An Equity Guide for Techies: A workbook for thinking through what equity means for your projects, and how to build equitable goals into your work early.
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# Introduction

My name is Jonathan Rotner and I am a collector. Some people collect autographs, some collect stamps, some collect Pokémon. I collect stories of technology gone wrong.

A couple of years ago, a small team of researchers and I published a website and a paper called,  
“AI Fails and How We Can Learn from Them.”[[1]](#endnote-2) A few stories really stayed with me:

* A psychiatrist realized that Facebook’s ‘people you may know’ algorithm was recommending her patients to each other as potential ‘friends,’ since they were all visiting the same location.[[2]](#endnote-3)
* An artificial intelligence (AI) algorithm for allocating healthcare services in a healthcare facility offered more care to White patients than to equally sick Black patients. The algorithm was trained on real data patterns, where unequal access to care means less money is traditionally spent on Black patients than White patients with the same level of need. Since the algorithm was programmed to drive down costs, it focused on the group where more funding was allocated for care, and therefore offered more care to White patients.

As an engineer, my first reaction was that these are engineering problems that can be analyzed and fixed.

However, they’re actually issues of equity.

The ‘people you may know’ example reminded me that decisions that go into algorithmic design always have unintended consequences, which can result in real harm. The healthcare example emphasized to me the danger of relying on data that purports to be objective, yet stems from a history of systemic injustice, as well as the importance of selecting between a mathematical and a human-centric objective.

There was a third story from our research that left me with a very different takeaway.

* The Department of Veterans Affairs (VA) is exploring whether virtual reality (VR) could have therapeutic value for veterans. VA medical centers[[3]](#endnote-4) and researchers[[4]](#endnote-5) believe that VR could help with Post-Traumatic Stress Disorder, as well as help alleviate feelings of isolation during the pandemic. Results are still being assessed, but in the meantime veterans have an opportunity to co-create, along with researchers and medical professionals, a more personalized approach to their care that combines new technology with traditional forms of therapy.

This example showed me that when a technology is used to help those in need, with the participation and guidance of those who are affected, the outcomes can become both equitable and extraordinary.

## ****Every project is an equity project, because it affects other people.****

From experts in equity, I learned that *equity* means the elimination of disproportion and disparity.[[5]](#endnote-6) Equity occurs when outcomes cannot be predicted from the characteristics of an individual or group.[[6]](#endnote-7)

Equity isn’t the same as *equality.* Equality assumes we all have the same needs, goals, and opportunities; equity directs us to understand the different obstacles that different people face and leverage the different resources that different groups possess. Equity also isn’t the same as *fairness*. Fairness is an ideal – a goal for pursuing good intentions; equity doesn’t care how fairness is defined, it emphasizes that goodness must be measured by impact, not intent.

For me, an electrical engineer who got a graduate degree in circuit design, worked on 3D-printing prototyping and participated in AI research projects for the national defense sector, I had no experiences that prepared me or trained me to consider equity, or that equipped me with the tools or skills to design algorithms with equity in mind. I needed to practice designing for equity to understand it, let alone get better at it.[[7]](#endnote-8)

More and more issues involving equity in advanced technology, like the stories above, are coming to light. They’re not simple engineering problems, but examples of hidden biases, limited perspectives, and systemic injustice. Just as engineers and algorithm developers learn how to make efficient use of computer resources, study theories of computability and compiler design, and practice by developing programs in different computer languages, we have to learn how to practice equity. That means learning how to view technologies as part of a complex ecosystem that interacts with and influences human behavior, decision making, preferences, strategies, and ways of life in beneficial, and sometimes less beneficial, ways. Once we understand the importance of equity, we can incorporate it into technological design.

I created this “Equity Guide for Techies” workbook because I wanted to make equity seem less foreign to my fellow techies. By the term *techies* I mean people who apply mathematical, engineering, data-science based approaches to solving a problem. Techies could be coders or developers, program managers, designers, or, in fact, any people who consider themselves techies.

I also want to acknowledge that equity is a challenging theme to explore. It is a charged topic; we may feel it shows up everywhere, sometimes in settings we don’t expect, whether we want it to or not. It can be so tempting to just dismiss it. Equity can also be felt deeply and personally; it can remind us that our experiences are shared by others, while simultaneously stirring up pain, anger, guilt, defensiveness, or fear. Engaging in this topic isn’t quick and it isn’t easy. But it’s important, because our work affects others, whether or not we’re aware of how it does so, and whether or not we intend it to do so.

## We can only get to equitable outcomes if we intentionally pursue them**.**

The goal of the workbook is to help techie teams define and redefine success for a project by linking success criteria to equitable outcomes. I pulled from established design techniques, and I learned from (and am deeply grateful to) some remarkable authors[[8]](#endnote-9) to inform this workbook.

By the end of the workbook, I hope you walk away with three outcomes.

1. A sense of which group(s) of people are likely to benefit most from your efforts, or who might be at particular risk from inequitable results of your efforts, as well as ideas about who could tell you more about such potential benefits and risks.
2. Intentionally establishing an equitable direction for your efforts, as well as actionable next steps for your team to take.
3. A reliable process for incorporating equity into your efforts and emphasizing its role in your efforts.

The four activities in this workbook are estimated to take 2–3 hours in total. Because the activities ask you to do some thinking and exploration, it’s probably best to spread the work out and give yourself and your team time for that thinking and exploration. You are always welcome to return to these pages as your project evolves.

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# What Are the Core Principles When Designing for Equity?

My best answer to this question so far is to share how equity challenges my thinking and guides my actions. I start with three truths that are easy for me to overlook, undervalue, or brush aside, but that equity forces me to face. Starting with those truths changes my perspective on how I approach a problem, and which people I need to include in comprehending and addressing the problem. This understanding and partnership with others leads to better and more acceptable outcomes, since they will come to reflect the complexities and nuances inherent in the challenge.

**Truth #1**: What I make will always have unintended consequences. People change, environments change, priorities change, and people will use what I make in ways I can neither expect nor control.

 [[9]](#endnote-10)

So many examples show technology and algorithms going awry, being misused, and/or causing real harm.[[10]](#endnote-11) So if I know that unintended consequences will follow, then I become able to plan for and anticipate some of them.

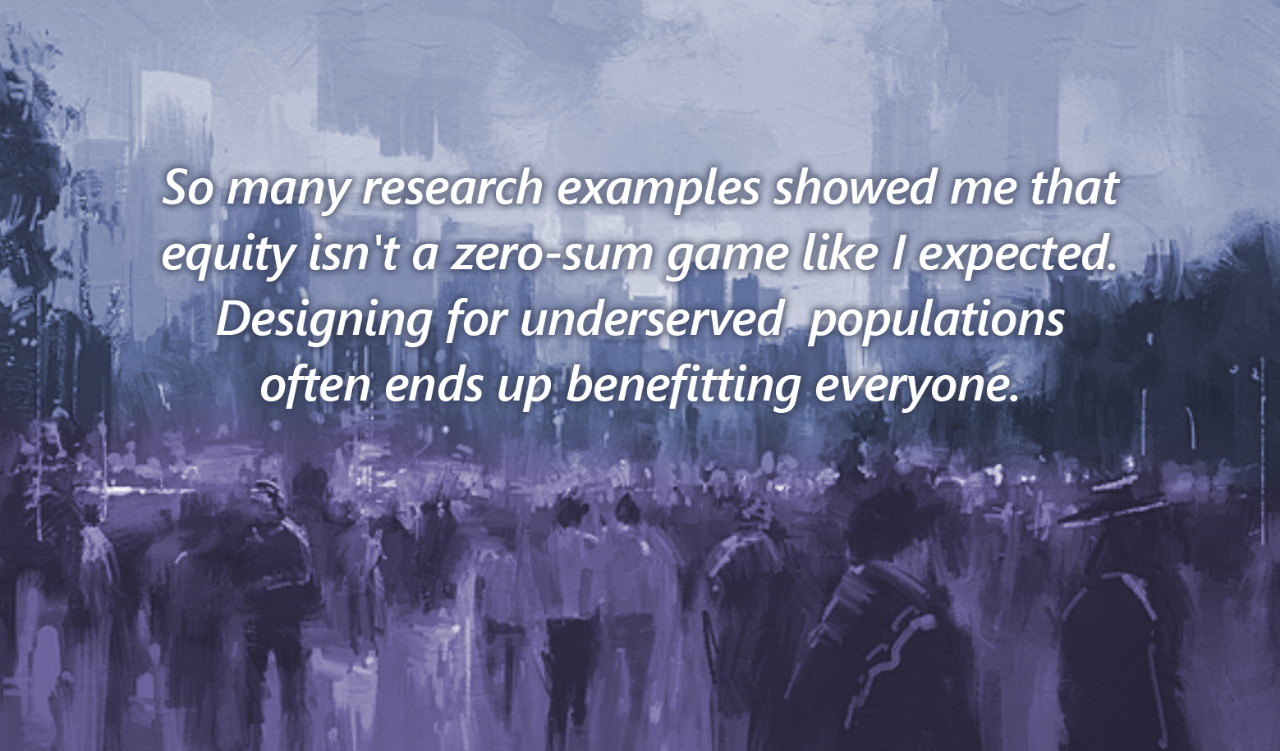
Equity means that the success of my effort must be measured by its ongoing impact on humans and the environments that we inhabit.

