Towards A More Ethical Technology Development Process

PLAYBOOK

Version 1 - Fall 2022 Draft

NEW AMERICA

Carnegie Mellon University HeinzCollege
INFORMATION SYSTEMS • PUBLIC POLICY • MANAGEMENT

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Who This Playbook Is For

This playbook is **designed for anyone and everyone with an interest in public interest technology to use**. In general, this can be interpreted as all individuals and organizations that seek to build a rights-respecting digital future. The introduction, description of the current state of ethics in technology, and framework is written as a contextual overview for **how and why** each of the recommended actions that follow are included in the playbook. Next to each action, you'll notice an icon that describes the type of person or organization to which the action pertains, also shown below:

Technology End-Users

Technology Developers

Educators and Trainers

Policymakers, Regulators

Advocates, Think Tanks

Introduction

The Policy Innovation Lab, a graduate level course at Carnegie Mellon University's Heinz College of Information Systems and Public Policy, provided the framework and impetus for this playbook.

"The Policy Innovation Lab is a Public Interest Technology initiative that connects students with real policy challenges and introduces an agile, design-driven framework to rapidly create solutions to those challenges. The course is an experiment in improving public policy by working outside the traditional structures of government."[1]

The team, partnering with New America to develop insights for a technologist code of ethics, employed an iterative approach in which primary user research informed the problem statement, which informed secondary research, which informed proposals for solutions. Users and stakeholders weighed in on the solution proposal, starting the process over again. Find a detailed description of this process in the accompanying "readme" documentation.

Developed out of this user-centered process, this playbook serves a broad landscape of actors with a set of guidelines, initiatives, and processes to better embed an ethical way of thinking into the technology development process.

Users – defined as technologists, regulators, ethicists, technology users, and anyone else with a stake in creating more ethical technology – provided context to the current state in which ethics are considered: largely ad-hoc, voluntary, and a secondary consideration, if considered at all. Despite painting this unfortunate picture, they also provided context into how ethics can begin to become a priority for technologists. The overarching theme was that a defined set of ethics – a code that defines correct or incorrect actions – will not be helpful. Rather, ***a change in culture, or the thoughts and processes that govern technologists' daily work, is paramount.*** Several additional themes emerged among users and secondary research, which are detailed throughout the playbook.

Advocates who successfully work together to follow the course of this playbook will reconceptualize our digital future in a way that does not come at the cost of privacy and human rights.

[1] Professor Chris Goranson, Policy Innovation Lab Syllabus Fall 2022

The Current State

The team was initially interested in identifying if any ethical principles or practices were standardized, conveyed, shared, or taught at any point in the interview subject's careers. For example, when technology developers started their roles did Human Resources or management identify what was considered ethical practice and what was not? If employees had questions, were they instructed to a primary source such as the company's rules, guidelines, or policies? Or were students taught about ethical guidelines to inform their future work?

Early career technologists, civil servants with technology expertise, activists, technology consultants, and those with expertise in professional codes of conduct in other fields provided the current landscape for how ethics affect their work.

Interviewees initially shared insights into the training, whether formal or informal, that they received. They shared that **ethics are rarely taught in a manner that allows the technologist to critically evaluate their creation.** In fact, ethics classes are fairly uncommon. When ethics are taught, the training opportunities are often compliance-focused, teaching technologists to check pre-determined boxes to abide by existing laws.

> *"I remember most [ethics courses] were **pitched in terms of compliance** … most of the focus was on HIPAA, which isn't necessarily helpful."*

> *"I don't think the classes focused on the ethics side of things … but from my experience **you brush up against the ethics** [if you care enough about them]."*

In the development process, **technology is often an afterthought due to considerations deemed more important,** such as profit motives, technical expectations, and strategic management.

