

Akron Law Review

Volume 54

Issue 4 Symposium Edition: COVID & The
Practice of Law: Impacts of Legal Technology

Article 2

2021

Digital Curb Cuts: Towards an Inclusive Open Forms Ecosystem

Quinten Steenhuis

David Colarusso

Follow this and additional works at: <https://ideaexchange.uakron.edu/akronlawreview>



Part of the [Intellectual Property Law Commons](#)

Please take a moment to share how this work helps you [through this survey](#). Your feedback will be important as we plan further development of our repository.

Recommended Citation

Steenhuis, Quinten and Colarusso, David (2021) "Digital Curb Cuts: Towards an Inclusive Open Forms Ecosystem," *Akron Law Review*: Vol. 54 : Iss. 4 , Article 2.

Available at: <https://ideaexchange.uakron.edu/akronlawreview/vol54/iss4/2>

This Article is brought to you for free and open access by Akron Law Journals at IdeaExchange@UAkron, the institutional repository of The University of Akron in Akron, Ohio, USA. It has been accepted for inclusion in Akron Law Review by an authorized administrator of IdeaExchange@UAkron. For more information, please contact mjon@uakron.edu, uapress@uakron.edu.

DIGITAL CURB CUTS: TOWARDS AN INCLUSIVE OPEN FORMS ECOSYSTEM*

*Quinten Steenhuis[†] & David Colarusso^{‡§**^a}*

I.	Introduction	774
II.	Closing the Access to Justice Gap	775
	A. Technological solutions: online forms, guided interviews, and the birth of the interactive legal app	778
	B. Platforms for automating justice	779
	1. HotDocs	779
	2. A2J Author	780
	3. Docassemble	781
	4. Afterpattern and Documate	782
	5. Examples of interactive legal apps	783
	a. LegalZoom	783
	b. Hello, Divorce	784
	c. Upsolve	784
	C. Why the existing approaches are not enough	785
III.	Suffolk Law School's Document Assembly Line Project & Court Forms Online	786
	A. A call to action	787
	B. An assembly line for automated legal help	789
	C. Dividing up work	790
	D. How the interactive legal apps work	791

* This paper is dedicated to the memory of the Honorable Ralph Gants, Chief Justice of the Massachusetts Supreme Judicial Court. Not only was his example an inspiration, but the work described here would not have been possible without his leadership. He is sorely missed.

† Clinical Fellow, Suffolk University Law School, J.D., Cornell Law School (2008); B.S. Logic and Computation, B.S. Political Science, Carnegie Mellon University (2004). Before joining Suffolk Law School in March 2020, Quinten Steenhuis was a legal aid attorney for 12 years at Greater Boston Legal Services.

‡ Director, Legal Innovation and Technology Lab and Practitioner-in-Residence, Suffolk University Law School, J.D., Boston University School of Law (2011); M.Ed., Harvard Graduate School of Education (2002).

§ This ordering of authors was determined by coin flip.

E.	How email-based filing works—and does not work..	793
F.	A maturity model for interactive legal apps	794
G.	How the project has changed the lab and strengthened our pedagogy	796
H.	The impact of the work.....	798
IV.	A Vision for an Open-source Open-Standards Forms Ecosystem.....	799
A.	How standards are born	801
B.	On the shoulders of giants.....	802
C.	The value of agile development.....	805
D.	How e-filing standards could change the world	809
E.	The attorney's role in a world of legal software	810
V.	Conclusion	812

I. INTRODUCTION

Our country has an access to justice crisis. As much as 86% of civil legal needs are unmet by the legal system.¹ In this paper, we explore (1) the adoption of *digital curb cuts*, spurred by the COVID-19 pandemic; (2) how such interventions can mitigate the access to justice crisis; and (3) the effects the broad adoption of such interventions could have on legal practice post-pandemic. The online equivalent of their physical cousin, digital curb cuts are interventions that appear aimed to improve access for a specific population, but upon further examination, clearly have broader benefits.² Cities install physical curb cuts for wheelchair users, but they benefit parents pushing strollers and pedestrians of all abilities.³ In the same way, digital curb cuts have proliferated during the pandemic to allow remote participation in court but would remain valuable post-pandemic, especially for those with disabilities, childcare needs, or inflexible work schedules. When intentional, these curb cuts are the product of universal design, an approach that aims to produce built environments and systems that provide access to the greatest number of individuals regardless of

1. LEGAL SERVS. CORP THE JUSTICE GAP: MEASURING THE UNMET CIVIL LEGAL NEEDS OF LOW-INCOME AMERICANS 28 (2017), <https://www.lsc.gov/sites/default/files/images/TheJusticeGap-FullReport.pdf> [<https://perma.cc/9FC3-PS8X>]. This number has been persistent across decades. Ronald W Staudt, *All the Wild Possibilities: Technology Attacks Barriers to Access to Justice*, 42 L.A. L. REV. 1117 (2009).

2. Elizabeth Petrick, *Curb Cuts and Computers: Advocating for Design Equality in the 1980s*, 35 DESIGN ISSUES 23–32 (2019) (documenting the history of the curb cut metaphor in 1980s computing).

3. *Id.*

their ability, disability, age, income, and other unique needs.⁴ For many, court accessibility has always been a barrier. COVID-19 has, however, exposed for many the universal benefit of addressing this need.⁵ The legal community should take heed. In this paper, we describe a vision for a more inclusive ecosystem of technology solutions aimed at improving access to the courts and justice.

We will focus on a case study of Suffolk Law School's Document Assembly Line project and its Massachusetts implementation—Court Forms Online.⁶ The Document Assembly Line has rapidly developed over two dozen mobile-friendly interactive legal applications, providing step-by-step guidance that can be accessed from any internet-connected device at any time of day or night. The future of law practice must embrace this and similar tools that facilitate direct communication between courts, clients, and advocates, and the law will require practitioners who understand and are ready to leverage their operation.

The Assembly Line Project succeeded because it embraced the tools and processes at the center of the information technology revolution.⁷ We recognize that the work of attorneys, legal aid providers, and courts is the work of knowledge workers. The Assembly Line Project is staffed primarily by a volunteer team of attorneys, designers, software engineers, advocates, and law students from five continents.⁸ To date, these volunteers have donated thousands of hours of labor. This global collaboration and the rapid deployment of complex tools were made possible largely through open-source software and modern agile project management techniques.⁹

We will discuss how open-source technology has accelerated private-sector innovations and how courts can play a role in expanding access to justice by embracing many of these lessons—chiefly, a

4. Sheryl Burgstahler, *Universal Design: Implications for Computing Education*, 11 ACM TRANSACTIONS COMPUTING EDUC. 1–17 (2011).

5. For many it did not take a pandemic, but if this is the wakeup call people needed, then so be it. Consider B.W. Hesse, *Curb Cuts in the Virtual Community: Telework and Persons with Disabilities*, in PROCEEDINGS OF THE TWENTY-EIGHTH HAWAII INTERNATIONAL CONFERENCE ON SYSTEM SCIENCES 418–25 (1995).

6. CT. FORMS ONLINE, <https://courtformsonline.org> [<https://perma.cc/ABE5-6TJH>].

7. For a broader discussion of how the information technology industry has impacted society, see KLAUS SCHWAB, THE FOURTH INDUSTRIAL REVOLUTION (2017). Like Tim Hwang, we agree “that the specialist should control their tools, and not the other way around.” Tim Hwang, *Bestlaw: How a 3L Enhanced Westlaw*, LAW TECHNOLOGY TODAY (Dec. 12, 2014), <https://www.lawtechnologytoday.org/2014/12/bestlaw-westlaw/> [<https://perma.cc/KLD3-7QT2>].