That’s not something I learned in engineering school. Take a moment before continuing and ask yourself: Is that how you measure success now?

Truth #2: There often isn’t a single right answer, and multiple right answers force us to make tradeoffs. For example, I need to make tradeoffs when I ask myself: For whom am I designing? Can I improve accuracy by gathering better data while respecting the privacy and autonomy of individuals? Do I create fair and good outcomes by treating everyone equally or by learning about and adjusting to the different opportunities and histories of different people? Techies make these tradeoff choices. And through these tradeoffs, some win and some lose. Yet, so many examples show underserved populations[[11]](#endnote-12) are the ones that usually lose out, that suffer disproportionately.[[12]](#endnote-13) A single tradeoff decision has limited impact; but when every techie team chooses the same losers, then it becomes a pattern that ends up harming those who have been repeatedly and historically harmed.

Equity means I need to make different choices. Equity means  
my efforts must specifically prioritize underserved populations.

Fortunately,

 [[13]](#endnote-14)

Some examples are:

Closed captioning (transcribing audio into text) was created to help the deaf and hard of hearing. It also brought advantages to wider audiences, including those learning English, those wanting help in understanding accents, and those in an area where access to audio is limited (like watching the news while sitting at an airport gate).[[14]](#endnote-15)

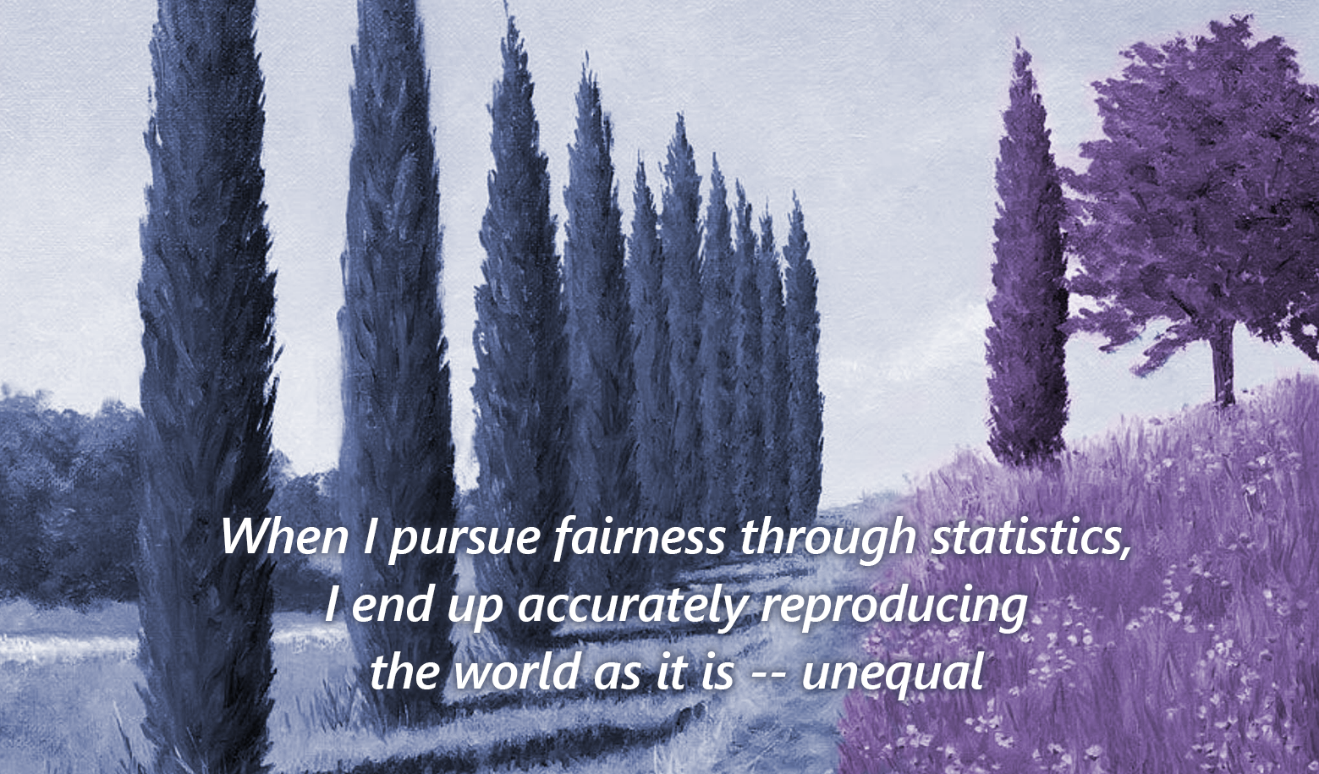
Michigan’s Department of Health and Human Services wanted to simplify the application forms for major assistance programs, which were exceedingly long (18,000 words on 42 pages) and included poorly worded questions. A redesign not only helped current and potential applicants, but also reduced the burden on government workers (through significantly fewer site visits and time spent correcting responses, as well as increased submission of verification documents required for maintaining benefits).[[15]](#endnote-16)

* Curbed ramps on sidewalks were originally designed to help people in wheelchairs more easily move around in public spaces. They also brought advantages to other groups, including people pushing strollers, kids pulling wagons, adults pulling luggage, and delivery people pulling dollies.[[16]](#endnote-17)

Take a moment before continuing and ask yourself: Are there more examples of things you use and benefit from that were designed for underserved populations?

Truth #3:The world is not a meritocracy. Sometimes equity is defined as fairness – there’s an underlying assumption that outcomes will fairly reflect an individual’s effort, skill, and will (in other words, a meritocracy). There’s a catch, though: so many examples show that society is unequal, and we live in a world in which discrimination is entrenched, and skill and willpower alone cannot overcome these inequalities.[[17]](#endnote-18) Meritocracy lacks merit.[[18]](#endnote-19),[[19]](#endnote-20)

Statistics represent a compelling example of a solution based on the idea of fairness. Statisticians try to achieve fairness through mathematical means – by seeking to achieve equal error rates across different socioeconomic groups (fairness through parity), by minimizing the disparity of outcomes across different groups (fairness through equality),[[20]](#endnote-21) by weighting outcomes to mirror existing demand (fairness through perpetuation),[[21]](#endnote-22) or by intentionally ignoring demographic attributes (fairness through unawareness).[[22]](#endnote-23) Fairness turns out to not be enough.

 [[23]](#endnote-24)

Equity means that my design efforts must counteract  
the systems that underserve populations.

I don’t think that sentiment ever came up in one of my engineering peer reviews or project quality reviews. Take a moment before continuing and ask yourself: What are the dominant emotions you are experiencing in reaction to that statement? Why do you think that is?

These truths give me a better grasp on what equity means. But I’m anticipating you might have one of two questions: “How do I put these equitable principles into practice?” or, “What if I’ve got deadlines and other project priorities I have to meet before I can think about equity?”

Good news: what to do next happens to be similar.

Reach out to others about it, specifically others outside your field of expertise or from an entirely different background. You’re going to get different perspectives, hear unexpected ideas, and make creative connections. These conversations don’t have to be formal – casual and quick might work best. Try to avoid using the words ‘fairness’ or ‘equality.’

I have one last truth: no one knows the specific challenges, barriers, resources, and opportunities to a problem better than those with lived experience (i.e., personal knowledge or first-hand experience) and their allies already engaged in trying to remedy inequalities in that domain.