> *"Yes, there are times that the idea of ethics should come in, but mostly **I just need my code run**! We are so often focused on the nitty gritty that we can't think about the deeper considerations."*

> *"Ethics … don't fit in the **bottom line of the company**."*

> *"I have a **hierarchy of needs**. Why would an entity follow the code [of ethics] if other needs are not met?"*

Further, while the development process prioritizes other motives, **there is no accountability structure in place to compel companies and individual technology developers to consider ethics.** Technologists have identified this phenomenon, but have not addressed it on a wide scale.

> *"If you do not address [ethics] up front, **incentives become more and more perverse.** Sunk costs of something ethically problematic makes it much harder to scrap what you've done or convince superiors that we need to assess implications"*

> *"**Enforcement is so important**. … [technologists are not currently] measured by how responsible their design is, but how fast they need to fulfill the metrics."*

While technology as a sector has prioritized efficiency to the benefit of billions of users who gain value from effective technological applications in their daily lives, it has come at the expense of **how those applications affect those users on a deeper level** – keeping them engaged to drive advertising revenue or fomenting emotions that have real-world implications including insurrection and genocide. Some technologists have attempted to fight this culture.

> *"One thing I have noticed is that we have separated technology from other disciplines. So there is a challenge in **how to bring human-focused disciplines** into development and balance between the two."*

> *"Personally, the consequences for my users are most important to me because I don't want to put them in a situation where **a failure of my own inhibits their well-being**."*

So what do these stakeholders think would be most effective in making sure ethical considerations are prominent in the technology development process? ***They make it clear that a cultural change is vital.*** Until the habits that govern people's daily lives are changed, ethics will not be a consideration.

> *"How can I learn, but also **teach others in the field**?"*

> *"Ethics are more about **thoughts and processes**."*

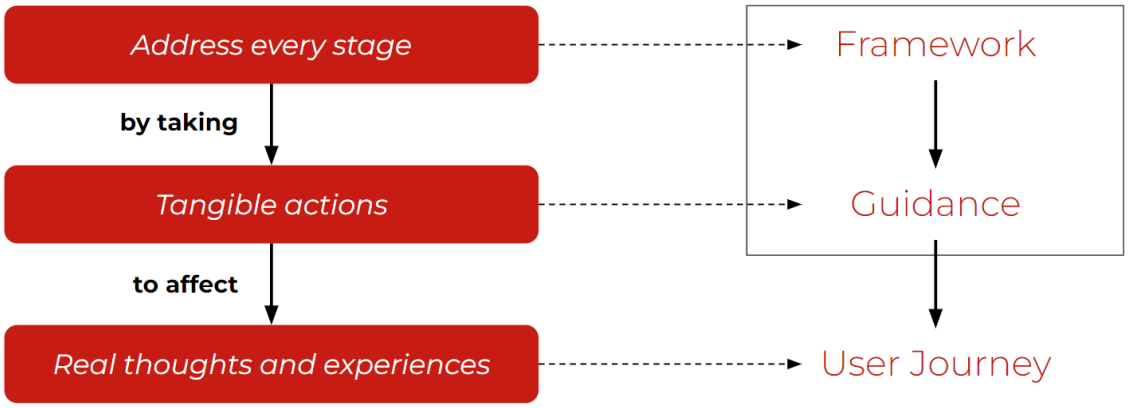
> *"Ethics and philosophy and all this thinking take time, which can be really frustrating, but it is really important. When we move fast mentally, **we should slow down**."*

Based on these observations, the team drew a ***key takeaway***:

> It is not a tangible code of ethics that would be most compelling, but a **change in culture** will be paramount to affect the **thoughts and processes that govern technologist's day-to-day work**.

Cultural Framework

To drive effective cultural change, we must...



