with inclusion in mind. During a Google Summit focused on diversity and inclusion initiatives, as well as inclusive product design, attendees explored Sherman’s project and its implications. Others presented their projects, which also needed guidance to ensure inclusion. At the summit, it became clear that across Google, employees needed more tools, resources and expertise to make sure they were truly creating products for all. A number of practitioners realized there were similar problems to solve within the product across image and sensor-based products and the conversation within Pixel took off.

This business need led to the conversion of Jean-Baptiste’s 20% project into a full-time role, and soon she was managing a small team called Product Inclusion & Equity (PI&E) whose efforts were distributed across a wide variety of Google teams in all product areas, encompassing a large number of people. While the terms inclusion and equity are often used interchangeably, there are distinctions. Inclusive design strives to make products and services accessible to all; Equity-focused design goes a step further to address the needs of historically marginalized groups.<sup>3</sup>

In early 2019, the PI&E team wrote this bold mission statement:

“Google designs useful products where underrepresented users are centered, validated, and uplifted. Google also centers the voices, technical expertise, and perspectives of underrepresented communities to address product opportunities and inequities, and values their contributions as employees, partners, and users. The work is shared by everyone—all Googlers from the grassroots through leadership levels are accountable to be allies in building inclusively.”

Jean-Baptiste and her PI&E team believed they could have an outsized impact on the entirety of Google, changing its culture to prioritize the most marginalized voices at every stage of product development, and thereby building better products for everyone. Her team sought to achieve this ambitious mission by forming working groups to implement inclusive design principles, and conducting talks to share insights around building a diverse user base. The team also recruited over 2,000 volunteer “product inclusion champions”—Googlers with varied lived experiences and backgrounds who could support product teams by testing products and providing feedback.<sup>4</sup> But was this enough for the team to create widespread culture change at Google?

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<sup>2</sup> <https://www.wired.com/story/inclusive-cameras-apple-google>

<sup>3</sup> <https://www.linkedin.com/pulse/leveling-up-inclusive-design-equity-focused-jerlyn-o-donnell-dhq8e/>

<sup>4</sup> Jean-Baptiste, A. (2020). *Building for Everyone*. Wiley.

## Advancing Google Pixel’s Technology

Building on the camera sensor work, Jean-Baptiste partnered with Florian Koenigsberger, the product manager leading Google’s Image Equity Initiative, to address the need of building a Pixel Camera that would portray everyone as beautifully and authentically as they saw themselves—no matter their skin tone.<sup>5</sup>

Historically and industry-wide, camera technology had not accurately represented darker skin tones—leading to inequitable experiences for many people. Since the beginning of photography, camera sensors, processing algorithms, and editing software were all tested and developed with light skin as the baseline, only taking into account a limited scale of skin tones. This bias lingered for decades because these technologies were never adjusted for those with darker skin. As a result, digital photography carried legacies of bias due to how it was developed.<sup>6</sup>

As of 2020, the bias persisted and there was no industry standard to accurately identify and photograph people with different skin tones across image-based technologies. Google recognized a clear need and opportunity to not only build the best smartphone camera but also scale the solution to address the technological bias across other Google imaging products.

The team was able to explore these challenges, align this initiative with the core objectives of the Pixel Camera to “make the best smartphone camera,” and identify a large gap/opportunity for an underserved population.

To get started, Koenigsberger asked, “How can we prioritize the needs of customers who are having a negatively biased or unfair experience with smartphone cameras? How can these gaps be closed in technology?”

The team collaborated with a group of image experts to create images with the communities who had been previously overlooked and/or excluded in the development process for image and skin tone technologies.