Actualizing equity means integrate the technical experts (i.e., the design team) with those who have lived experience and their allies, and adhere to mutually reinforcing purpose and accountability, which results in shared benefit and decision-making power. Or stated simply,

Actualizing equity means, “nothing about us without us.”[[24]](#endnote-25)

I hope that this workbook will help you and your team think through how to start putting all these pieces together and gives you practical ideas on how to do so. When you’re ready, let’s get going.

# Prologue: Is This the Right Time to Engage with This Workbook?

If you don’t have a sense of the problem space, if you’re staring at a blank page, or if you’ve shared an idea that starts and ends with ‘Wouldn’t it be great if…’ then this workbook may not be useful to you – at least not yet. Luckily, MITRE’s Innovation Toolkit has some tools that can help you put give substance to those ideas. Try [problem framing](https://itk.mitre.org/toolkit-tools/problem-framing/), [storyboarding](https://itk.mitre.org/toolkit-tools/storyboarding/) or a [value proposition canvas](https://itk.mitre.org/toolkit-tools/value-proposition-canvas/).

**However, if you’re**

* I having difficulty thinking through the risks associated with the problem you are trying to address, or
* unsure who might be negatively affected by your approach, or
* trying to better understand an identified problem, or
* developing a technological approach to solving a problem and are searching for an example to illustrate its value, or
* chatting with people who might be affected by the problem, or
* building or just about to launch a prototype,

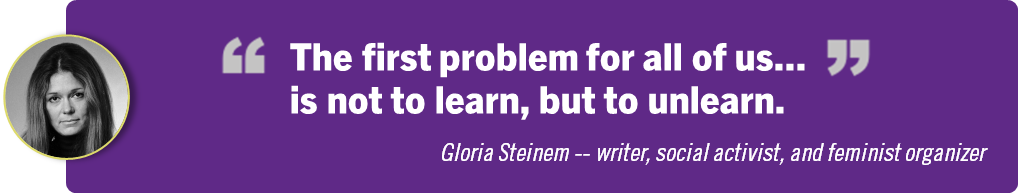
**then yes, this workbook might be a good fit.**

**And if**

* you’re proud of what you do
* you want to help people
* you’re making something that will affect other people or the environments we inhabit
* you think technology can be used for good and for bad, but you’re unsure of how much you can influence those outcomes
* you appreciate that we all come with our own biases and assumptions, which influence what we create
* you think equity is important but don’t have the time to engage with it or know where to start if you did
* you want to discuss the benefits of utilitarianism or the categorical imperative (nope, just kidding)

**then you should absolutely keep reading.**

# Part 1: Broadening the Context of the Problem

 *[[25]](#endnote-26)*

At the end of this exercise, you should walk away with a greater appreciation for the outcomes to avoid, and a sense of which populations might be at particular risk from the results of your effort.

## Describe the problem or opportunity

|  |
| --- |
| Use a few short and specific statements. Perhaps describe:   * The situation or background * Who is affected by the problem * Any initial approaches your team is considering, or approaches that others have tried previously * What is outside the scope |
|  |

## Describe what success looks like for your effort

|  |
| --- |
| Include specific metrics or goals, if you have them |
|  |

## Learn from history: review harmful patterns

Equity asks us to keep in mind that technology solutions help some people and hurt others. For the moment, let’s focus on who might be harmed and how they might be harmed. That will make it easier to flip the script and design for those underserved populations in the next part of the workbook.

Technological types of harm follow patterns, which are categorizable into eight *technology risk zones.[[26]](#endnote-27)*

Spend a moment to read through them.

Technology Risk Zone #1. Surveillance.Surveillance technology can monitor someone’s voice, face, biometrics, phone calls, emails, and movement.[[27]](#endnote-28) Surveillance has been weaponized to control behavior and subjugate groups of people.[[28]](#endnote-29),[[29]](#endnote-30),[[30]](#endnote-31),[[31]](#endnote-32),[[32]](#endnote-33),[[33]](#endnote-34)

Technology Risk Zone #2. Disinformation. Bots that present themselves as real people spread propaganda.[[34]](#endnote-35) deepfake images;[[35]](#endnote-36) videos;[[36]](#endnote-37) and audio[[37]](#endnote-38) present realistic scenarios that never happened. Disinformation spreads belief in false narratives, and it erodes confidence in one’s perceptions, senses, and instincts.[[38]](#endnote-39),[[39]](#endnote-40),[[40]](#endnote-41)

Technology Risk Zone #3. Exclusion. Not all groups of people have access to the same technology.[[41]](#endnote-42),[[42]](#endnote-43) As technological convenience turns into requirements for functioning in a modern world, those without technology (who are often already underserved) fall further and further behind.[[43]](#endnote-44),[[44]](#endnote-45),[[45]](#endnote-46)

Technology Risk Zone #4. Algorithmic bias. Data can be inaccurate, incomplete, or reflect historical prejudices. Algorithm models can encode the developer’s assumptions about how the product will and should be used. Yet algorithms are falsely perceived and marketed as objective and fair.[[46]](#endnote-47),[[47]](#endnote-48),[[48]](#endnote-49) And so they have amplified societal inequities in healthcare,[[49]](#endnote-50),[[50]](#endnote-51) justice,[[51]](#endnote-52),[[52]](#endnote-53) immigration,[[53]](#endnote-54),[[54]](#endnote-55) and more.

Technology Risk Zone #5. Addiction. In order to keep consumers engaged, products are intentionally designed to be irresistible.[[55]](#endnote-56),[[56]](#endnote-57),[[57]](#endnote-58),[[58]](#endnote-59) The results[[59]](#endnote-60),[[60]](#endnote-61) induce depression, anxiety, impulsivity,[[61]](#endnote-62) increased susceptibility to substance use,[[62]](#endnote-63) and even new mental health conditions.[[63]](#endnote-64)

Technology Risk Zone #6. Data control and ownership. Individuals don’t know what data is being collected about them, nor are there consent or oversight mechanisms to restrict that data collection.[[64]](#endnote-65),[[65]](#endnote-66) As a result, data is repeatedly shared with those who really shouldn’t have it,[[66]](#endnote-67),[[67]](#endnote-68),[[68]](#endnote-69),[[69]](#endnote-70) and that’s before any data is hacked.

Technology Risk Zone #7. Bad actors. Companies use a range of technical approaches[[70]](#endnote-71),[[71]](#endnote-72),[[72]](#endnote-73),[[73]](#endnote-74),[[74]](#endnote-75) – with various degrees of automation – to try to reduce bullying, trolling (see endnote for definition[[75]](#endnote-76)), radicalization, fraud, and exploitation on their platforms. Legislation exists[[76]](#endnote-77),[[77]](#endnote-78) but enforcement is difficult and generally occurs only after the damage is done.[[78]](#endnote-79)

Technology Risk Zone #8. Outsized power. A few individuals with outsized power can control information flow, which shapes others’ beliefs and behaviors.[[79]](#endnote-80),[[80]](#endnote-81) A few organizations with outsized power create monopolistic marketplaces[[81]](#endnote-82) and labor practices.[[82]](#endnote-83),[[83]](#endnote-84)

## Assess potential risks

OK, those are pretty horrifying outcomes. Really pretty horrifying. It can be hard to believe that so much of that bad stuff happens unintentionally. And it can be terrifying or depressing or incredible to imagine that something we design might be added to that list!

Yet that’s what this workbook is asking you to do. Let’s spend a couple of minutes plunging into the dark, so that we can better understand how to emerge into the light.

 [[84]](#endnote-85)

Typically, more than one risk zone is at play. But for this exercise we are asking you to choose 2–3 zones that seem most relevant to your effort. Starting on the next page, fill out a table for each risk zone you choose. You’ll think about who is at risk, describe the risk, and note who might have the professional or lived experiences (see endnote for definition[[85]](#endnote-86)) to help you become smarter about the challenge. The table will look like this:

An image the is a preview of that table that appears on the next page. The instructions above the table ask you to write down your chosen technology risk zone. Then the header row for the table is divided into 3 columns, which say: (1) Who is at risk? (2) Describe the risk, and (3) Who might be able to tell us more?