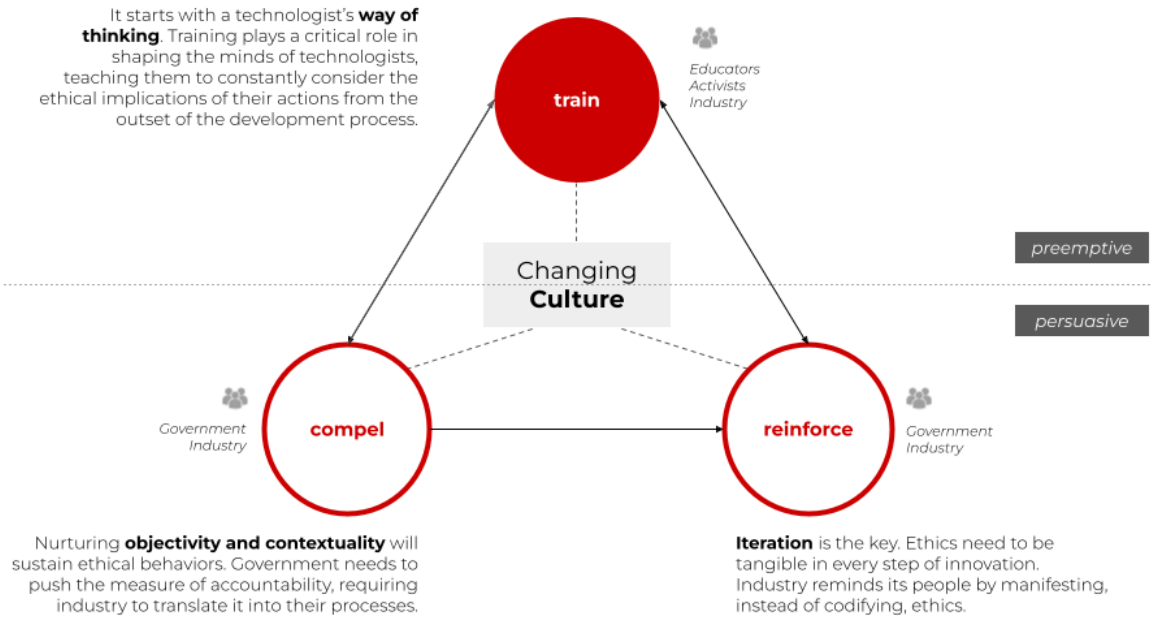
When the team asked users how a code of ethics would be most effective in informing their work, users expressed that **a tangible code of ethics may not be the most effective tool.** Rather, they expressed a desire to have a more solid foundation of analytical reasoning to critically consider ethics involved in technology development.

Although interviewees indicated that ethical training will be most effective early in their careers, **embedding a more effective manner of ethical deliberation into the technology sector will require multiple touchpoints.** Consistent, repeated exposure to ethical deliberation and critical thinking skills, in which technologists practice considering the comprehensive consequences of technology they hope to build, will be necessary for long-term adoption of these skills.

Several themes emerged among users regarding the most effective stages in their career – which are referred to as "stages" – that exposure to ethical thinking would be useful. Interviewees identified **actions that introduce ethical practices** – initial exposure through education and training; interviewees identified **actions that reinforce ethical practices** – repeated exposure to principles while they practice developing technology; and interviewees identified **actions that compel ethical practices** – including actions that hold technologists accountable to maintain an ethical culture through enforcement by governments or voluntary behaviors. These stages of actions will be described as ***"train," "reinforce," and "compel,"*** respectively.

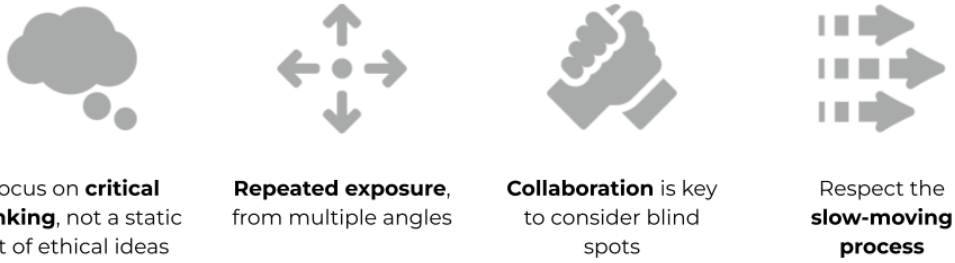
These insights have been visualized through a 'culture map.' Each of the stages of actions framed in the culture map are necessary to create a more ethically conscious culture in the technology sector.