These experts were industry-celebrated photographers, cinematographers, directors, colorists, and academics who were recognized in their craft and had significant experience photographing people across the skin tone spectrum. They worked closely with the Pixel Camera teams to thoroughly test the products across a representative mix of skin tones, hair types, and styles at scale and provided direct feedback to the engineering teams about where the technology could improve. These efforts impacted many Google features over the years, including expanding “Real Tone” (which represent the nuances of different skin tones) to more Pixel Camera modes. Google was recognized for its “Real Tone” product innovation by winning the Mobile Grand Prix at Cannes Lions International Festival of Creativity in 2022.<sup>7</sup>

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<sup>5</sup> <https://blog.google/products/pixel/image-equity-real-tone-pixel-6-photos/>

<sup>6</sup> <https://www.wired.com/story/inclusive-cameras-apple-google>

<sup>7</sup> <https://www.campaignlive.com/article/google-wins-mobile-grand-prix-real-tone/1790829>

This is only one story of how Jean-Baptiste's team impacted Google. As of 2024, Google continued to explore how to integrate inclusive and equitable design in every part of product development and build delightful and helpful technology that enables everyone to pursue their goals.

## Background

### *Need for Inclusive & Equitable Design in Tech*

The tech industry hasn't always spoken about the need for inclusive design. But the conversation started when it became clear that the demographics of the tech industry did not reflect the working population in the United States. Tech employees are more white, Asian, and male than the general U.S. workforce:

- Black employees comprise 8% of those who work in tech, while they are 12% of the U.S. workforce.<sup>8</sup>
- 3% of C-suite tech executives are Black.<sup>9</sup>
- Women are only 27% of tech workers, though they are 49% of the U.S. workforce.<sup>10</sup>
- Latine workers make up about 10% of the tech industry, though they are 20% of the U.S. workforce. In management, only 5% of executive leadership roles and 3% of tech company board seats are held by Latine professionals.<sup>11</sup>

This lack of representation in the tech industry can create a disconnect between those who are designing products, and those they are designing for. This applies beyond US demographics related to race and gender, and is also related to having an American-centric point-of-view. While the large tech companies operate on a global scale, most have headquarters in the United States,<sup>12</sup> with leaders often holding an American-centric point-of-view.

This lack of diversity in the workforce, as well as a desire for speed to market, has led to many missteps that have created technologies that have perpetuated harmful biases and structural inequities. Some have benefited, but certainly not all.<sup>13</sup>

The following are some examples of products that were discriminatory over the last decade:

- Automated infrared sensors are often used in faucets, soap dispensers and hand dryers in public restrooms. These sensors are activated by infrared light shining onto the skin and reflected back to the sensor. Darker skin absorbs more light than lighter skin. These sensors take a longer time to respond to dark skin, with no water or soap being released to the darkest of skin tones at all. The longer wait time before dispensing water and soap, or the appliances dispensing nothing, could discourage the washing of hands. Hand hygiene is an essential component of health in reducing pathogen growth and the transmission of disease, thus creating a potential health inequity.<sup>14</sup>

<sup>8</sup> [https://comptiacdn.azureedge.net/webcontent/docs/default-source/research-reports/comptia-state-of-the-tech-workforce-2024.pdf?sfvrsn=a8aa5246\\_2](https://comptiacdn.azureedge.net/webcontent/docs/default-source/research-reports/comptia-state-of-the-tech-workforce-2024.pdf?sfvrsn=a8aa5246_2)

<sup>9</sup> <https://www.mckinsey.com/bem/our-insights/how-to-close-the-black-tech-talent-gap>

<sup>10</sup> [https://comptiacdn.azureedge.net/webcontent/docs/default-source/research-reports/comptia-state-of-the-tech-workforce-2024.pdf?sfvrsn=a8aa5246\\_2](https://comptiacdn.azureedge.net/webcontent/docs/default-source/research-reports/comptia-state-of-the-tech-workforce-2024.pdf?sfvrsn=a8aa5246_2)

<sup>11</sup> [https://kaporfoundation.org/wp-content/uploads/2024/03/Kapor-Latine-Tech-Ecosystem-Report\\_FINAL10.pdf](https://kaporfoundation.org/wp-content/uploads/2024/03/Kapor-Latine-Tech-Ecosystem-Report_FINAL10.pdf)

<sup>12</sup> <https://www.washingtonpost.com/technology/interactive/2021/amazon-apple-facebook-google-acquisitions/>

<sup>13</sup> <https://www.dukece.com/insights/move-fast-together/>

<sup>14</sup> Ren, X. & Heacock, H., 2022. Sensitivity of Infrared Sensor Faucet on Different Skin Colours and How It Could Potentially Effect Equity in Public Health. BCIT Environmental Public Health Journal.