**If you want help brainstorming about who is at risk,** consider this list as a starting point. This list can only be a starting point because identifies are complex, and how individuals prioritize their identities are fluid and dependent on the situation. In addition, no group can be uniformly represented, and different individuals and groups perceive risks differently, through the lens of their own history, struggles, and norms.[[86]](#endnote-87)

But since we need a place to start, we can begin with common characteristics, such as:

* races
* ethnicities
* socio-economic statuses
* gender identities
* gender expressions
* sexual orientations
* national origins
* ages
* formerly incarcerated individuals
* career and military experiences
* cleared and uncleared environments (such as a SCIF)
* first languages and English proficiency
* physical and emotional developmental abilities
* health and cognitive impairments
* religious and spiritual affiliations
* persons without access to technology (including smartphones, computers, or internet connection)
* other groups that might be underserved[[87]](#endnote-88),[[88]](#endnote-89),[[89]](#endnote-90)
* the intersection of these identities, because none of us have an identity limited to a single group

A reminder that some of this groups are legally protected under US antidiscrimination law.

If you want help brainstorming about specific risks, you can ask:

* Historically, how have similar technology designs led to this type of risk zone?
* How might this effort be unintentionally used or intentionally coopted to exacerbate this type of risk zone?
* How might our success criteria actually facilitate an unwanted outcome?

The researchers who came up with the technology risk zone concepts created specific questions for each risk zone. You can refer to them in the appendix.

**If you want help brainstorming about who can tell you more,** consider:

* Those with lived experiences of the challenge
* Those who represent one or more groups who might be at risk
* Those already engaged in trying to remedy the inequities in the domain you’re dealing with
* Those who have attempted to provide a legislative approach to the problem space
* Those who have attempted to provide a social, cultural, grassroots, or community-oriented approach to the problem space
* Those who have expertise in equitable design thinking.

**To start the exercise,** each team member should try to fill in at least 7 rows per risk zone. Often, the last few rows are hardest to fill in, but are the most revealing. Spend about 5 minutes per risk zone. Then discuss as a team.

[Insert your Technology Risk Zone here]

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| Who is at risk? | Describe the risk | Who might be able to tell us more? |
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Quick check – Take each person or group from the *who might be able to tell us more* column, and list their multiple, demographic identities. Overall, do these individuals capture a broad representation of groups that might be at risk? Why or why not?

[Insert your second Technology Risk Zone here]

|  |  |  |
| --- | --- | --- |
| Who is at risk? | Describe the risk | Who might be able to tell us more? |
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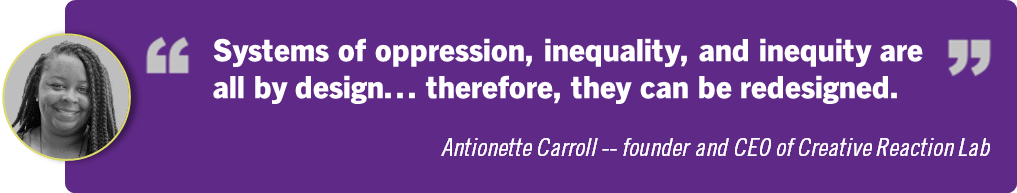
Quick check – Take each person or group from the *who might be able to tell us more* column, and list their multiple, demographic identities. Overall, do these individuals capture a broad representation of groups that might be at risk? Why or why not?

[Insert your third Technology Risk Zone here]

|  |  |  |
| --- | --- | --- |
| Who is at risk? | Describe the risk | Who might be able to tell us more? |
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Quick check – Take each person or group from the *who might be able to tell us more* column, and list their multiple, demographic identities. Overall, do these individuals capture a broad representation of groups that might be at risk? Why or why not?

Part 2: Placing Equity as the Core of the Effort

[[90]](#endnote-91)

At the end of this exercise, you should walk away with a prioritized group(s) of people who stand to benefit from your efforts, as well as ideas about the types of services or resources that might benefit them.

## Imagine alternatives

For every risk there is an opportunity.

Spend a moment to read through the equitable opportunities that exist for each risk zone.[[91]](#endnote-92)

#1. Surveillance**↔** Protect privacy.

Consider technical and operational systems that limit the collection and distribution of personally identifiable information or behavior; that enable privacy by default; and that seek to reestablish personal freedoms and remove traditional and self-censorship in public and private spaces.

#2. Disinformation**↔** Promote truth.

Assume your tech will be able to influence people’s views. Consider technical methods and processes that limit dissemination of falsehoods; prioritize diversity in thought and scientific and journalistic integrity over speed and scale; and implement human and automated checkpoints.

#3. Exclusion↔ Broaden access.

Explore ways to identify and include a diverse set of individuals who don’t have access to the same technology (such as smartphones, high-bandwidth internet connectivity, or require visual or auditory aids when interacting with digital technologies). Integrate their goals with the original goals of the project and find ways to partner with these individuals.

#4. Algorithmic bias**↔** Judge by algorithmic impact.

Move away from hard-to-agree-upon concepts of fairness, goodness, and accuracy as a means of measuring an algorithm’s usefulness or helpfulness. Instead evaluate the algorithm by the effect it has on different populations, particularly underserved communities, and the power they have to make decisions about what affects them.

#5. Addiction **↔** Inspire healthy behaviors.

Promoting healthy digital behaviors means reducing digital reliance and gamification (see endnote for definition[[92]](#endnote-93)), even if the effort is meant to promote healthier outcomes (a gamified prompt to exercise is still employing gamification - an unhealthy behavior). Explore alternate business models from ones that profit from addictive content.

#6. Data control and ownership**↔** Increase data ownership.

Allow people to self-select what data about themselves they share or sell. Create easy methods for redress, contestability, data deletion, and opting out that puts the power in the hands of the data-source, not the data collector. Incorporate security principles under the assumption that all data will be stolen.

#7. Bad actors **↔** Encourage civility.

Consider ways to limit bad behavior and remove bad actors, such as bringing in experts in ransomware, fraud, and social and behavioral sciences. Establish transparent and consistent rules for use. Appreciate that civility and good behavior are different in different cultures, so be sure not to normalize the design team’s values.

#8. Outsized power **↔** Facilitate choice.

Deprioritize scaling or growth as a key measure of success. Emphasize long-term engagement and activities in specific markets. Integrate with existing efforts and groups in a particular interest area. Look for ways to make efforts interoperable and compatible with legacy approaches.

## Now let’s tie those opportunities to a specific group of people.

We can reprioritize whom we are designing for as a way to refocus our efforts. Actually, a better way to put it is: we can reprioritize whom we are designing *with* as a way to refocus our efforts. Designing *for* someone emphasizes that success for the effort reflects the values and preferences of the design experts (i.e., the design team). Designing *with* someone is a reminder and a prompt for building equitable outcomes by promoting inclusivity, as well as shared purpose with and accountability to the underserved populations affected by the effort.

Recall that when we design with those who have the greatest needs, everyone can benefit. As the equity movement likes to say, “a rising tide lifts all boats.”

 [[93]](#endnote-94)

**To start this exercise, capture here the groups who repeatedly feature in your table.**

|  |  |
| --- | --- |
| Group 1: | Group 3: |
| Group 2: | Group 4: |

**Next, you’ll map equitable opportunities to the groups featured in your risk table.**

This exercise is a fill-in-the-blank activity. For each fill in the blank, pick an individual or group from the previous box. Then, insert the equitable opportunity that corresponds to your chosen technology risk zones in the previous exercise; for example, if you chose “disinformation” in the exercise in Part 1, now fill in “promote truth.” Use the following list as a memory prompt for all eight risk zones and equitable opportunities.

#1. Surveillance ↔ Protect privacy.

#2. Disinformation ↔ Promote truth

#3. Exclusion ↔ Broaden access.

#4. Algorithmic bias ↔ Judge by algorithmic impact.

#5. Addiction ↔ Inspire healthy behaviors.

#6. Data control and ownership ↔ Increase data ownership.

#7. Bad actors ↔ Encourage civility.

#8. Outsized power ↔ Facilitate choice.

When you complete the fill-in-the-blank, your sentence should look like:

How might we *[Insert your equitable opportunity here]* with *[Insert group at risk]*?

Brainstorm at most 1–2 opportunities for 1–2 groups. Here, it’s better to be targeted and specific rather than explore a large number of opportunities. In fact, you might find it helpful to keep asking yourself, “More specifically, how might we…?” as you fill in each box.