Culture Map



Core Principles

Overarching recommendations follow for how to engage with each of the stages of actions; train, reinforce, and compel. Below the overarching recommendations will provide specific examples of tasks that interested parties can take to drive effective cultural change surrounding technology development.



Focus on **critical thinking**, not a static set of ethical ideas

Repeated exposure, from multiple angles

Collaboration is key to consider blind spots

Respect the **slow-moving process**

Critical Thinking	Because ethics vary from nation to nation and even person to person, it is important that the actions teach people how to critically engage with what they understand to be ethical, rather than giving them a set rulebook.
Repeated Exposure	To effectively change culture and build new habits, technologists must receive the same message consistently from a multitude of trusted sources.
Collaboration	When implementing the playbook, do so with feedback from other public interest technologists who can help determine whether the action is effective in culture change or whether it is unhelpful.
Respect the Process	Culture change takes time. None of these actions alone will solve the problem. With patience and respect for the process, though, these actions can build together to drive culture change.

Stages of Action

Each of the actions has been thoughtfully considered and abides by the core principles outlined above:

Train: Introducing Ethical Deliberation

Public Interest Technology ensures technology is designed, deployed, and regulated in a responsible and equitable manner, but also places the user first.

We acknowledge that there is already a "Public Interest Technology" Network that has or plans to complete some of this work already. In that case, organizations should inventory what they have already done and plan how the tasks below help them accomplish their goals. Organizations may build off of their existing platforms as well as to use these actions to advocate for change in the broader education and training ecosystem.

1. Foster avenues to engage students' interests in doing good with technology

1. *Build formalized consensus* through the PIT-UN to have members commit to providing students an ethical way of thinking about technology.
   - 1.1. PIT-UN benefits to adjust marketing materials to reflect ethical ethos
   - 1.2. PIT-UN benefits to expand the PIT-UN network globally
2. PIT-UN members should *motivate students* in computer science and engineering to take courses that supply an ethical way of thinking about software development.
   - 2.1. PIT-UN members should submit challenge grants to develop a curriculum explicitly focused on ethics
   - 2.2. Members should initially *conduct an audit of their course catalog* as they may already have ethics-based courses. For example, a small collection of courses at CMU (member):
     - Ethics and Artificial Intelligence
     - Ethics and Politics of Data
     - Human AI Interaction
     - Cyber Law and Ethics

	• Ethics and Policy Issues in Computing **2.3.** If members do not have courses, New America could facilitate other members *offering remote courses, programs, or lectures* to other students in the network

2. Build ethical analysis skills directly into certifications, courses, modules, and curriculum

1. Providers should *conduct an analysis of their curriculums* to determine whether they teach ethics-based material

2. Similar to other organizations' inclusion of Certified Ethical Hacker certifications, trainers should *offer similar certifications or include required readings and modules* on ethical product development

3. Model curriculum development

1. Advocacy organizations should develop *model curriculum* to teach

1.1. This curriculum should include *critical thinking activities*, providing workshops that teach aspiring technologists to think about how user's access the technology and consider unintended consequences

1.2. Curriculum should also demonstrate *the importance of user-centered design* – showing technologists that when they are proximate to users, they will understand the real-world impact they cause

4. Nurture career opportunities for future public interest technologists

1. Encourage development of public interest technology career opportunities to establish skills that extend into the workplace
   - **1.1.** Continue to connect applicants with public interest tech jobs via the PIT-UN
   - **1.2.** Establish career pipelines to ethical technology organizations such as New America, EFF, or others
   - **1.3.** Develop connections with industry partners who support ethical technology practices
   - **1.4.** Establish career pipeline to industry partners who support ethical technology practices

Reinforce: Continuing to Build Ethical Culture

For sustained change in how ethics informs the technology sector, technology developers must continue to receive ethics training and be continually reminded to prioritize ethics when possible. This could either be by including elements of ethical analysis into existing processes (or products) or by creating entirely new products and processes.