- Pulse oximeters are used in healthcare settings and placed on a patient’s finger or ear lobe as a way to quickly get a measure of blood oxygen saturation (SpO<sub>2</sub>). This is a critical measure used to determine how well someone is breathing on their own or whether they need supportive breathing treatment. When compared to white patients, Black, Hispanic, and Asian patients had greater discrepancies between blood saturation levels detected using pulse oximeters versus levels detected in blood samples. This results in receiving less supplemental oxygen than white patients, which can be life threatening. The potentially severe negative health impact of this was noticed greatly during the COVID-19 pandemic, as pulse oximeters were used at home for self-monitoring, as well as in hospitals.<sup>15</sup>

These, and many other examples, have led the tech industry to understand the value of building its capabilities in inclusive and equitable design. The tech industry has been—and continues to be—influenced by the ethos to “move fast and break things.” While efficiency and speed to market remain important for all businesses, moving fast can lead to mistakes. As Jean-Baptiste said, “How do you balance moving fast with moving intentionally? There’s a difference between velocity and speed, you also have to know the direction... The earlier you start, the easier it is.”

### ***Industry Shifts to Inclusive & Equitable Product Design***

Many tech companies have outlined their own set of principles, frameworks, and tools, aimed at informing product development strategies, review processes, and employee behavior. A majority of these companies take a “design for all” or inclusive design approach.

In the beginning, most organizations focused solely on accessibility. According to Jean-Baptiste, those organizations have begun to ask: “Who else needs to be included in the product development process? Who else’s perspectives do we need?”

#### **Box 1. The origins of inclusive design**

Inclusive design has its roots in accessible design.<sup>16</sup> The understanding that designing products centering the needs of historically excluded groups results in better outcomes for all users is often traced back to inflection points such as the “[curb cut effect](#),”<sup>17</sup> wherein designing ramps for sidewalk access benefitted not just the people in wheelchairs who advocated for this feature in the 1970s, but also parents with strollers, and people wheeling heavy luggage or other objects.<sup>18</sup> A few years later, legal mandates such as The Americans with Disabilities Act and the Fair Housing Act established design standards for accessibility within the United States (US). As a result, most US-headquartered organizations’ initial foray into inclusive design focused on improving accessibility.<sup>19</sup>

<sup>15</sup> Gottlieb, E., Zeigler, J., Morley, K. et al., 2022. Assessment of Racial and Ethnic Differences in Oxygen Supplementation Among Patients in the Intensive Care Unit. *JAMA*.

<sup>16</sup> “What Is Inclusive Design?” Inclusive Design, Interaction Design Foundation, [www.interaction-design.org/literature/topics/inclusive-design](http://www.interaction-design.org/literature/topics/inclusive-design). Accessed 8 Dec. 2023.

<sup>17</sup> [https://ssir.org/articles/entry/the\\_curb\\_cut\\_effect](https://ssir.org/articles/entry/the_curb_cut_effect)

<sup>18</sup> Blackwell, A. G. (2016). The Curb-Cut Effect. *Stanford Social Innovation Review*, 15(1), 28–33. <https://doi.org/10.48558/YVMS-CC96>

<sup>19</sup> <https://www.humancentereddesign.org/inclusive-design/history>

In 2024, organizations that were practicing inclusive design took a holistic approach. They tended to focus on two main dimensions: (1) organizations considered a wide variety and intersections of demographic criteria that might impact user experiences, and (2) organizations evolved their processes, identifying the stages of product development at which users were previously excluded, and worked to involve them at each step. Overall, the following themes ran through a majority of corporate inclusive design principles:

- Taking a broad view of identity and acknowledging intersectionality
- Centering marginalized voices, feedback, and consumers
- Ensuring inclusion / co-creation is prioritized throughout the design process

Within specific industries, additional trends emerged. For instance, technology firms tended to organize their principles on the basis of overarching good practices for leaders and teams to implement, whereas consulting firms organized their approach by key questions and mindsets to prioritize throughout product development. BCG, for instance, broke out its principles into key “design, architecture, and ecosystem” questions to ask during the “assess,” “define,” “enable,” and “develop” stages of the product life cycle.<sup>20</sup>