8. The Document Assembly Line Project, *COVID-19 Response: The Document Assembly Line Project 1*, <https://suffolklitlab.org/doc-assembly-line/#team> [<https://perma.cc/GS5X-QAX4>].

9. See extended discussion *infra* section IV. C below.

commitment to open interoperability for e-filing and data standards more broadly. We will also explore the role project management and aspects of the Agile method can play in facilitating the implementation of new technologies.

Digital forms projects are not new. We find ourselves expressing the same optimism and embracing part of the same vision of the future as our predecessors 10, 20, and 30 years ago.¹⁰ The vast majority, including those with robust question-and-answer driven digital forms, however, require litigants to print and deliver the completed form by hand.¹¹ While

10. See, e.g., Staudt, *supra* note 1.

11. Among the largest state-wide interactive legal app repositories are those in New York State (<https://www.nycourts.gov/courthelp/DIY/index.shtml> [<https://perma.cc/SB9T-XPDE>]), Michigan (<https://michiganlegalhelp.org/> [<https://perma.cc/38CF-BZVT>]), and Illinois (<https://www.illinoislegalaid.org/> [<https://perma.cc/UZ3X-CGU2>]). None currently provide integrated electronic filing that files forms directly in a court's case management system to self-represented litigants. More than one state piloted the acceptance of forms by email during the pandemic, with clerks manually opening and then filing emailed forms by hand. E-filing projects can be expensive when started from scratch and require cooperation by either courts or for-profit vendors, like Tyler Technologies, and incentives may not align with free electronic filing for pro se litigants. While there is not space in this article for a full survey of all efforts towards digital delivery of forms, we believe it is likely that some courts who have built their own case management systems have such integrations for specific forms, and it should be noted that the Tyler *Guide and File* platform provides end-to-end filing for a limited number of forms.

We do note three examples of quasi-integrated electronic filing that were created by legal aid agencies with the assistance of Law Help Interactive. Two are focused on advocates, not pro se litigants. A third was a pilot that has been discontinued.

1. In the New York State Family Law Court, since 2014, court-based domestic violence advocates have been able to use a Law Help Interactive interview to enter information about domestic violence survivors prior to a case being docketed. The information goes directly into the court's case management system, saving critical time in the completion of restraining orders. This tool, however, is not open to the general public and does not include a full pleading. See Rochelle Klempner, *The Case for Court-Based Document Assembly Programs: A Review of the New York State Court System's "DIY" Forms*, 41 FORDHAM URBAN LAW JOURNAL 1189 (2016); Josh Waldman, *The Family Offense Petition Project: Increased Usage for New York State Tool for Advocates*, CONNECTING JUSTICE COMMUNITIES (Jan. 25, 2021), <https://www.connectingjusticecommunities.com/ny-family-offense-petition/2021/01/> [<https://perma.cc/6AZK-9QB2>].

2. In Washington, DC, beginning in March 2020, court personnel began collaborating with Law Help Interactive to login to a portal called "LHI Connect" to periodically download domestic violence filings. In some DC courts, the filings are received by email rather than through the LHI portal. In either case, the clerk then enters information about the case into a case management system by hand.

3. Law Help Interactive had an e-filing pilot project based in Minnesota's Hennepin County between 2012–2015 that integrated directly with the court's case management system. The project allowed filing of both a domestic violence and a civil nuisance pleading, eventually reaching about 2,400 filings per year. This pilot project involved sending XML data directly to the court's case management system, predating the modern Electronic Filing Service Partner (EFSP) relationship that Tyler Technologies now has in 8 states. LEGAL SERVICES NAT'L TECH. ASSISTANCE PROJECT, THE STATE OF E-FILING 2017 (Oct. 4,

these projects often fail to remedy this last mile problem, there is a history of forms projects that have tried to use e-filing to cross this divide.¹² Courts, however, have failed to embrace such projects, presumably because of constrained resources and their perceived complexity.

Lessons from the information revolution and the experience of court operation during the pandemic suggest actions the court can take to better foster the creation of such projects, often with relatively little effort by courts.¹³ Courts that adopt open standards for direct integration with interactive legal applications could accelerate the creation of a truly accessible online-forms ecosystem and lead to a world where equal access to courts is no longer the main barrier to justly resolving civil disputes.¹⁴

Using the Assembly Line Project as a case study, we will explore how the broader adoption of digital curb cuts could play out for access to justice, the practice of law, and the role of attorneys in such a connected world. Section II will briefly summarize past attempts to improve access to justice, with a focus on digital solutions—primarily interactive applications that help litigants complete court forms. Section III will describe the Assembly Line Project and its Massachusetts implementation, Court Forms Online, along with brief discussions of other partnerships. Section IV will describe our vision for an open-source, open-standards form ecosystem and how implementing it could decrease the access to justice gap. Section V concludes.

II. CLOSING THE ACCESS TO JUSTICE GAP

The *access to justice gap* describes the gap between the minority of individuals who receive adequate legal assistance and the majority who do not.¹⁵ The focus is on areas of civil legal need because, unlike representation in criminal matters where defendants are provided counsel

2017), <https://www.slideshare.net/LSNTAP/the-state-of-efiling-2017> [<https://perma.cc/A9XH-Y2SD>]. This project later led to the development of a document outlining best practices for e-filing on behalf of self-represented litigants. Richard Zorza, *E-Filing Best Practices Document Available — Please Help with the Evaluation*, RICHARD ZORZA'S ACCESS TO JUSTICE BLOG (Jan. 8, 2014), <https://accesstojustice.net/2014/01/08/e-filing-best-practices-document-available-please-help-with-the-evaluation/> [<https://perma.cc/UPM4-LFAD>].

12. Klempner, *supra* note 11.

13. CCJ/COSCA, *Guiding Principles for Post-Pandemic Court Technology*, PENNSYLVANIANS FOR MODERN CTS. (July 16, 2020), <https://www.pmconline.org/resources/guiding-principles-post-pandemic-court-technology> [<https://perma.cc/FU34-BQLJ>].

14. See David Anthony Colarusso & Erika J. Rickard, *Speaking the Same Language: Data Standards and Disruptive Technologies in the Administration of Justice*, 50 SUFFOLK U. L. REV. 387 (2017).

15. LEGAL SERVS. CORP., *supra* note 1 at 6.

as a matter of right,¹⁶ there is no federal right to counsel in civil matters.¹⁷ The best survey on this topic, performed by the Legal Services Corporation in 2017, found that as much as 86% of civil legal needs go unmet.¹⁸ The largest areas of need include housing, consumer debt, family law, and immigration.¹⁹ The need for civil legal help for the poor has been recognized for more than a century, though modern attention to this problem is tied closely to Lyndon Johnson's Great Society and the foundation of the Legal Services Corporation.²⁰ Since then, strategies to close the access to justice gap have focused primarily on increasing the number of lawyers available to help low-income litigants. This has included direct funding of civil legal aid and a movement towards so-called Civil Gideon, as well as efforts to experiment with alternative legal representation such as limited assistance representation and mandatory or highly encouraged pro bono service. It is worth noting that some states mandate representation for a subset of civil matters.²¹

Given the immense scale of unmet legal needs, it is not even clear that providing representation to all of those facing legal issues is possible.²² We also need to think carefully about whether most consumers want one-on-one assistance from a lawyer for all their legal needs. Just as Americans have turned away from tailors and cobblers, some Americans may be happier and better served with less expensive do-it-yourself alternatives to full representation.²³

Access to justice need not mean access to an attorney, particularly via traditional full-service retainers.²⁴ To stretch the resources of understaffed legal aid organizations, a number have relied on telephone

16. See *Gideon v. Wainwright*, 372 U.S. 335 (1963).

17. Right to counsel in a narrow subset of civil matters does, however, exist as a matter of state law, although these areas of law usually share features with criminal law in that liberty interests are at stake. For example, Massachusetts provides counsel by right for civil commitment and child requiring cases. See MASS. GEN. LAWS ch. 123, § 12(b), ch. 119 § 39F (2019) respectively.