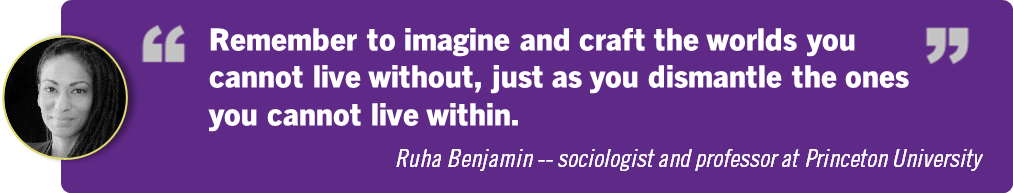
Individually, spend about 5 minutes per box. Then discuss as a team.

|  |
| --- |
| How might we *[Insert your equitable opportunity here]* with *[Insert group at risk]*? |

|  |
| --- |
| How might we *[Insert your equitable opportunity here]* with *[Insert group at risk]*? |

|  |
| --- |
| How might we *[Insert your equitable opportunity here]* with *[Insert group at risk]*? |

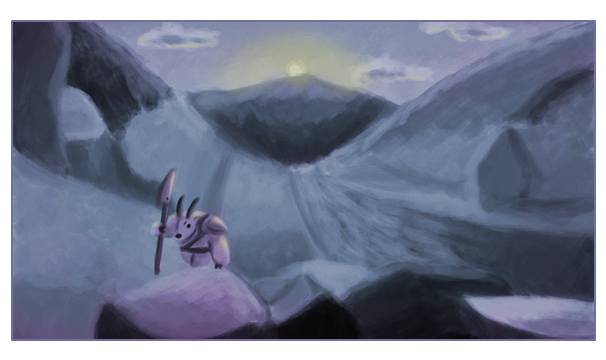
# Part 3: Establishing Guideposts and Guidelights

*[[94]](#endnote-95)*

At the end of this exercise, you should walk away with a new, equitable direction for your effort, in the form of updated success criteria. Please revisit these updated success criteria any time the team is feeling a little lost or overwhelmed, or the team needs a reminder for its direction.

## Revisit what success looks like for your effort

You’ve envisioned dystopias, you’ve brainstormed aspirational alternatives, and you’ve possibly uncovered some unknown assumptions and unconscious preferences. Now you’ll use all that hard work to return to what success might look like.

 [[95]](#endnote-96)

Design is an iterative process, and defining success is too. In this exercise, prompts will invite you to redefine and keep refining your effort’s success criteria. Each iteration will draw from the work you’ve done so far in this workbook. Each iteration is tied to a core equity principle.[[96]](#endnote-97)

Work as a team to go through this exercise. If you want a nudge for any iteration, try filling in one of the following statements:[[97]](#endnote-98)

* If we *don’t* do \_\_\_\_, it’s a failure.
* If the only thing we do is \_\_\_\_, it’s a win.

|  |
| --- |
| **Initial success criteria:** |
|  |

|  |
| --- |
| **Can your success criteria incorporate any equitable opportunities? Can these equitable outcomes and your initial outcomes reinforce each other?** |
|  |

|  |
| --- |
| **Can your success criteria reference specific individuals or groups of people you identified as being at risk? Can you frame the criteria so that failure of the effort does not depend on those groups’ inaction or lack of cooperation (or said another way, can you frame your criteria so that failure of the effort is not blamed on those you are trying to help?)** |
|  |

|  |
| --- |
| **Can your criteria emphasize that success or failure is tied to how these individuals are impacted?** |
|  |

|  |
| --- |
| **Imagine sharing your success statement with these individuals and groups. How might they react – Will they agree? Will they want to join your effort?** |
|  |

# Part 4: Taking Action

[[98]](#endnote-99)

At the end of this exercise, you should walk away with an actionable plan for your team’s next steps.

Ok, there’s still a lot to do up ahead, but let’s look back and appreciate what you’ve done so far.

Congratulations on grappling with and confronting some difficult and potentially uncomfortable questions.

The last part of this workbook asks you to take action towards actualizing equity*.* As a reminder of what that looks like, I’ll repeat the final takeaway from the ‘what does equity really mean’ section:

Actualizing equity means integrate the technical experts (i.e., the design team) with those who have lived experience and their allies, and adhere to mutually reinforcing purpose and accountability, which results in shared benefit and decision-making power. Or stated simply,

Actualizing equity means, “nothing about us without us.”

 [[99]](#endnote-100)

This exercise asks you to fill out a table deciding who is doing what by when. To get you started, the first action item is already filled in: *Socialize what we’ve done.* Share the insights that you’ve found through this workbook with people who were not a part of these exercises and listen to what they say. Try to find people outside your field of expertise or from an entirely different background. Try to find people who have practiced equitable design practices or are already established as allies for underserved populations in the domain your work will affect. It doesn’t have to be a formal thing – ask if your thinking and planned actions resonate with them. Ask if your proposed approach is clear and actionable. Ask if it’s inclusive and shares decision making power. Ask is if it results in shared benefit.[[100]](#endnote-101)

There are about thirty suggested actions listed after the table. There’s also an excellent guide on increasing “direct participation by impacted communities in the development and implementation of solutions and policy decisions that directly impact them” by Rosa González, of *Facilitating Power*.[[101]](#endnote-102)

Individually, spend some time thinking about potential actions to take. Refer to the suggested actions either before or after you’ve come up with your own ideas. Then discuss as a team.

|  |  |  |
| --- | --- | --- |
| What | by Whom | by When |
| Socialize what we’ve done | Everyone on the team | Check in with the group in 7 days |
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### Suggested Actions

#### Integrate the technical experts with those who have lived experience and their allies

* Identify a more comprehensive and representative set of individuals or groups who are affected by your project. Use a tool that specifically incorporates an equity lens to help your team notice its own biases and assumptions as well as become aware of the needs and priorities of the larger community.[[102]](#endnote-103)
* Categorize and prioritize which groups to engage, examined through the concept of power dynamics. Use a tool that specifically highlights impacted groups and explore ideas about how to elevate their roles on the effort.[[103]](#endnote-104)
* Develop a plan for effectively engaging each group. Use a tool that helps your team identify a potential partner’s needs, wants, and priorities, and incorporates the context in which this partner operates, including history of past engagements, so that your team can work to avoid missteps.[[104]](#endnote-105)
* Bring in an expert to help communicate and partner with those affected by your effort. Find ways to move from informing to involving to partnering with those affected by your effort.[[105]](#endnote-106)
* Apply a systematic methodology to identify and explore the structural elements that lead to a community’s experience of a certain outcome, from the vantage point of that community’s lived experiences. Use this methodology to integrate the affected community’s voice into both qualitative and quantitative research, analysis, modeling, and simulation.[[106]](#endnote-107)
* Partner with government groups who already work in the equity space. This list includes, but is not limited, to the White House’s Equitable Data Working Group, the United States Digital Service (USDS), the Federal Customer Experience Team in the Office of Performance and Personnel Management (OPPM), the Equity Learning Community at the Office of Management and Budget (OMB), the Department of Veterans Affairs’ (VA) Veterans Experience Office, and the National Institutes of Health’s (NIH) Community-Based Participatory Research Program.
* “Don’t start by building a new table; start by coming to the table.” Prioritize engaging with users in spaces familiar to them, whether those spaces include physical spaces or networks.[[107]](#endnote-108)

#### Adhere to mutually reinforcing purpose and accountability, which results in shared benefit and decision-making power

* Hire an outside counselor with no conflicts of interest to provide regular check-ins. Researchers from the community or context you are investigating might be suitable for this role.[[108]](#endnote-109)
* Find ways to compensate external groups and individuals for their time.

Compensation can mean several things, one of which is financial. When exploring this route, compare paying for the time of someone with lived experience to that of a professor at Stanford; that’s to say a $30 gift card may not be equitable compensation.

Compensation includes coming to potential partners with a recognition that others may have previously asked for their time and not followed up on commitments, that this challenge is a part of life for them and not something they can step away from, and that your team potentially may be here as long as the project receives funding. Talk about how this effort might be different and discuss their needs and goals for engagement and for their communities.

Last, compensation can mean sharing information: offering the networks and resources that you have at your disposal.[[109]](#endnote-110)

* Publish the justifications for why your team decided against including something (a metric, a dataset, a partner), in addition to why you decided to include something.
* Bring in someone with a background in human-centered design and equity, social justice, or community-partnership to reinforce and continue the themes covered in this workbook.