**Box 2. Example of inclusive design principles in the tech industry**

**Adobe**<sup>21</sup>

- a. Assume nothing is perfect
- b. Give people a choice
- c. Make room to adapt
- d. Avoid distractions
- e. Be consistent
- f. Involve marginalized users
- g. Make documentation a priority

Several organizations supplemented their design principles with frameworks and additional resources to make them more tangible. Additional resources included manuals and guides (including various approaches to inclusive design), educational worksheets, screeners, tools to integrate throughout the product development cycle, and case studies showing the principles in action.

### ***Product Inclusion & Equity in Action***

Under the leadership of Jean-Baptiste and the PI&E team, Google launched a set of three guiding principles to streamline and institutionalize the company’s overarching approach to inclusive design:<sup>22</sup>

1. Prioritize historically marginalized voices — from start to finish.
2. Build for equity, not just minimum usability.
3. Hold ourselves accountable through inclusive testing and best practices.

These principles were supplemented with good practices and frameworks for implementation, including key questions to ask during four main phases of the product development cycle, as well as a non-exhaustive list of identity dimensions and intersections for product teams to keep in mind as they define

<sup>20</sup> <https://www.bcg.com/capabilities/diversity-inclusion/inclusive-product-design>

<sup>21</sup> <https://spectrum.adobe.com/page/inclusive-design/>

<sup>22</sup> [https://about.google/belonging/in-products/#module-guiding\\_principles-products-guiding-principles-anchor](https://about.google/belonging/in-products/#module-guiding_principles-products-guiding-principles-anchor)

their user bases.<sup>23</sup> Teams were able to proactively pull these resources from the PI&E website and reach out to Jean-Baptiste and her team if they had questions or needed implementation support.

This work was possible because Jean-Baptiste had grown buy-in over time in two ways. In her book, *Building for Everyone*, she wrote: “The success of your product inclusion initiative hinges on your ability to recruit people within your organization. You need to get buy-in from top to bottom. Launch a two-pronged attack to get the buy-in you need.” First, that included leadership buy-in, hopefully an engaged leader who will “champion your cause and help reduce any resistance you may encounter moving forward.” Second, it meant grass-roots buy-in because “these are the people who make or break any product inclusion initiative.”<sup>24</sup>

In 2024, the PI&E team served as a partner across Google, with the aim of decentralizing product equity work to involve all those who were coding, designing, and researching products, using a hub and spoke model. The team was a hub that focused on overarching vision, strategy, tools/resources and implementation, while the spokes were embedded in product teams and went deep on features and products. PI&E worked with various product teams to ascertain where they fell on a scale of thinking about inclusion and equity. The PI&E team asked, for example: “Who are we leaving out? Who can we bring on? Who on the team can we give a voice to? Can we actually build this for everyone?” to help colleagues understand who their potentially underserved users might be before sharing insights on how to co-design with these users and scale.

In recent years, the PI&E team has also implemented community-based collaborative research (a form of participatory research that brings in external experts). The team also collaborated with academic institutions (such as through a Fellowship designed with the Center for Equity, Gender & Leadership at UC Berkeley’s Haas School of Business) to explore the effectiveness of inclusive and equitable product design practices. Indeed, PI&E work doesn’t live with one person or one team at Google, it has been a cross-functional effort across the Pixel teams (engineering, product management, user experience and product marketing management) and product inclusion and equity, and has been successful due to its cross-functional nature.

As PI&E built its portfolio of partnerships, it also began to compile and share case studies highlighting successes, to demonstrate accountability, and to bring additional teams and leaders on board. Given that each team within Google is different in terms of size and focus, providing ad-hoc support could be challenging. In addition, Google’s business portfolio is vast and diverse—the business case for hardware versus a software program is unlikely to look the same. In 2024, Jean-Baptiste and her team continued to face dilemmas around how to prioritize and segment metrics on product profitability, security, and responsibility. As a result, it was critical for the PI&E team to document the process and value of inclusive and equitable design to continually grow its practices and generate inroads and increase impact across the company.