18. LEGAL SERVS. CORP., *supra* note 1.

19. LEGAL SERVS. CORP., *supra* note 1 at 23.

20. See Warren E. George, *Development of the Legal Services Corporation*, 61 CORNELL L. REV. 681 (1975).

21. See *Gideon v. Wainwright*, 372 U.S. 335 (1963).

22. "Even if lawyers became more willing to work for free, U.S. lawyers would have to increase their pro bono work from an annual average of thirty hours each to over nine hundred hours each to provide some measure of assistance to all households with legal needs." Gillian K. Hadfield, *Innovating to Improve Access: Changing the Way Courts Regulate Legal Markets*, 143 DAEDALUS 83, 87 (2014).

23. Mary Juetten, *Unauthorized Practice of Law Claims Threaten Access to Justice*, FORBES (May 8, 2018), <https://www.forbes.com/sites/maryjuetten/2018/05/08/unauthorized-practice-of-law-claims-threaten-access-to-justice/> [https://perma.cc/GBK5-PTQR].

24. James Sandman, *Rethinking Access to Justice*, 68 VIRGINIA LAWYER 28 (2014).

advice hotlines²⁵ and brief service clinics. Legal aid organizations, court service centers, and community organizations have a long history of producing written materials, including books and websites, that provide legal information and guidance.²⁶ For a long time, these have also included simple paper forms with instructions. While legal information on its own might solve only a few legal problems, more recently, legal aid organizations have innovated by creating a wide range of interactive tools that deliver legal information and assistance while helping litigants avoid mistakes.

Over the past two decades, the Legal Services Corporation has helped fund a constellation of technology projects aimed at addressing the access to justice gap through its Technology Initiative Grant Program.²⁷ A requirement of this funding was the mandate that grantees attend an annual conference where they could share the results of their work.²⁸ As early as the year 2000, this conference began to build a community of technologists and practitioners focused on solving the needs of low-income civil litigants. This community predates the civil tech movement that swept executive branch agencies in the 2010s.²⁹

It is worth comparing the nature of these executive actions with the approach and resources available. Executive branch agencies are nimbler than the judiciary, the latter lacking a chief executive able to quickly steer the ship of state.³⁰ Additionally, executive branch civic tech has embraced the digital services model,³¹ bringing technologists into government both to implement technology projects and to help coordinate vendor

25. The UK has a special history of brief advice hotlines—the Citizens Advice Bureaux—as a method of closing the access to justice gap. Dolores Korman Sloviter, *Let's Look at Citizens Advice Bureaux*, 65 A.B.A. J. 567 (1979).

26. *About the Statewide Website Assessment Public Report*, LEGAL SERVS. CORP., <https://www.lsc.gov/node/4534> [<https://perma.cc/2D4X-C844>].

27. *Technology Initiative Grant Program*, LSC - LEGAL SERVICES CORPORATION, <https://www.lsc.gov/node/456> [<https://perma.cc/B8G5-AXHX>].

28. See, e.g., 2020 Technology Initiative Grant (TIG) Special Grant Terms and Conditions (2020), LEGAL SERVS. CORP., <https://www.lsc.gov/sites/default/files/attach/2020/11/2020-TIG-Terms-and-Conditions.pdf> [<https://perma.cc/A82M-6EPG>].

29. Matt Stempeck, *A Timeline of Civic Tech Tells a Data-Driven Story of the Field*, CIVIC HALL (May 28, 2019), <https://civichall.org/civicist/how-civic-tech-has-evolved-over-the-last-25-years/> [<https://perma.cc/XE5L-2L9B>].

30. DIGITAL GOVERNMENT: BUILDING A 21ST CENTURY PLATFORM TO BETTER SERVE THE AMERICAN PEOPLE, <https://obamawhitehouse.archives.gov/sites/default/files/omb/egov/digital-government/digital-government.html> [<https://perma.cc/LT8V-FR6K>].

31. *Id.*

interactions, whereas courts have continued to rely largely on outsourced technical expertise.³²

The civic technology world, growing up in the age of technology giants like Google, Facebook, and Amazon, has drawn more heavily on a professionalized technology corps than the legal technology access to justice space.³³ On the legal side, it has been more common to draw on lawyer-coders than professionally trained technologists.

A comprehensive history of civil legal tech is beyond the scope of this paper although several illustrative accounts exist.³⁴ We will restrict our exploration here to direct antecedents of the Assembly Line Project and a sample of adjacent offerings in the private sector.

A. Technological solutions: online forms, guided interviews, and the birth of the interactive legal app

Lauritsen and Steenhuis³⁵ use the term “interactive legal application” or “app” to describe a wide range of tools that: (1) ask a series of simple fact-based questions; (2) ask relevant follow-up questions and skip irrelevant questions; (3) use the factual information provided by the user to correctly complete a legal form, provide tailored information, or provide another legal service; and (4) provide a just-in-time learning component to enable a user to make informed choices while completing a legal form. These tools are also called wizards, guided interviews, or sometimes simply document automation tools. American readers are usually familiar with TurboTax, a document automation tool that assists with correctly filling in United States income tax forms.³⁶ While there are many platforms to author such apps that have appeared and disappeared

32. See e.g., Todd Wallack, *Call it Big Data’s Big Dig — \$75m, 19 Years, Still Not Done*, THE BOS. GLOBE (April 11, 2015, 9:01 p.m.) <https://www.bostonglobe.com/metro/2015/04/11/massachusetts-courts-long-delayed-computer-system-may-leave-public-out/S7tZcbvBDFd3nho7XvEZPO/story.html> [https://perma.cc/D6VV-AZHY].

33. See *infra* Section IV.C.

34. See, e.g., Staudt, *supra* note 1.

35. Marc Lauritsen & Quinten Steenhuis, *Substantive Legal Software Quality: A Gathering Storm?*, in ICAIL ‘19 PROCEEDINGS OF THE SEVENTEENTH INTERNATIONAL CONFERENCE ON ARTIFICIAL INTELLIGENCE AND LAW 52 (2019).

36. Austan Goolsbee, *The Turbo Tax Revolution: Can Technology Solve Tax Complexity?*, THE CRISIS IN TAX ADMINISTRATION 126 (Henry Aaron & Joel Slemrod eds., 2004). Note that the use of Turbo Tax as a generic descriptor is problematic given the underpinnings of the business model behind the product. See Jason Tashea, *Stop Comparing Your Startup to TurboTax*, ABA JOURNAL (Mar. 25, 2019, 6:30 AM CDT), <https://www.abajournal.com/lawscribbler/article/stop-comparing-your-startup-to-turbotax> [https://perma.cc/HE4D-2B3C].

over time, the most prominent in the access to justice space are HotDocs, A2J Author, and Docassemble.³⁷

These tools have been highly effective at serving many self-represented litigants. Law Help Interactive, which hosts both A2J Author and HotDocs forms, serves as the largest host for these interactive legal applications, assembling half a million forms for self-represented litigants each year.³⁸

B. Platforms for automating justice

The world of interactive legal apps is popular enough that several dedicated software applications help software developers build legal-focused question-and-answer-driven applications. There are too many platforms to enumerate here.³⁹ Below we briefly summarize some of the most popular apps, both for-profit and non-profit.