1. Integrate ethics directly into the development process

1. Either through *existing tools and software*...
   - 1.1. For example, implement into agile methodologies for software development
   - 1.2. Require development process to implement "consequence scanning"
     - What are the intended and unintended consequences of this product or feature?
     - What are the positive consequences we want to focus on?
     - What are the consequences we want to mitigate?
2. ...or through the *development of new tools*
   - 2.1. Use Privacy by Design Principles as a framework to ensure ethics is not an afterthought, but built into the process

2. Adopt existing norms and accepted practices for sensitive technologies

1. Utilize *existing models and governance structures*
   - 1.1. Fair Information Practice Principles
   - 1.2. Artificial Intelligence
   - 1.3. Cybersecurity

3. Hire permanent ethics officers to work towards ethical culture

1. Give ethics officers prominent, authoritative roles
   - 1.1. Give ethics officers *freedom to ask questions*
   - 1.2. Give ethics officers freedom to talk to the right people
2. Engage ethics officers with products and teams most in need of ethical development framework

4. Continually update ethics trainings to reflect current best practices

1. When organizations do employ ethics training, it may be to "check a box." Instead, ethics training should be performed in conjunction with qualified trainers to create real change in technologist thoughts and habits.
   - 1.1. Rely on best practices to inform curriculum
2. Attend conferences and seminars organized by qualified educators to remain on the cutting edge of ethical tech development practices

5. Engage consultants that are sympathetic to PIT to embed ethical processes in recommendation framework

1. Demonstrate *the value proposition* of ethical deliberation for customers
   - 1.1. Demonstrate how *ethical analysis leads to customer retention and loyalty*
2. Build ethical analysis into *agile methodology*

	2.1. Show how it doesn't necessarily need to slow processes down

6. Foster Collaboration

1. Advocacy organizations should *sponsor gatherings and conferences centered around ethical deliberation*
   - **1.1.** Conferences should allow technologists space to engage each other and share best practices
   - **1.2.** Conferences should allow for user research and for teaching human-centered design

7. Assist the public sector in recruiting and upskilling talent[2]

1. Government will be most effective in compelling technologists to incorporate ethics into their work if the government can speak in technologist's language.
   - **1.1.** Talented technologists with concern for ethics could *use a regulatory role* to engage with companies in a way that past civil servants could not
2. Government must *provide upward mobility for public interest technologists* to continue providing their technology skills in useful ways

[2] Mazzucatto et al., Governing artificial intelligence in the public interest, UCL Institute for Innovation and Public Purpose Working Paper 2022/12, https://www.ucl.ac.uk/bartlett/public-purpose/sites/bartlett_public_purpose/files/governing_ai_in_public_interest.pdf

Compel: Hold Technologists Accountable

The public sector plays an important role as an employer as well as an enforcement and regulatory arm. As a technology funder and implementer, the government should set an example for building ethical technology with the public interest in mind. The government acts as a major enforcement mechanism, but has other tools to compel ethical behavior and is by no means the only actor that should compel ethical behavior. Government agencies should be wary to position enforcement as synonymous with moral or ethical authority. Other types of actors and organizations are necessary to compel developers, formally or informally, to develop technology ethically, with the well-being of the end-user at heart.