#### Anticipate unwanted futures that follow historical patterns of harm

* Ask yourselves if the likelihood of harm is too high, or the consequences too damaging. Remember that it’s OK, and even beneficial, to pause and reevaluate your project.
* Conduct research on how similar types of technology and applications have resulted in previous harm.
* Establish a team that acts as a bad actor might, pretending to coopt your effort in each of the tech risk zones. This practice of ‘red teaming’ can strengthen technological and procedural guardrails against misappropriation of your effort.
* Clearly delineate responsibilities during design, development, and deployment that give those affected an opportunity for redress, transparency, and change in design.[[110]](#endnote-111) One possible way to handle redress and design changes is to establish and fund a team with the authority to do so. This team can publicize in clear language how those adversely affected by your effort can alert this feedback team. This team can create guidelines and governance on how and when to act on this feedback. This team can proactively create policies that address relevant technology risk zones (for example, favor privacy concerns over data collection). This team should have representation of those individuals or groups most at risk from the effort. And the success of this team should be tied to leadership’s goals and financial incentives.
* Consider a “microsimulation” if your project is further along in its development. The Urban Institute describes a microsimulation as an algorithmic approach to “estimate how demographic, behavioral, and policy changes might affect individual outcomes, and to better understand the effects of current policies.”[[111]](#endnote-112) However, the simulation’s accuracy depends on how well the data reflects the characteristics of different demographic groups, and such sub-divided datasets are usually unavailable.[[112]](#endnote-113)

#### **Explore specific equity tools**

(Unless otherwise noted, the bullet points are quoted directly from the Office of Management and Budget, “Study to Identify Methods to Assess Equity: Report to the President.”)[[113]](#endnote-114)

* Community Resilience Estimate (United States Census Bureau). This tool measures risk factors to the Census block level, including those that are relevant to the social and economic impacts of pandemics, natural disasters, etc.[[114]](#endnote-115)
* Opportunity Atlas (United States Census Bureau, Harvard University, Brown University). This tool is based on a comprehensive Census tract-level dataset of children’s outcomes in adulthood and uses data covering nearly the entire U.S. population. For each tract, estimates are made of children’s outcomes in adulthood such as earnings distributions and incarceration rates by parental income, race, and gender. These estimates enable researchers to trace the roots of outcomes such as poverty and incarceration to the neighborhoods in which children grew up.[[115]](#endnote-116)
* Racial Equity Geographic Information Systems [GIS] Tools (ESRI). This collection of maps, datasets, tools, and guidance was designed to allow users to engage GIS to understand racial equity in communities as a basis for making more equitable decisions about interventions and resource allocation. GIS provides insight into patterns of inequality and can provide common understanding across communities to affect positive change.[[116]](#endnote-117)
* Spatial Equity Tool (Urban Institute). This application uses multiple spatial datasets to track place-based equity in cities over time. Users can upload their own data. The tool geocodes the dataset to a U.S. city and compares the distribution of the uploaded data with the distribution of baseline variables from the American Community Survey. Similar tools could be created for data with a race and ethnicity variable to scale measurement of impact across Government.[[117]](#endnote-118)
* Transfer Income Model [TRIM3] (U.S. Department of Health and Human Services). This microsimulation tool is designed to simulate over a dozen different programs—including cash assistance programs, nutrition benefits, other in-kind benefits, Government-provided health insurance, payroll taxes, and Federal and State income taxes and tax credits—and captures State-level policy variations, as well as cross-program interactions. The model can be used in two ways: to examine how programs are currently affecting the economic wellbeing of American families; and to test what would happen (to program eligibility, program costs, tax liability, and so on) if policies were changed.[[118]](#endnote-119)

#### Apply equity thinking to traditional systems approaches

* Explore the problem space to identify who experiences the problem and how they experience the problem. Formulate a robust problem statement to ensure you are solving the right problem, from the perspective of those who experience the problem..[[119]](#endnote-120)
* Use a mind-mapping technique[[120]](#endnote-121) to expand your brainstorming on the technology risk zones most relevant to your effort, as well as equitable opportunities that can emerge from your effort.
* Storyboard[[121]](#endnote-122) how to incorporate others’ experiences. Chart common pain points and opportunities, using tools that document others’ experiences,[[122]](#endnote-123) and verify your insights with the individuals or groups who are affected by your project.
* Identify indicators, measures, and metrics that assess equitable outcomes. Investigate your data sources for their completeness and representativeness [[123]](#endnote-124)
* Pilot or prototype an equitable opportunity (for example, make settings support privacy by default rather than rely on people opting in). Get ongoing feedback from diverse groups of those who will be affected by your technology.

#### Discover more about equity-driven design and applying equity principles

There is plenty on these and equity-related topics. Here are just a few ideas to get you started.

* Read an introduction to equitable design[[124]](#endnote-125)
* Read a designing for equity guide[[125]](#endnote-126)
* Take a class[[126]](#endnote-127)
* Watch an expert’s perspective[[127]](#endnote-128)

# A Final Thought

Changing our habits and patterns is hard, regardless of topic. Changing our thinking and actions around equity is really hard. It takes practice. It takes repetition. I repeat, it takes repetition.

So keep learning, keep trying, keep finding ways to hold yourself accountable to those beyond your team. Working on this with your team will help keep you all accountable to each other. Share your successes, share your stumbles, and you’re always welcome to reach out at [jrotner@mitre.org](mailto:jrotner@mitre.org).

## About the author

I am a human-centered technologist who helps program managers, algorithm developers, and operators appreciate technology’s impact on human behavior. I and my co-authors have pointed out 50 [*AI Fails and How We Learn from Them*](https://sites.mitre.org/aifails/wp-content/uploads/sites/15/2021/02/AI-Fails-and-How-We-Can-Learn-from-Them-MITRE-2020.pdf)(MITRE, 2020) and made the case that [ethical AI can result in greater national security and economic prosperity](https://www.mitre.org/publications/technical-papers/how-can-ethics-make-better-ai-products) (MITRE, 2020). I may or may not have dressed up as a robot for my wedding ‘save the date’ invitation.

## Thank yous

I want to share a deep thank you to my parents, brother, and my wife. Thank you for supporting and contributing to the evolution of this workbook, and for unlearning and learning along with me. Especially to my wife, thank you for your strength, patience, perspectives, and kindness.

A big thank you to my colleagues at MITRE who made the ideas in this workbook sharper, clearer, and more faithful to equitable design principles. Thank you to Rachel Bergstein, Mary Bruzzese, Lilia Chan, Jen Choi, Heather Cogdell, Lura Danley, Robert Edson, Tammy Freeman, Howard Gershen, Ron Hodge, Jillian Humphreys, Margaret MacDonald, Liban Mohamed, Jenine Patterson, Jacques Sabrie Jr., Siggy Scott, Jennifer Strickland, Erica Taylor, Dan Ward, and Daniel Weiss. An extra thank you to John Schleith for his artistic eye and graphics talent.

Finally, I struggle to capture in words the immense appreciation I have for the wisdom, directness, and the capacity to stay in this fight from many brilliant minds in the equity space. My compulsion to engage in this space comes from my European-Jewish history, where my grandparents are Holocaust-survivors, and my parents are political refugees. At the same time, my race, gender, education, and lack of experience with disability are examples of how my multiple forms of privilege limit the credibility of my interpretation of equity-related processes and outcomes. In citing the work of the several Black, Hispanic, trans\*, and women authors whose writings I’ve been fortunate enough to be exposed to, I hope that, rather than appropriation and erasure, I can bring other readers directly to their profound work (thank you Sasha Costanza Chock for how you phrased your version of this sentiment).[[128]](#endnote-129)

## Disclaimer

The author's affiliation with The MITRE Corporation is provided for identification purposes only, and is not intended to convey or imply MITRE's concurrence with, or support for, the positions, opinions, or viewpoints expressed by the author.

# Appendix: Ethical OS Risk Mitigation Checklist

Because this workbook cites the eight technology risk zones as categorized in the Ethical OS Toolkit, and one of the workbook’s activities is inspired by their work, I am including a copy of the original Risk Mitigation Checklist that was developed by the Ethical OS team (a partnership between the [Institute of the Future](http://www.iftf.org/home/), a think tank, and the [Tech and Society Solutions Lab](https://www.omidyar.com/our-work/tech-and-society-solutions-lab), an initiative from Omidyar Network.)