1. HotDocs

HotDocs, one of the earliest tools for automating legal forms, is still widely used today.⁴⁰ It was originally designed as a desktop application. In the most widely used version in the access to justice space, HotDocs Server version 11, has been ported to the Internet, but it is challenging to use on a mobile device. Text is cramped and buttons are difficult to interact with. It offers a page-based user interface, with each screen consisting of several questions and providing free navigation among each question, akin to flipping through the pages of a multi-page form.

The traditional HotDocs program is designed for use by litigators and paralegals. It includes the ability of an author to provide contextual help and graphics. Visually, it still looks like its 1990s desktop original and does not offer the ease of use that modern consumers expect, but it has the benefit of a wide base of experienced developers.

37. The Legal Services Corporation has specifically called out each of these three technologies as preferred for its Technology Initiative Grants projects. See *Technology Initiative Grant Program*, LEGAL SERVS. CORP. (Mar. 21, 2019), <https://web.archive.org/web/20190321190234/https://www.lsc.gov/grants-grantee-resources/our-grant-programs/tig> [https://perma.cc/56NX-GX4H].

38. Tina Rosenberg, Opinion, *Legal Aid With a Digital Twist*, N.Y. TIMES (June 1, 2016), <https://www.nytimes.com/2016/06/01/opinion/legal-aid-with-a-digital-twist.html> [https://perma.cc/5B7X-83F6].

39. For a closer look at a few others, see Lauritsen & Steenhuis, *supra* note 35.

40. *HotDocs Classic*, HOTDOCS (2021), <https://www.hotdocs.com/products/hotdocs-classic/> [https://perma.cc/VK8H-Y5DR].

Interviews that are authored in HotDocs can be run for free on the LawHelpInteractive platform,⁴¹ but all developers who want to author new HotDocs applications, including non-profit developers, must purchase a monthly subscription.

2. A2J Author

A2J Author is a user-friendly alternative to HotDocs. It grew out of a project to produce an automated tool to assist litigants filing for divorce in Cook County, Illinois.⁴² The first standalone version of the tool cost “hundreds of thousands of dollars.”⁴³ The desire to produce thousands of these tools with much less effort encouraged the authors to develop a general-purpose platform. One of its prominent features is a friendly digital avatar and road metaphor. Instead of presenting a user with several questions at once, it asks one question at a time. It now includes a mobile interface.

A2J Author has succeeded in its goal of producing many tools.⁴⁴ A2J Author classes have been taught in law schools, and frequent free training is available to help legal aid lawyers learn the tool.⁴⁵ The first version of A2J Author relied on Macromedia Flash, a convenient tool for slick, user-friendly application development, but one that preceded mobile phones. In 2017, A2J Author lost some momentum in the effort to become mobile-friendly but has caught up, and in its most recent iteration, it works smoothly on mobile devices using HTML5 technology.⁴⁶

A2J Author is a product of Chicago Kent Law School and is actively developed by CALI, the Center for Computer-Assisted Legal Instruction.⁴⁷ Starting in 2021 A2J Author was made available under a

41. See LAW HELP INTERACTIVE, <https://lawhelpinteractive.org/> [<https://perma.cc/JNH9-VRMB>].

42. Staudt, *supra* note 1.

43. Staudt, *supra* note 1 at 116.

44. As of February 2021, CALI’s website announces that A2J Author interviews have been used more than 4 million times. See *What is A2J Author?*, CALI, <https://www.cali.org/faq/15690> [<https://perma.cc/CY3R-6HNP>].

45. Marc Lauritsen, *Roads, Towers, and Online Legal Help*, MEDIUM (Jan. 10, 2020), <https://marclauritsen01.medium.com/roads-towers-and-online-legal-help-57957a25767> [<https://perma.cc/K499-ZFKX>].

46. Sarah Glassmeyer, *We’re Rolling out A2J Author Version 5.0!!*, CALI (Jul. 31, 2014, 1:20 PM), <https://www.cali.org/blog/2014/07/31/we%E2%80%99re-rolling-out-a2j-author-version-50> [<https://perma.cc/6MVD-S3MB>].

47. Staudt, *supra* note 1.

GNU AGPL v3.0 license.⁴⁸ Developers can also host their interviews for free at A2J.org or on LawHelpInteractive.org.⁴⁹

3. Docassemble

Docassemble is a tool conceived of and primarily maintained by a solo developer, Jonathan Pyle, at Philadelphia Legal Assistance.⁵⁰ Unlike the graphical tools HotDocs and A2J Author, Docassemble is a highly flexible web framework that is heavily optimized for building interactive legal applications. It allows both rapid development and the ability to add custom code.

Of the major platforms, Docassemble has by far the most permissive license. The famous MIT License allows any entity, commercial or non-profit, to use and modify the software if they include an acknowledgment of the original author.⁵¹

It is common for Docassemble apps to be released in a reusable library form. To achieve this, Docassemble integrates with GitHub, a popular platform for software developers to collaborate and share code.⁵² This allows a Docassemble author to view and integrate code by other authors that use a compatible software license. In turn, Docassemble programs frequently make use of the wider constellation of open-source libraries that are part of the Python software ecosystem.⁵³

Example Python libraries integrated into Docassemble apps include: a decades-long research project that can conjugate verbs, make nouns plural, and do other advanced natural language processing in four

48. Free Software Foundation, Inc., *GNU Affero General Public License Version 3*, OPEN SOURCE INITIATIVE (2007), <https://opensource.org/licenses/AGPL-3.0> [https://perma.cc/VH3T-ZX8A]; Mike Mitchel, *Update License to GNU AGP v3.0 and Link in Readme.md* · CCALI/a2jdat@acbfb9a, GitHub (2021), <https://github.com/CCALI/a2jdat/commit/acbf9af281a7dbd2f1b5a11280bd30b651917c3#diff-4673a3aba01813b595de187a7a6e9e63a3491d55821606feed9f13a10c188a1d> [https://perma.cc/PSS3-3JTQ].

49. For a history of LawHelpInteractive and its hosting of HotDocs and A2J Author interviews, see Lauritsen, *supra* note 45.

50. Jonathan Pyle, *Docassemble*, DOCASSEMBLE, <http://docassemble.org/> [https://perma.cc/325C-H3X8].

51. *The MIT License*, OPEN SOURCE INITIATIVE, <https://opensource.org/licenses/MIT> [https://perma.cc/EX8J-93HC].

52. *GitHub: Where the World Builds Software*, GITHUB (2021), <https://github.com> [https://perma.cc/SA8U-JSFG].

53. Rick Hoving, Gabriel Slot, & Slinger Jansen, *Python: Characteristics Identification of a Free Open Source Software Ecosystem*, in 2013 7TH IEEE INTERNATIONAL CONFERENCE ON DIGITAL ECOSYSTEMS AND TECHNOLOGIES (DEST) 13 (2013); Jonathan Pyle, *External Data*, DOCASSEMBLE (2021), <http://docassemble.org/docs/external.html> [https://perma.cc/K8PA-WJGY].

languages;⁵⁴ track (and therefore adjust court dates) based on holidays around the world;⁵⁵ extract text from images and add Bates numbering to uploaded exhibits; and autocomplete addresses as one types based on the device's location.⁵⁶

A Docassemble app, especially one that uses external Python features, can be thought of as a long collaboration with potentially hundreds or thousands of researchers and developers around the world. All of them releasing their work to the world for free.

4. Afterpattern and Documate

Docassemble's permissive license has led to the creation of two commercial platforms that provide a user-friendly overlay to Docassemble: Afterpattern, formerly Community Lawyer,⁵⁷ and Documate.⁵⁸

The added value for both products is the ease of use of a graphical environment for rapid automation by non-technical users, at the cost of waiting for the platform author to add new features. The two platforms are both similar: they provide a subset of Docassemble's features for automation of legal forms in an easy to use drag-and-drop authoring environment, together with a marketplace and some bundled integrations, including connections to payment systems, case management systems, and other tools already used by small and solo law firms.