1. Work with government agencies or nonprofit organizations to develop voluntary ethical certification



1. While certified by an international body such as the UN or OECD, companies *voluntarily ask for certification*
    - 1.1. Developers will understand how a certification *leads to customer retention and loyalty*
    - 1.2. Certification provides consumers an understanding of technology that was developed with *their well-being in mind*
2. Developers must meet specified criteria to earn certification, similar to LEED certifications for energy-efficient buildings

2. Urge government agencies to set the example

1. Companies may not find motivation to build ethical technology if they find that those with a commitment to the public good are not abiding by the same processes.

1.1. *Work with the U.S. Digital Corps, the U.S. Digital Service, and 18F* to ensure their methods incorporate ethical practices and processes discussed in the "reinforce" section

3. Show policymakers what can be possible in terms of ethical technology

1. When regulators hold hearings on technology, provide *comment on ethical technology development*
   - **1.1.** Position researchers, academia, and advocates as experts
   - **1.2.** Develop *series of blogs, reports, or academic articles* on the value of ethical development
2. Offer *recommendations* for legislation
   - **2.1.** Take lessons learned from trailblazing legislation and improve upon it

4. Create the market for ethical behavior

1. America's Seed Fund should *actively search for projects and startups* that use ethical development practices to implement technologies for the public good.
2. *Create a substantial annual prize* for projects that embed ethics into development with well-thought consequences akin to Department of Transportation's Smart City Challenge

	3. Flex large procurement power by investing in and buying from companies that have *demonstrated significant ethical deliberation* in their processes

5. Ensure viable enforcement mechanisms, with teeth	
	**1.** Model off of existing *enforcement mechanisms or agencies* **1.1.** For example, currently for Environmental, Social, and Corporate Governance (ESG) the SEC (although in limited capacity) makes companies responsible over public statements about ethics, principles, practices. **1.2.** At the bare minimum, regulation should ensure that companies do what they claim they do.

Appendix - User Personas

These user personas demonstrate how the playbook can be contextualized to affect real cultural change among stakeholders. Each persona will experience change of journeys by having some of the actions in the playbook implemented.

User Persona Current Realities

John Doe

AGE 22
OCCUPATION Software Engineer
LOCATION Cape Town, South Africa

ATTRIBUTES
- Ambitious
- Focused

GOALS
Develop **High-Quality Products** aligned with Customer Needs and Business Model

BIOGRAPHY

John is a fresh graduate computer scientist who starts his career in the software engineering field. As a newcomer, he tries to deliver the best product with his skills. He tries to fulfill the quality standard of his deliverables which align the business model with the customer's needs.

Bill Stones

AGE 44
OCCUPATION CTO
LOCATION London, UK

ATTRIBUTES
- Leader
- Innovative

GOALS
Deliver **new Social Media** to connect people in more profitable way

BIOGRAPHY

Bill is CTO of a leading blockchain-based social media startup. He built the company to push the social media industry to being more responsible. However, Bill struggles to find the balance between right-minded ethics and the right business model to ensure financial sustainability.

