

# Framework for Assessing Digital Contact Tracing Technologies Used for COVID-19 Response

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## Central Principles

As DCTT emerge as a tool for pandemic response, an accompanying literature is developing around how these technologies can and should be used to mitigate and suppress COVID-19 and quell future outbreaks of communicable disease. To address this cross-cutting issue, contributing scholars are drawing central ideas from the public health literature (1), privacy law (2), digital data governance (3), human rights frameworks (4), and moral philosophy (4-6). While terminology varies slightly across authors, this emerging body of literature has coalesced around a set of five principles that address the potential privacy, ethical, and social impacts of these technologies (7).

1. **Efficacy** (necessary, proportionate, scientifically valid, impactful): The best available evidence should show that technology-assisted contact-tracing will improve response efforts and that the positive effects DCTT create will outweigh the negative effects of these technologies. Those responsible for these systems should also monitor their performance and provide some measurement of their ongoing positive and negative impacts. Compatibility, across-platform functionality, and backward compatibility are also key to effectiveness.
2. **Privacy** (voluntary, consent, limited, anonymous, editable, secure, temporary): Participation in technology-assisted contact-tracing should be voluntary and non-participation should not incur any punitive measures. Users should be given clear notice about the types of data that will be collected, how that data will be stored, transferred, and shared. Users should also have the ability to opt out at any time and have control over which of their data is shared and when. Any data collected from users should also be limited to the purposes of COVID-19 prevention, be securely stored, and destroyed when no longer relevant for this purpose.
3. **Transparency** (open source, accessible, customizable): The rules governing the collection and management of user data should be understandable and publicly accessible. The contact tracing systems themselves should use open architectures and standards and ideally be entirely open sources, so others can audit and amend the systems.
4. **Accountability** (auditable, amendable): Technology-assisted contact-tracing systems should undergo independent assessments organized around these five principles. Those assessments should also be publicly accessible. Clear operational rules and guidelines need to be created and matched with enforcement mechanisms and a clear chain of responsibility for enforcement. These systems should also be customized and amended as new evidence becomes available about disease transmission and system effectiveness.
5. **Equity** (equally available, equally accessible): DCTT should be free and available to any user that wishes to use them. These technologies should also be accessible to people of different backgrounds, levels of experience, incomes, and other differentiating characteristics. Some form of oversight should be designed to identify if DCTT are creating inequitable public health outcomes.

## References

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4. J. Morley, J. Cows, M. Taddeo, L. Floridi, Ethical guidelines for COVID-19 tracing apps. *Nature* 582, 29–31 (2020).
5. U. Gasser, M. Ienca, J. Scheibner, J. Sleight, E. Vayena, Digital tools against COVID-19: taxonomy, ethical challenges, and navigation aid. *The Lancet Digital Health* (2020) [https://doi.org/10.1016/s2589-7500\(20\)30137-0](https://doi.org/10.1016/s2589-7500(20)30137-0).
6. V. Hart, *et al.*, Outpacing the Virus: Digital Response to Containing the Spread of COVID-19 while Mitigating Privacy Risks, COVID-19 Rapid Response Impact Initiative – White Paper 5 (Harvard University - Edmond J. Safre Center for Ethics, 2020)
7. Center for Disease Control and Prevention, "Preliminary Criteria for the Evaluation of Digital Contact Tracing Tools for COVID-19 – Version 1.2" (U.S. Center for Disease Control and Prevention, 2020).