Unique to one of the two platforms, Afterpattern promoted remix culture by requiring users of its free tier to make their work accessible to others. If the author allowed, another author could import and modify the code, without losing the simplified graphical interface. This has allowed for a culture of sharing to develop. For example, during the pandemic, the Centers for Disease Control and Prevention issued an eviction moratorium

54. Tom De Smedt & Walter Daelemans, *Pattern for Python*, 13 J. MACHINE LEARNING RES. 2063 (2012).

55. Maurizio Montel, *Python-Holidays*, GITHUB (2021), <https://github.com/dr-prodigy/python-holidays> [<https://perma.cc/P9F2-XSJA>].

56. Jonathan Pyle, *Setting Variables (and Doing Other Things) with Questions*, DOCASSEMBLE (2021), <http://docassemble.org/docs/fields.html> [<https://perma.cc/K24X-KLDJ>].

57. AfterPattern no longer uses Docassemble as the underlying engine. Still, its design and structure remain heavily influenced by its original iteration as a Docassemble front-end. In November 2021, Afterpattern was acquired by NetDocuments and is slated for integration with the NetDocuments platform. *NetDocuments Inspires Productivity with Acquisition of Afterpattern Document Automation*, NETDOCUMENTS (2021) <https://www.netdocuments.com/press-releases/netdocuments-inspires-productivity-with-acquisition-of-afterpattern-document-automation> [<https://perma.cc/FE2D-J5BJ>].

58. See AFTERPATTERN, <https://afterpattern.com/> [<https://perma.cc/78ZQ-XPNB>]; see also DOCUMATE (2021), <https://www.documate.org/> [<https://perma.cc/9WYT-7CQK>] respectively.

that requires tenants to sign a simple declaration of their right to halt an eviction.⁵⁹ Kentucky Equal Justice Center, a legal aid provider, built a simple app to solve this problem on Afterpattern. That app was then remixed by legal aid providers in other states who wanted to add local resources.⁶⁰

Documate does not explicitly encourage remixing, but it has taken the approach of allowing advanced users of the platform to edit their code in the native Docassemle environment. That means a sophisticated author still can make use of custom Python engineering and import Docassemle packages created by third parties.

5. Examples of interactive legal apps

Interactive legal apps are appealing to legal aid programs and non-profits because they allow them to serve many more people than they can through direct representation. Creating a legal app is a way for a private attorney to build recurring revenue and reduce costs. While most of the private legal market still relies on the billable hour, for-profit law firms have also entered this space in innovative ways. Forward-thinking law firms of all sizes have begun to build their own legal apps.

The following is a brief list of notable interactive legal apps, including both for-profit and not-for-profit.⁶¹

a. LegalZoom

LegalZoom is an early commercial pioneer in building legal apps.⁶² LegalZoom offers a wide range of question-and-answer-driven legal

59. Ben Carter, *Helping Renters*, AFTERPATTERN (2020), <https://info.afterpattern.com/case-studies/helping-renters> [https://perma.cc/BTJ7-WA7S].

60. Ben Carter, author of the app, reports that it was duplicated by legal aid providers in Cleveland and Indiana.

61. For a longer, but still incomplete, list of non-profit apps in this space, see an inventory conducted here: *Summer 2020 Automated Forms Audit*, A2J AUTHOR, <https://www.a2jauthor.org/content/summer-2020-automated-forms-audit> [https://perma.cc/W344-3SQH]. See also Rebecca L. Sandefur, *Legal Tech for Non-Lawyers: Report of the Survey of US Legal Technologies*, AM. BAR FOUND. (2019), http://www.americanbarfoundation.org/uploads/cms/documents/report_us_digital_legal_tech_for_nonlawyers.pdf [https://perma.cc/E5DW-KYZX].

62. Although outside of the scope of this article, it is worth noting that LegalZoom is also a pioneer in establishing that these tools are not the unauthorized practice of law. For an extensive discussion, see Emily McClure, *LegalZoom and Online Legal Service Providers: Is the Development and Sale of Interactive Questionnaires that Generate Legal Documents the Unauthorized Practice of Law?*, 105 KY. L.J. 563 (2017).

forms for simple situations, from incorporation to wills and trusts.⁶³ The cost of tools starts at around \$100.⁶⁴ Their primary product includes the review of completed forms by attorneys. Attorney review is also available, either bundled or as an add-on service.

b. Hello, Divorce

Owner Erin Levine ran a small family firm in California before joining Duke Law School's legal startup accelerator program.⁶⁵ The Hello, Divorce tool complements her existing family law practice by offering a monthly subscription that includes basic forms to file for divorce. The subscription price ranges from about \$100 each month for unlimited form use up to a flat fee of \$4,500 for forms over the lifetime of the case with added assistance.⁶⁶ Compared to the average cost of a divorce (\$15,000),⁶⁷ this is an affordable option for many families.

The Hello, Divorce website focuses on a great deal more than the interactive legal app that assembles the basic forms, which they brand the *Divorce Navigator*. It includes numerous articles and videos aimed at helping litigants navigate the divorce process, many of which are not behind a paywall. These serve both as a value add for subscribers and content marketing.

Hello, Divorce was built primarily on the Documate platform, which as we have noted is itself built atop Docassemble.

c. Upsolve

Upsolve, a tool that helps people with low incomes file for bankruptcy, is an exemplar of a non-profit built around an interactive legal app. It was recently named one of the top inventions of 2020 by Time Magazine.⁶⁸ Like Hello, Divorce, Upsolve goes beyond legal forms to the building of an ongoing relationship centered around a product. Among

63. *LegalZoom: Start a Business, Protect Your Family: LLC, Incorporate, Wills, Trademark, Legal Advice*, LEGALZOOM (2021), <https://www.legalzoom.com/> [https://perma.cc/DX8P-RQ4D].

64. *Id.*

65. Themis Solutions, Inc., *How an Attorney-Turned-Entrepreneur is Using Legal Technology to Reshape Divorce Law*, CLIO (2020), <https://www.clio.com/customers/how-an-attorney-turned-entrepreneur-is-using-legal-technology-to-reshape-divorce-law/> [https://perma.cc/JRL3-8VQZ].

66. *Hello Divorce: Plans and Pricing*, HELLO DIVORCE, <https://hellodivorce.com/membership-options/> [https://perma.cc/9Z6S-XAJE] (2022).

67. Erin McDowell, *The Average Cost of Getting Divorced Is \$15,000 in the US*, BUS. INSIDER (Aug. 1, 2019, 10:58 AM), <https://www.businessinsider.com/average-cost-divorce-getting-divorced-us-2019-7> [https://perma.cc/7H85-UVBN].

68. *Upsolve: The Best Inventions of 2020*, TIME (Nov. 19, 2020, 8:56 AM), <https://time.com/collection/best-inventions-2020/5911367/upsolve/> [https://perma.cc/J4UB-K7R4].

Upsolve's simple innovations: an active Facebook group; use of video testimonials; a referral program that allows applicants who do not qualify based on income to help fund service for those who do; and integration with credit reporting agencies to help bankruptcy applicants save time in listing debts.⁶⁹

Upsolve was built on the Docassemble platform, with some of the development provided by Docassemble's author, Jonathan Pyle.