May Smith

AGE 31
OCCUPATION Policy Analyst
LOCATION New York, NY

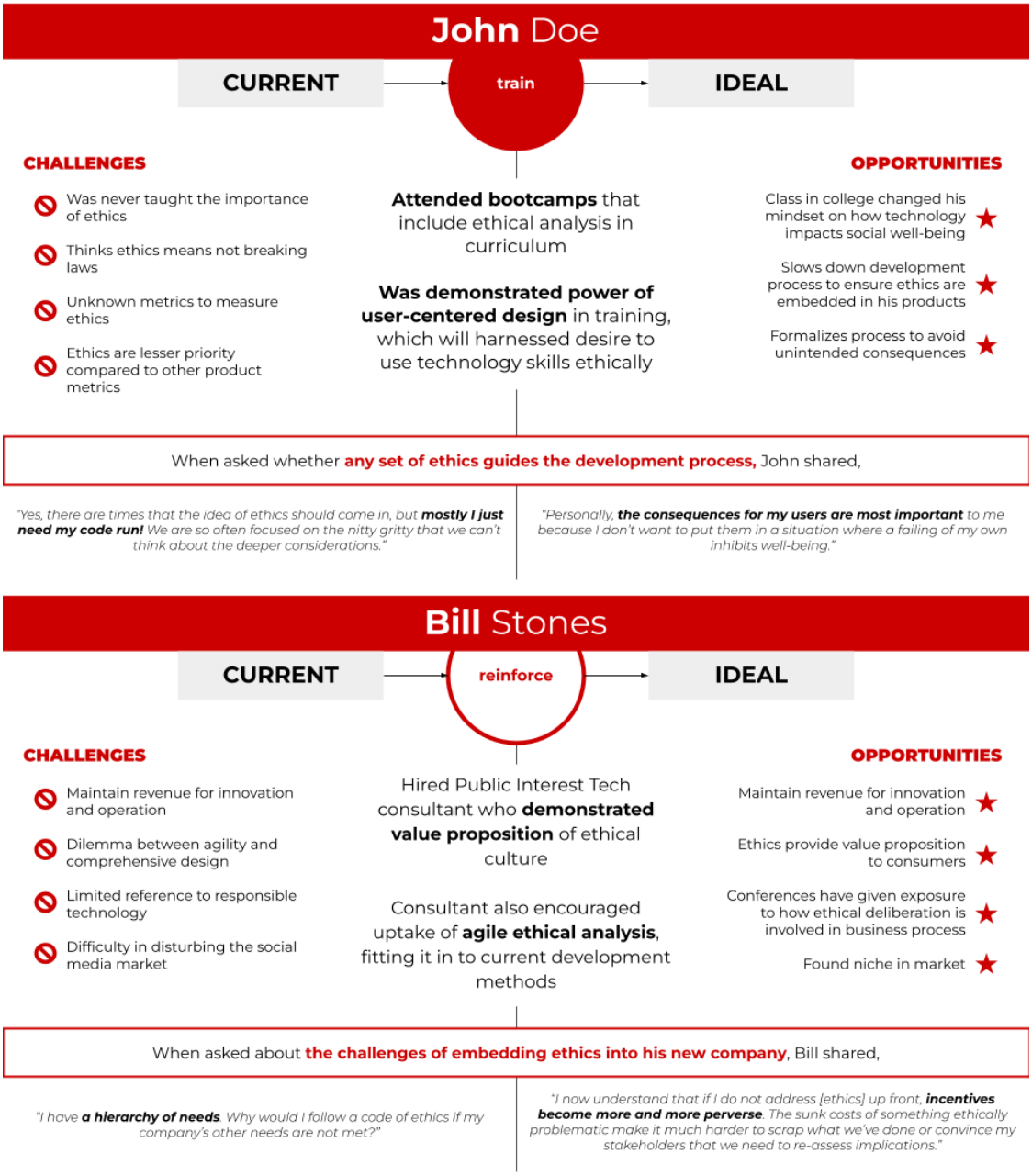
ATTRIBUTES
- Disciplined
- Skeptical

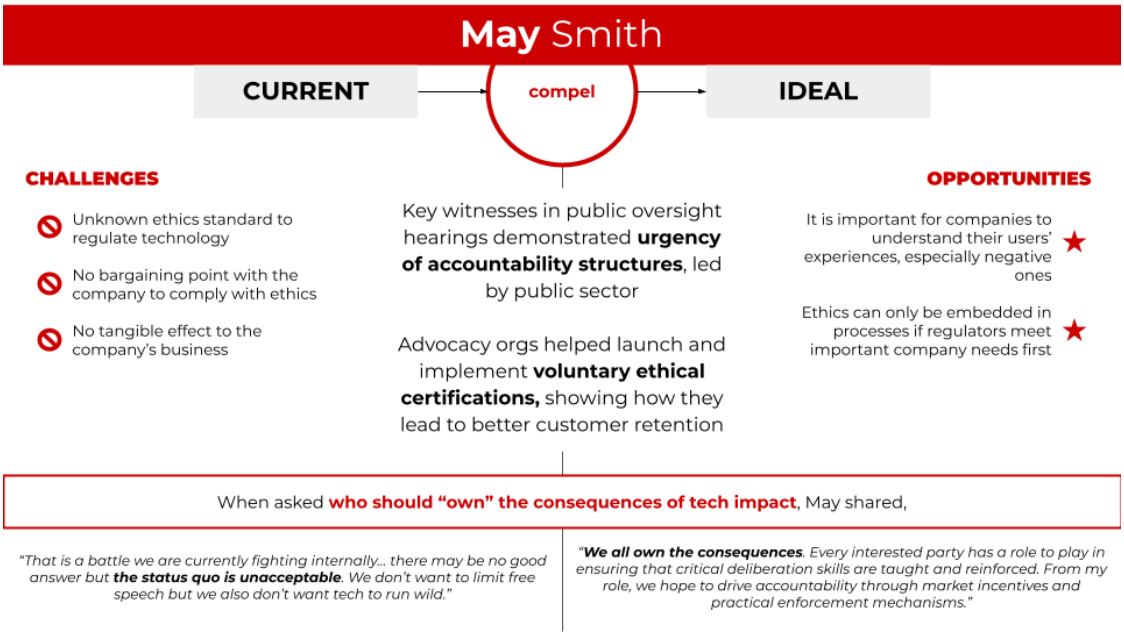
GOALS
Ensure Technology Implementation aligned with **People, Process and Policy** for common good

BIOGRAPHY

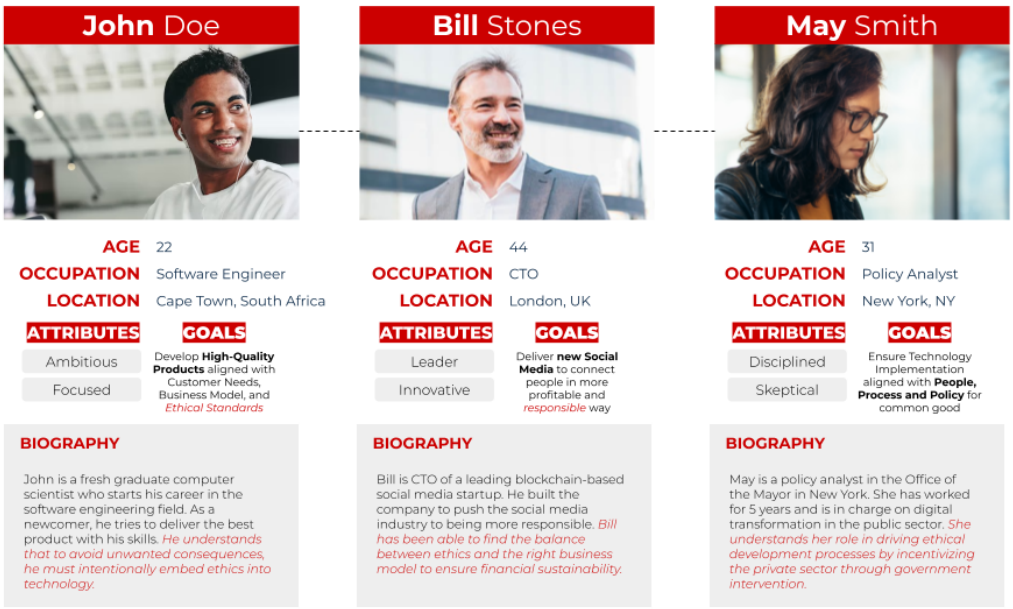
May is a policy analyst in the Office of the Mayor in New York. She has worked for 5 years and is in charge on digital transformation in the public sector. She understands the complexities and constraints of technology development but also sees the need for accountability and her role in it.

Playbook In Action Affecting User Personas





User Personas Experience Changed Culture



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