The original document can be found at <https://ethicalos.org/wpcontent/uploads/2018/08/EthicalOS_Check-List_080618.pdf> The full Ethical OS Toolkit can be found at: <https://ethicalos.org/>

Note: This is an earlier iteration of the researchers’ work, so the eight risk zones don’t exactly map to the ones cited in the pages above.

Most tech is designed with the best intentions. But once a product is released and reaches scale, all bets are off. The Risk Mitigation Manual presents **eight risk zones** where we believe **hard-to-anticipate *and* unwelcome consequences are most likely to emerge.**

*Different tech runs different risks. This checklist will help you prioritize your efforts.*

## How it works:

**Choose a technology, product or feature you’re working on.** Read through the checklist and **identify the questions** and **risk zones** most relevant to you and the technology you’ve chosen. **Use the “Now what?” action items** to start investigating and mitigating these risks.

Risk Zone 1: Truth, Disinformation, and Propaganda

What type of data do users expect you to accurately share, measure or collect?

How could bad actors use your tech to subvert or attack the truth? What could potentially become the equivalent of fake news, bots or deepfake videos on your platform?

How could someone use this technology to undermine trust in established social institutions, like media, medicine, democracy, science? Could your tech be used to generate or spread misinformation to create political distrust or social unrest.

Imagine the form such misinformation might take on your platform. Even if your tech is meant to be apolitical in nature, how could it be co-opted to destabilize a government?

Risk Zone 2: **Addiction & the Dopamine Economy**

Does the business model behind your chosen technology benefit from maximizing user attention and engagement—i.e., the more, the better? If so, is that good for the mental, physical or social health of the people who use it? What might not be good about it?

What does “extreme” use, addiction or unhealthy engagement with your tech look like? What does “moderate” use or healthy engagement look like?

How could you design a system that encourages moderate use? Can you imagine a business model where moderate use is more sustainable or profitable than always seeking to increase or maximize engagement?

If there is potential for toxic materials like conspiracy theories and propaganda to drive high levels of engagement, what steps are being taken to reduce the prevalence of that content? Is it enough?

Risk Zone 3: **Economic & Asset Inequalities**

Who will have access to this technology and who won’t? Will people or communities who don’t have access to this technology suffer a setback compared to those who do? What does that setback look like? What new differences will there be between the “haves” and “have-nots” of this technology?

What asset does your technology create, collect, or disseminate? (example: health data, gigs, a virtual currency, deep AI) Who has access to this asset? Who has the ability to monetize it? Is the asset (or profits from it) fairly shared or distributed with other parties who help create or collect it?

Are you using machine learning and robots to create wealth, rather than human labor? If you are reducing human employment, how might that impact overall economic well-being and social stability? Are there other ways your company or product can contribute to our collective economic security, if not through employment of people?

Risk Zone 4: **Machine Ethics & Algorithmic Biases**

Does this technology make use of deep data sets and machine learning? If so, are there gaps or historical biases in the data that might bias the technology?

Have you seen instances of personal or individual bias enter into your product’s algorithms? How could these have been prevented or mitigated?

Is the technology reinforcing or amplifying existing bias?

Who is responsible for developing the algorithm? Is there a lack of diversity in the people responsible for the design of the technology?

How will you push back against a blind preference for automation (the assumption that AI-based systems and decisions are correct, and don’t need to be verified or audited)?

Are your algorithms transparent to the people impacted by them? Is there any recourse for people who feel they have been incorrectly or unfairly assessed?

Risk Zone 5: **Surveillance State**

How might a government or military body utilize this technology to increase its capacity to surveil or otherwise infringe upon the rights of its citizens?

What could governments do with the data you’re collecting about users if they were granted access to it, or if they legally required or subpoenaed access to it?

Who, besides government or military, might use the tools and data you’re creating to increase surveillance of targeted individuals? Whom would they track, why—and do you want your tech to be used in this way?

Are you creating data that could follow users throughout their lifetimes, affect their reputations, and impact their future opportunities? Will the data your tech is generating have long-term consequences for the freedoms and reputation of individuals?

Whom would you not want to use your data to surveil and make decisions about individuals, and why not? What can you do to proactively protect this data from being accessible to them?

Risk Zone 6: **Data Control & Monetization**

Do your users have the right and ability to access the data you have collected about them? How can you support users in easily and transparently knowing about themselves what you know about them?

If you profit from the use or sale of user data, do your users share in that profit? What options would you consider for giving users the right to share profits on their own data?

Could you build ways to give users the right to share and monetize their own data independently?

What could bad actors do with this data if they had access to it? What is the worst thing someone could do with this data if it were stolen or leaked?

Do you have a policy in place of what happens to customer data if your company is bought, sold or shut down?

Risk Zone 7: **Implicit Trust & User Understanding**

Does your technology do anything your users don’t know about, or would probably be surprised to find out about? If so, why are you not sharing this information explicitly—and what kind of backlash might you face if users found out?

If users object to the idea of their actions being monetized, or data being sold to specific types of groups or organizations, though still want to use the platform, what options do they have? Is it possible to create alternative models that build trust and allows users to opt-in or opt-out of different aspects of your business model moving forward?

Are all users treated equally? If not—and your algorithms and predictive technologies prioritize certain information or sets prices or access differently for different users—how would you handle consumer demands or government regulations that require all users be treated equally, or at least transparently unequally?

Risk Zone 8: **Hateful & Criminal Actors**

How could someone use your technology to bully, stalk, or harass other people?

What new kinds of ransomware, theft, financial crimes, fraud, or other illegal activity

could potentially arise in or around your tech?

Do technology makers have an ethical responsibility to make it harder for bad actors to act?

How could organized hate groups use your technology to spread hate, recruit, or discriminate against others? What does organized hate look like on your platform or community or users?

What are the risks of your technology being weaponized? What responsibility do you have to prevent this? How do you work to create regulations or international treaties to prevent the weaponizing of technology?

# Building on the Work of Others

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   An example of disproportionality is “The percentage of children of a certain racial or ethnic group in the country as compared to the percentage of the children of the same group in the child welfare system. For example, in 2000 Black children made up 15.1 percent of the children in this country but 36.6 percent of the children in the child welfare system.”

   An example of disparity is “Unequal treatment when comparing a racial or ethnic minority to a non-minority. This can be observed in many forms including decision points (e.g., reporting, investigation, substantiation, foster care placement, exit), treatment, services, or resources. Research shows that children of color in foster care and their families are treated differently from—and often not as well as—white children and their families in the system. For example, fewer African American children receive mental health services even though the identified need for this type of service may be as great (or greater) for African Americans as for other racial or ethnic groups.”

   Both examples come from: Office of Children and Family Services, New York State. *Disproportionality and Disparity.* (Accessed September 16, 2022). <https://ocfs.ny.gov/main/recc/disparity.php>  [↑](#endnote-ref-6)
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7. To help you practice, MITRE put together a guide. Choi, J., Deveneau, L. K., Freeman, T. C., Humphreys, J., Rotner, J., Ward, D., Davis, M. & McKnight, M. *Designing for equity starter guide*. The MITRE Corporation. Unpublished (expected publication date of Fall 2022, on <https://sjp.mitre.org/>). [↑](#endnote-ref-8)
8. This list includes:

   (i) Dr. Christine Marie Ortiz Guzman, *Equity Meets Design* (<https://equitymeetsdesign.com/>).

   (ii) The Creative Reaction Lab (<https://www.creativereactionlab.com/>), specifically their webinar series.

   (iii) Dr. Sasha Costanza-Chock and their book, *Design Justice. Community-led Practices to Build the Worlds We Need.* (2020). Cambridge: the MIT Press. <https://mitpress.mit.edu/books/design-justice>

   (iv) The *Ethical Explorer* guide and *Ethical OS*, a partnership between the [Institute of the Future](http://www.iftf.org/home/), a think tank, and the Tech and Society Solutions Lab, a former initiative from the impact investment firm Omidyar Network. Available at: <https://ethicalexplorer.org/> (Ethical Explorer) and <https://ethicalos.org/> (Ethical OS).