C. Why the existing approaches are not enough

While the existing legal app ecosystem is astonishing, there is still a veritable mountain of unmet legal need. A lot of inefficient work is done from scratch with each new forms project. Specifically:

- Existing tools do not promote code reuse. There is a lot of redundant and repetitive work:
 - Variable names are reinvented by each interview author, even if the concepts are the same.
 - Questions are often written from scratch too because popular platforms do not offer a way to select from standard questions.⁷⁰
- While there is a great deal of information sharing inside the access to justice world, the work is not heavily standardized. Conventions are ad hoc and vary from developer to developer.
- Work is not easily divided into discrete units. Traditional forms projects use one or a small team of automators. It is challenging for two authors to work simultaneously, even in unrelated parts of the tool.

69. Danny Crichton, *YC-Backed Upsolve Is Automating Bankruptcy for Everyone*, TECHCRUNCH (Jan. 16, 2019, 9:01 AM), <https://social.techcrunch.com/2019/01/16/upsolve-bankruptcy/> [https://perma.cc/K5TE-AQGD]; Upsolve Bankruptcy Community, <https://www.facebook.com/groups/upsolveusers/> [https://perma.cc/KY6P-3NLW]; Rohan Pavuluri, *Why Does Upsolve Believe in Earning Revenue?* (Aug. 1, 2020), <https://upsolve.org/learn/being-sustainable/> [https://perma.cc/SZ9S-7W9S]; Quinten Steenhuis, *7 Lessons for Building User Friendly Guided Interviews*, NONPROFIT TECHY (Jun. 27, 2018), <https://www.nonprofittechy.com/2018/06/27/7-lessons-for-building-user-friendly-guided-interviews/> [https://perma.cc/28HR-LCES].

70. This functionality, however, is offered in other similar tools such as Survey Monkey. See *Question Bank*, SURV. MONKEY (2021), https://help.surveymonkey.com/articles/en_US/kb/What-is-Question-Bank [https://perma.cc/9TJ8-M67E].

- Interactive legal apps collect a great deal of structured data, but deliver the data to the court on paper or as a PDF.⁷¹
- Self-represented litigants find it challenging to deliver work to the court or to perfect service.⁷²

By working together with open source tools and techniques, we can reduce inefficiencies and accelerate work to close the access to justice gap.⁷³

III. SUFFOLK LAW SCHOOL'S DOCUMENT ASSEMBLY LINE PROJECT & COURT FORMS ONLINE

The authors of this paper have worked together on a project to reduce the access to justice gap that fully embraces open source and agile development techniques during the pandemic: Court Forms Online. Court Forms Online is a website that provides residents of Massachusetts interactive access to court forms.⁷⁴ The forms provide step-by-step guidance for several legal processes. These tools provide more than just form-filling. The experience is closer to sitting across the table from an experienced attorney than filling in a blank form on paper.⁷⁵

The most complex tool is a domestic violence petition for a protection order, which generates eight forms addressing custody, child support, and related issues in addition to the core protection order.⁷⁶ Perhaps the simplest of the tools allowed a tenant anywhere in the United States to determine if they qualified for protection by the Centers for Disease Control and Prevention's September 2020 order creating a

71. Jason Tashea wrote about this concept recently. Jason Tashea, *The Justice System as a Digital Platform*, THE COMMONS (Sept. 30, 2020), <https://wearecommons.us/2020/09/30/the-justice-system-as-a-digital-platform/> [<https://perma.cc/S35U-LD2B>].

72. Staudt, *supra* note 1, elegantly summarizes the challenges caused by a lack of e-filing integration.

73. This insight is not unique insight and echoes Cyd Harrell's description of open source benefits in the context of civic technology. CYD HARRELL, A CIVIC TECHNOLOGIST'S PRACTICE GUIDE 23 (2020).

74. Document Assembly Line Project, *Court Forms Online (MassAccess)*, CT. FORMS ONLINE MASSACCESS <https://courtformsonline.org/> [<https://perma.cc/QLR9-QJXZ>].

75. Quinten Steenhuis, *Creating a Clinic in a Box: Why I Fell in Love with Building Online Legal Apps*, MEDIUM (Sept. 8, 2020), <https://medium.com/legal-design-and-innovation/creating-a-clinic-in-a-box-why-i-fell-in-love-with-building-online-legal-apps-8b56a6e0ed1c> [<https://perma.cc/63Z8-5YSH>].

76. See Document Assembly Project, *Domestic Violence*, CT. FORMS ONLINE MASSACESS, <https://courtformsonline.org/dv/#209A> [<https://perma.cc/J6V7-9CAZ>].

moratorium on evictions and helps the tenant send a declaration protecting their rights to their landlord.⁷⁷

The website was built as a part of the Assembly Line Project, an international collaboration led by the Legal Innovation and Technology Lab at Suffolk University Law School, in March of 2020 in partnership with the Massachusetts Access to Justice Commission.⁷⁸ About 200 individuals from five continents participated in the project, including volunteers from Suffolk Law School, Greater Boston Legal Services, Massachusetts Law Reform Institute, Code for Boston, Northeast Legal Aid, Theory and Principle, the NuLawLab at Northeastern University, AppGeo, Bentley University Court UX Team, Documate, and AfterPattern.⁷⁹

A. A call to action

Court Forms Online began in response to a call to action from the late Chief Justice of the Supreme Judicial Court of Massachusetts, Ralph Gants.⁸⁰ “Thou shall not ration justice,” the letter begins,⁸¹ quoting Judge Learned Hand. Justice Gants urged the bar to rise to the challenge to find ways to keep serving the public when physical buildings were closed.⁸² “We know many are being hurt: defendants in custody awaiting trial, crime victims awaiting closure to their ordeal, and children in limbo awaiting custody or adoption decisions, to name only a few. And we know we must do what we can to limit their pain.”⁸³

The urgent need caused by the pandemic was clear. Courts would remain open for emergency business, but the actual buildings would not. Would-be litigants trying to get protection against abusers or abusive property owners would be stuck outside in the cold. With survivors of domestic abuse, this was literal. An early story from survivor support agencies was of a woman who waited for hours on the courthouse steps in

77. See Document Assembly Project, *Housing*, CT. FORMS ONLINE MASSACCESS, <https://courtformsonline.org/housing/#CDC> [<https://perma.cc/E3AT-N6BE>].

78. See Document Assembly Project, *About*, CT. FORMS ONLINE MASSACCESS, <https://courtformsonline.org/about> [<https://perma.cc/8JUQ-7SBZ>].

79. Notable individual contributors included Maeve MacGlinchey, a volunteer from South Africa who worked as a full-time project manager six time zones away. Other volunteers participated from The Hague, The Netherlands; Australia; India; Ireland; and cities across the United States.

80. Chief Justice Ralph D. Gants, *Letter to the Bar from Supreme Judicial Court*, MASS.GOV (Mar. 19, 2020), <https://www.mass.gov/news/letter-to-the-bar-from-supreme-judicial-court-chief-justice-ralph-d-gants> [<https://perma.cc/TW8Y-PFSM>].

81. *Id.*

82. *Id.*

83. *Id.*

late winter of 2020 before receiving a blank set of forms and no additional assistance to fill out an abuse protection petition.⁸⁴

In response to the Chief's call, Suffolk Law Dean, Andrew Perlman, asked members of the law school's Legal Innovation and Technology community to brainstorm how we could help. Given the physical closing of the courts, we immediately drew inspiration from the success of the online software tool MADE, a robust step-by-step process to help tenants respond to an eviction case, created by co-author Quinten Steenhuis during his time at Greater Boston Legal Services.⁸⁵ MADE was built over the course of about a year and leveraging about \$100,000 in staff time. That would be too slow to help during the pandemic. If we helped, it would be necessary for us to find partners and processes that could multiply and speed up our work. Given our experience working with teams of students and on distributed collaborations such as open-source software, we came to believe the school's Legal Innovation and Technology (LIT) Lab, which we staffed, and later the Massachusetts Access to Justice Commission's COVID-19 taskforce, could serve as conveners and guides for a volunteer effort.