The PI&E team sought to balance the business case and the human case for inclusive and equitable design, backing up its work across Google with robust storytelling, research, and testing. Part of that story included the market potential of untapped customers, which was over \$3 trillion according to the University of Georgia’s Selig Center for Economic Growth.<sup>25</sup>

The team’s success hinged on meaningful support from leadership, and enabling people in various product roles to recognize their agency and take accountability and ownership of PI&E methods.

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<sup>23</sup> [https://about.google/belonging/product-inclusion-and-equity/#module-card\\_collage-pie-phases-card-collage-anchor](https://about.google/belonging/product-inclusion-and-equity/#module-card_collage-pie-phases-card-collage-anchor)

<sup>24</sup> <https://www.anniejeanbaptiste.com/>

<sup>25</sup> <https://www.terry.uga.edu/americas-economy-continued-grow-and-diversify-while-recovering-covid-19/#:~:text=Based%20on%20data%20provided%20by,to%20%243.2%20trillion%20in%202021>



Jean-Baptiste believes there are two distinct approaches to inclusion and equity. An organization can prioritize either compliance or delight. Prioritizing compliance implies a focus on avoiding legal issues, while prioritizing delight means working towards ensuring all individuals, including those who have historically been excluded, feel as though the products and services they use are made by them or with them in mind. Jean-Baptiste said that Google wants to go beyond compliance: “Our goal is delight.”

### Box 3. Build the case for product inclusion

- **Identify the market opportunity for key demographics.** For example, women comprise 50 percent of the world's population and have trillions in purchasing power.<sup>26</sup>
- **Recognize what real users want.** For example, many of the women who play video games feel that the gaming industry is focused mainly on classic PC/console titles that are played in 'sessions' in a fixed space and time at home. While many of them enjoy that style of play, many others prefer a more flexible approach to gaming; they prefer to game their way across various genres and devices at their own pace, to suit a variety of 'moments' or moods throughout their day.<sup>27</sup>
- **Identify the market opportunity by examining the gap between what is currently being offered and what the key demographic needs or desires.** For example, nearly 50 percent of women play video games, yet fewer than 10 percent refer to themselves as 'gamers.' Even fewer actually pay for games. If the industry could create an inclusive place for female gamers, millions if not billions of dollars could be made.<sup>28</sup>

## *Organizational Structure to Support Equitable Product Design*

At Google, Jean-Baptiste’s team continued to act as a hub, researching, creating overarching strategies and, most importantly, connecting with users to understand their needs. This investment in inclusive and equitable product design was only possible because of commitments made—and accountability upheld—by the top of the organization.<sup>29</sup>

The PI&E team helped find themes in its work, set overarching strategy, and create the infrastructure to make it as easy as possible to proactively and intentionally build with inclusion in mind no matter the technology, product, or service.

Jean-Baptiste’s former manager would ask her, “How can we make it as easy as possible for Googlers to do the right thing?” With her experience, she has seen that it takes maintaining an infrastructure and creating space for people to bring their lived experiences into the design process, and do it time and time again.

<sup>26</sup> <https://www.forbes.com/sites/digital-assets/2024/03/07/who-runs-the-world-women-control-85-of-purchases-29-of-stem-roles/>

<sup>27</sup> <https://play.google/changethesame/research/women-in-gaming/>

<sup>28</sup> <https://www.gamedeveloper.com/business/beyond-50-50-breaking-down-the-percentage-of-female-gamers-by-genre>

<sup>29</sup> <https://about.google/commitments/racialequity/>

## Case Discussion Questions

1. What is the business case for inclusive and equitable design? Why would a company want to invest in it and bring it into the organization?
2. With respect to management and incentive structures, what recommendations do you have for the PI&E team as they seek to better embed inclusive and equitable product design into product teams and employees' day-to-day jobs?
3. What are some ways industries can more effectively co-design with people who have been historically overlooked or excluded to inform and influence product development?
4. What is the best structure for ensuring inclusive product development in an organization? Do you agree with the hub and spoke model at Google? Does it depend on the size of the organization or the industry?
5. If you were in a position such as Annie's, how would you seek to garner management buy-in when leading a new effort such as equitable product design at Google? What strategies might you use?