   (v) Rosa González of Facilitating Power. (2020). *The spectrum of community engagement to ownership*. <https://www.communitycommons.org/entities/3aec405c-6908-4bae-9230-f33bef9f40e1>

   (vi) MITRE’s Innovation Toolkit (<https://itk.mitre.org/>).

   (vii) MITRE’s *Framework for Assessing Equity in Federal Programs and Policies*. Available at: The Social Justice Platform Team, The MITRE Corporation. (2021, May). *A framework for assessing equity in federal programs and policy* [Technical paper]. <https://www.mitre.org/publications/technical-papers/a-framework-for-assessing-equity-in-federal-programs-and-policy>

   I hope to adequately reflect their teachings as I build off their work. [↑](#endnote-ref-9)
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11. The White House defines “underserved populations” as “populations sharing a particular characteristic, unique challenges, and geographic communities, who have been systemically and institutionally denied a full opportunity to participate in aspects of economic, social and civic life.” The Department of Veterans Affairs expands this definition to include “Black, Hispanic and Latino, or Indigenous and Native American persons; Asian Americans and Pacific Islanders and other persons of color; members of religious minorities; women; individuals who face discrimination based on sex, sexual orientation, gender identity or gender expression, including pregnancy status and including LGBTQ+ persons; persons with disabilities; first-generation professionals or first-generation college students; individuals with limited English proficiency; immigrants; persons who may face employment barriers based on older age; persons who live in rural areas; and persons otherwise at-risk of persistent poverty, homelessness or inequality.” Sources: The White House. (2021, September). *Executive order on advancing racial equity and support for underserved communities through the federal government*. <https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/executive-order-advancing-racial-equity-and-support-for-underserved-communities-through-the-federal-government/>; and Department of Veterans Affairs. (2021, September). *Inclusion, Diversity, Equity, & Access (I-DEA): Action plan* (Version 1). <https://www.va.gov/ORMDI/docs/VA_I-DEA_Action_Plan-SIGNED.pdf> [↑](#endnote-ref-12)
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    (i) In 2015, Amazon used an AI application to find the top talent from stacks of resumes. Because the algorithm was trained on data from previous hires, its selections reflected those existing patterns and strongly preferred male candidates to female ones. In fact, female-specific activities or patterns (such as joining a female-based organization or specific word choices) penalized female candidates. Source: Dastin, J. (2018, October 9). *Amazon scraps secret AI recruiting tool that showed bias against women*. Reuters. <https://www.reuters.com/article/us-amazon-com-jobs-automation-insight/amazon-scraps-secret-ai-recruiting-tool-that-showed-bias-against-women-idUSKCN1MK08G>

    (ii) COMPAS, a tool that assesses recidivism risk of prison inmates (repeating or returning to criminal behavior), produced controversial results and debate about how it measures fairness. The outcomes were that Black inmates were twice as likely as White inmates to be classified as presenting medium or high risk. Sources: Corbett-Davies, S., Pierson, E., Feller, A., and Goel, S. (2016, October 17). A computer program used for bail and sentencing decisions was labeled biased against blacks. It’s actually not that clear. *The Washington Post*. <https://www.washingtonpost.com/news/monkey-cage/wp/2016/10/17/can-an-algorithm-be-racist-our-analysis-is-more-cautious-than-propublicas/>; and Wexler, R. (2017, June 13). When a computer program keeps you in jail. *The New York Times*. <https://www.nytimes.com/2017/06/13/opinion/how-computers-are-harming-criminal-justice.html>

    (iii) Since 2008, initial deployments of webcam facial tracking algorithms cannot identify faces of darker skinned individuals, because most of the training data came from white skinned persons and the developers were also white skinned). One particularly illuminating demonstration of this pattern occurred in 2018, when Amazon’s facial recognition system confused pictures of 28 members of Congress (the majority of them dark-skinned) with criminal mugshots. Sources: Simon, M. (2009, December 23). *HP looking into claim webcams can’t see black people*. CNN. <http://www.cnn.com/2009/TECH/12/22/hp.webcams/index.html>; and Barrett, B. (2018, July 26). *Lawmakers can’t ignore facial recognition’s bias anymore*. Wired. <https://www.wired.com/story/amazon-facial-recognition-congress-bias-law-enforcement/> [↑](#endnote-ref-13)
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    (i) Wage disparities exist across a range of occupations. Black women working as personal care aides make 87 cents for every dollar paid to their White, non-Hispanic male counterparts. Black women who are highly educated, such as those working as physicians and surgeons, make just 54 cents for every dollar paid to their White, non-Hispanic male counterparts. In 2017, Hispanic men made 14.9 percent less in hourly wages than comparable White men (an improvement from 17.8 percent in 2000), while Hispanic women made 33.1 percent less than comparable White men. Sources: Temple, B., & Tucker, J. (2017, July). *Workplace justice: Equal pay for Black women* [Fact sheet]. National Women’s Law Center. <https://nwlc.org/wp-content/uploads/2017/07/Equal-Pay-for-Black-Women.pdf>; and Mora, M. T., & Dávila, A. (2018, July 2). *The Hispanic–white wage gap has remained wide and relatively steady: Examining Hispanic–white gaps in wages, unemployment, labor force participation, and education by gender, immigrant status, and other subpopulations*. Economic Policy Institute. <https://www.epi.org/publication/the-hispanic-white-wage-gap-has-remained-wide-and-relatively-steady-examining-hispanic-white-gaps-in-wages-unemployment-labor-force-participation-and-education-by-gender-immigrant/>

    (ii) Studies of employee hiring find that when changing names, the exact same resumes have very different callback results. White-sounding names receive 50% more callbacks for interviews. Mothers are penalized for being parents (compared with childless persons and fathers). In a double-blind study, job applicants randomly assigned a male name were rated as significantly more competent and hirable and were offered a higher starting salary and more career mentoring compared to identical applicants assigned female names. Sources: Bertrand, M., & Mullainathan, S. (2004). Are Emily and Greg more employable than Lakisha and Jamal? A field experiment on labor market discrimination. *The American Economic Review, 94*(4), 991–1013. <https://www.uh.edu/~adkugler/Bertrand&Mullainathan.pdf>; Benard, S., Paik, I., & Correll, S. (2007). Getting a job: Is there a motherhood penalty? *American Journal of Sociology, 112*(5), 1297–1338. <https://sociology.stanford.edu/publications/getting-job-there-motherhood-penalty>; and Moss-Racusin, C. A., Dovidio, J. F., Brescoll, V. L., Graham, M. J., & Handelsman, J. (2012). Science faculty’s subtle biases favor male students. *Proceedings of the National Academy of Sciences, 109*(41), 16474–16479, <https://www.pnas.org/content/pnas/109/41/16474.full.pdf>

    (iii) In 2016, *On The Media’s* extensive series about poverty in America challenges and debunks commonly-held myths that poverty is a result of lack of will to work, and that contemporary safety nets can lift people out of poverty. Source: Gladstone, B. (2016, September 28–October 28, 2016). Busted: America’s poverty myths [Audio podcast series]. In *On the Media with Brooke Gladstone*. WNYC. <https://www.wnycstudios.org/podcasts/otm/projects/busted-americas-poverty-myths>

    (iv) The Pell Institute for the Study of Opportunity in Higher Education published a 2021 report on The Indicators of Higher Education Equity in the United States. The Director of the Institute summarized the report by saying, “The inescapable conclusion considering the statistics in the report is that the U.S. higher education system is deeply segregated by parental socio-economic status and by race and ethnicity. This has resulted in a cost and funding structure that provides almost insurmountable barriers for nontraditional, low-income and students of color to overcome. It is an overly competitive system, that ends up producing highly resourced monocultured institutions serving a small percentage of students who are highly resourced academically and financially.” Source: The Pell Institute for the Study of Opportunity in Higher Education and PennAHEAD. (2022). Indicators of higher education inequity in the United States: 2022 historical trend report. <http://pellinstitute.org/indicators/>

    (v) The CDC tracks COVID-19 infection, hospitalization, and death rates by race and ethnicity: its data reveals that American Indian or Alaska Natives, Black, and Hispanic persons all have higher rates of hospitalization and death compared to White Americans. Source: Centers for Disease Control and Prevention. (2022, June 2). *Risk for COVID-19 infection, hospitalization, and death by race/ethnicity*. <https://www.cdc.gov/coronavirus/2019-ncov/covid-data/investigations-discovery/hospitalization-death-by-race-ethnicity.html>

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