Immediately following the Chief's call, the COVID task force contacted us with an ask for work similar to the results of our brainstorming. The Lab's director, David Colarusso, was named a co-chair of the taskforce's access to courts committee, and the Lab partnered with the Commission to create the Document Assembly Line Project. Our goal became to automate about 30 core processes, identified by the Trial Court as emergencies, and allow for their e-filing with the court.⁸⁶ Later in the pandemic, the Appeals Court collaborated with us on more processes, resulting in an administrative order naming the Assembly

84. We learned of this powerful incident, and several similar ones, through oral reports from multiple legal aid attorneys, although the name of the client was not disclosed to protect privacy. It is a good illustration of the delays and inconsistent procedures that the sudden closing of courts to physical access caused at the beginning of the pandemic.

85. See *Massachusetts Defense for Eviction (MADE): Self-Guided Eviction Help*, GREATER BOSTON LEGAL SERVS. (2021), <https://gbls.org/MADE> [<https://perma.cc/92VG-CMEL>]; Quinten Steenhuis, *MADE in Boston; Replicable Around the World?*, LAW, TECH. & ACCESS JUST. (May 16, 2019), <https://law-tech-a2j.org/odr/made-in-boston-replicable-around-the-world/> [<https://perma.cc/GLQ8-XPW5>].

86. It is worth noting, that the term e-filing as used here includes the email submission of filings. Unlike true e-filing, email provides for electronic delivery, but a court clerk still needs to manually enter information about the case in the court's docket. See section III.E. This goal was memorialized in a Memorandum of Understanding (MOU) with the Trial Court. In what is likely a record, the Court drafted the MOU spelling out the relationship between Suffolk and the Court within two days of the topic being raised. It would be six weeks before the MOU was eventually signed, but the Court's interest in taking action was palpable.

Line's work as an official means of filing.⁸⁷ Throughout the pandemic, the Assembly Line has also created a collection of pro se materials independent of our agreements with the courts not intended for e-filing.

B. An assembly line for automated legal help

To speed up development, we thought carefully about what tools and skills would be needed for the project to succeed. We coalesced around a simple concept: we would divide the process of automating a form into several small steps that could be done independently, and then put out a call for volunteers. We chose a few tools early on. First, we chose the Docassemble platform.⁸⁸ LIT Lab staff were already familiar with the platform and had seen its success with Upsolve and MADE. Docassemble is built with the needs of software developers in mind. That means a steeper learning curve. However, it also makes Docassemble easier to automate. The fact that Docassemble is released under an open-source license also weighed heavily in the decision. The LIT Lab, which often works on software projects, defaults to releasing work under permissive terms, preferring the MIT license where appropriate.

We used Trello, a popular web-based implementation of a Kanban board, to organize and divide work.⁸⁹ Kanban is one of the principal tools in agile software development.⁹⁰ Part of Toyota Automotive's Kaizen approach to process improvement, it is now widely adopted in the software industry.⁹¹ The concept is simple: each unit of work is assigned a card. The developer creates multiple *lists* or columns that represent distinct stages of production. Cards move from one *list* to the next as each step in the manufacturing process is completed. The benefit of a tool like Kanban is that backlogs and delays in the work are very visible. It is easy to see what parts of your workflow require improvement or optimization as cards pile up on one list without moving to a new list. These cards can

87. See Massachusetts Appeals Court, *Appeals Court Administrative Order 20-5*, MASS.GOV (2021), <https://www.mass.gov/info-details/appeals-court-administrative-order-20-5> [https://perma.cc/ZK2F-6PB5]. Such an order was not required for the Trial Court work as they did not have a single mandated method for e-filing. *Id.*

88. To provide some measure of how quickly the decision to use Docassemble was reached, the project's name—The Document Assembly Line—was originally coined as an homage to Docassemble . . . DocAssembly.

89. Atlassian, *Trello*, TRELLO (2021), <https://trello.com> [https://perma.cc/E8CW-DXUA].

90. See Bogdan-Alexandru Andrei, Andrei-Cosmin Casu-Pop, Sorin-Catalin Gheorghe, & Costin-Anton Boiangiu, *A Study on Using Waterfall and Agile Methods in Software Project Management*, 13 J. INFO. SYS. & OPERATIONS MGMT. 125 (2019).

91. *Id.*; see Jagdeep Singh & Harwinder Singh, *Kaizen Philosophy: A Review of Literature* 24 (2009).

be as simple as sticky notes on a whiteboard, but several software tools allow remote, digital collaboration using Kanban.

We also relied heavily on regular meetings over Zoom and used Slack as an asynchronous, quasi-real-time collaboration platform. We recorded and continue to record the majority of our Zoom meetings. As of this writing, over one hundred such meetings can be found on the Lab's YouTube Channel.⁹²

When possible, we made use of tools that were either free or freely available to us. Our use of Trello and Slack leveraged their free tier offerings, and we made use of university-issued tools like Zoom. We also expressed a preference for open source (free) tools such as Docassemble.

This focus on tooling extended to a preference for modern technology stacks and flexible and low-cost hosting environments such as Amazon's LightSail.⁹³ In many ways, our approach paralleled that suggested by the Digital Services Playbook.⁹⁴

C. Dividing up work

The basic process of automating a legal form on the Document Assembly Line consists of the following steps:

1. Review and categorize the form. Understand who uses it and how it can be used.
2. Label the fields (blank spaces) on the form so that the computer can recognize them. Developers are provided detailed guidance and pre-determined labels for most fields.
3. Create a simple draft of a step-by-step interview to provide answers to all the fields. Our major innovation is that this process is automated if the fields have been correctly labeled.
4. Work with an expert to review and improve clarity and understand the logical flow of questions for the final form.
5. Review language and usability of the form based on our style guide and with advice from a plain language expert.
6. Further improve and customize the form based on feedback. Rinse and repeat.

92. Suffolk Legal Innovation and Technology Lab, *Document Assembly Line Project*, YOUTUBE, <https://www.youtube.com/playlist?list=PLy6i9GFGw5GzcPqGyZQ06IPp35v6S5-YF> (last updated Mar. 11, 2021) [<https://perma.cc/5V5T-GVT6>].

93. In fact, we were able to spin up servers and integrations like Twilio for less than \$100 a month.

94. *The Digital Services Playbook*, DIGITAL SERVS. PLAYBOOK, <https://playbook.cio.gov/> [<https://perma.cc/6R76-KRPZ>].

One innovation we stuck with to varying degrees throughout the project was the use of standardized questions. We worked closely with experienced plain language experts⁹⁵ to write questions that were used again and again on our forms: questions related to basic demographic information, such as names and addresses; questions about the court and the litigant's children; and questions about potentially tricky legal concepts, such as the litigant's role in the case as either a plaintiff or defendant. When a form was automated in our process, it would automatically make use of these standardized questions. There were limits to this approach, but each new form gave us a chance to explore and find variations in our standard questions that could cover more use cases. This saved work for developers and helped us have a consistent voice across the full form library.

Historically, most of these roles would be performed by a single person or team that would continue to work on the form from start to finish. Because we used an assembly-line style approach, the work was able to better use the efforts of volunteers who were available for an uncertain amount of time or had expertise in just one part of the process.

Our volunteers included members of legal aid; usability experts; employees of the court; private attorneys from around the world; members of the academic community in Australia, Ireland, and the United States; and students from law schools all over the country. Some had ties to Boston and some just wanted an opportunity to engage in meaningful work during pandemic lockdowns. Some volunteers participated for months, and some just ran a few tests for a few hours. The assembly line model helped facilitate this range of participation levels.

D. How the interactive legal apps work

From the litigant's perspective, using an app has three basic steps:

1. Answer interactive questions.
2. Download the completed document.
3. In some cases, click a button to email the form directly to the court.

To locate the correct form, the litigant visits a website,⁹⁶ on either their smartphone or a desktop computer. They can type in a description of their legal problem or navigate a menu of form categories to choose the

95. For example: one expert member of our team, Caroline Robinson, has worked for 17 years as an editor of MassLegalHelp.org to write legal content for untrained members of the general public.

96. To experiment with the apps described here, the reader can visit <https://courtformsonline.org>.

form they need.⁹⁷ From there, they click a link to start the interactive question-and-answer process. As they click from screen to screen, the computer chooses the proper follow-up questions. For example: if the litigant said that they are the plaintiff, the follow-up question would ask for the name of the defendant. The computer also handles any background calculations, such as determining a litigant's total income and comparing it to the federal poverty level if the litigant is applying for a fee waiver. These features can increase accuracy and save the litigant a great deal of time.

The forms include other critically helpful features that were built or improved along the way. For example, we worked with a company that specializes in geographic information systems to build a robust court locator tool.⁹⁸ We have found that understanding what court to file in can be difficult, but knowing the litigant's address is usually enough to narrow down the choices. Our locator uses the geocoded address and returns the geographically appropriate courts, considering any rules about jurisdiction. This removes a paralyzing step from the self-represented litigant's process.

Another important feature of the tool is the ability to add a digital signature. This enables remote collaboration. If an advocate or attorney fills out the form by talking to a client over the phone, they can click a button inside the tool to send it to their client to sign.⁹⁹ That process can also work in reverse, allowing a litigant to send a partially completed form to their advocate to review before it is filed in court.

When a litigant uses one of the tools that we created, they are also provided with information in-context that explains the choices they can make and the law that relates to their legal problem. This includes simple help bubbles and links to videos, diagrams, and external websites where appropriate. The tools also include basic accessibility features, such as a built-in screen reader for those with limited vision or literacy.

97. The ability to match a user's description of their problem with a legal issue and relevant resources is made possible through the integration of Suffolk A-powered issue spotter—Spot. See *The Legal Innovation & Technology Lab's Spot API Beta*, LEGAL INNOVATION & TECH. LAB, <https://spot.suffolklitlab.org/> [<https://perma.cc/826B-UMGD>].

98. Calvin Metcalf, *AppGeo Data Detectives: The Case of Boston Courthouse Jurisdiction*, APPGEO (Apr. 20, 2020), <https://www.appgeo.com/appgeo-data-detectives-the-case-of-boston-courthouse-jurisdiction/> [<https://perma.cc/K76J-M53K>].

99. Despite Massachusetts already allowing electronic signatures, a number of standing orders were issued during the early days of lockdown to reaffirm their validity. *Supreme Judicial Court Updated Order Authorizing Use of Electronic Signatures by Attorneys and Self-Represented Parties*, MASS.GOV, (June 10, 2020), <https://www.mass.gov/supreme-judicial-court-rules/supreme-judicial-court-updated-order-authorizing-use-of-electronic> [<https://perma.cc/PH3S-YDPL>].

At the end of the question-and-answer process, the litigant reviews and confirms the information on the form is correct, adds their signature, and then downloads or emails themselves a completed document. Many of the forms include instructions that specify the next steps. In some cases, if the court approved the form for emergency use, the litigant could click a button to email the form directly to the court clerk.

E. How email-based filing works—and does not work

A critical component of our project was incorporating a way for litigants to deliver completed forms to the court when the court was physically closed. We knew from past projects that while an interactive legal app can help someone complete a form correctly, it is usually up to the litigant to read, understand, and apply any information that you provide about filing, service, and filing deadlines. This aspect of using an interactive form is the likeliest to cause problems for pro se litigants. During a pandemic, with courts either closed for in-person filing or with unusually restricted hours, we felt this burden was critical for us to reduce.

After discussing the feasible options, we reached an agreement with the Massachusetts Trial Court to deliver certain critical forms by secure TLS-encrypted email. We later added an additional agreement with the Massachusetts Appeals Court for email filing. From the perspective of the courts, email required no training. From the perspective of our project, email delivery was a remarkably simple feature for us to add. However, it soon became clear that email delivery placed a burden on clerks, who would need to open and manually file each email that came in. This limited the ability of our project to expand electronic delivery beyond emergency forms to heavily used forms that have a larger impact on pro se litigants. Many of the apps on our site, therefore, allow litigants to complete and download a form but do not deliver it by email.

At this point, we began discussions centered around integrated electronic filing that would not only produce PDF forms but add a digital entry into the court's electronic docket. The Commonwealth has an existing e-filing provider, but it requires litigants to create a separate account and navigate a process that often is difficult or impossible on a smartphone.¹⁰⁰ We proposed not to replace this, but to supplement it. Our

100. E-filing is mandatory in some Massachusetts Courts, including Housing and Appeals. *Housing Court Standing Order 1-20: Implementation of Mandatory Electronic Filing for Attorneys in Summary Process and Small Claims Cases in the Housing Court Department*, MASS.GOV (Jan. 27, 2020), <https://www.mass.gov/housing-court-rules/housing-court-standing-order-1-20-implementation-of-mandatory-electronic-filing> [https://perma.cc/DDP7-TL5S]; *Appeals Court Rule*

e-filing integration would swap the email button with an e-filing button, and litigants would never need to leave our app to use it. This process is well-known and adopted commercially by third parties in states around the country, although only rarely by non-profit interactive legal app vendors.¹⁰¹ In our agreement with the Massachusetts Appeals Court, we have agreed to produce this integration as part of a later phase.

Pew Charitable Trusts has provided Suffolk with funding to build this electronic filing integration, which will start with a replication project in at least one other U.S. state.¹⁰²

F. A maturity model for interactive legal apps

Early on in our project, we realized the biggest barrier for releasing timely work was our own exacting standards. We knew that our goal was to reach *minimum viable product* level,¹⁰³ but we found it difficult to scope the work and reach release when we could clearly see improvements that would help litigants have a better experience. To solve this problem, we developed a capability maturity model for legal apps.¹⁰⁴ We realized that a minimum viable product is a slippery concept. Some forms, such as the domestic violence restraining order petition, required a very complete product to be safe for users. Others, such as an affidavit of compliance with the Servicemembers Civil Relief Act, 50 U.S.C. § 3931 (2018), require much less judgment from the user and therefore could be safely automated with fewer features.

Our capability maturity model addresses the difference between complexity and minimum level of safety by focusing on a set of features. We identified four levels of maturity, with a fifth quasi-level inserted between Levels 1 and 2. Importantly, we decided that most forms were ready for release at Level 1. Forms that require additional safety can be released at the appropriate maturity level, with internal releases at earlier

13.0: *Electronic Filing*, MASS.GOV (Mar. 5, 2020), <https://www.mass.gov/appeals-court-rules/appeals-court-rule-130-electronic-filing> [https://perma.cc/HP4W-MT6X].

101. See *supra* fn. 11 for extensive discussion.

102. This work is focusing on integration with both bespoke court-created in-house e-filing and national vendors like Tyler Technologies, the plurality vendor of electronic filing platforms for United States court systems, which has third-party integration agreements with eight different U.S. states: Texas, California, Illinois, Maryland, Minnesota, Indiana, New Hampshire, Georgia.

103. Henrik Kniberg, *Making Sense of MVP (Minimum Viable Product) - and Why I Prefer Earliest Testable/Usable/Lovable*, CRISP'S BLOG, <https://blog.crisp.se/2016/01/25/henrikkniberg/making-sense-of-mvp> [https://perma.cc/Y6V8-SVNL].

104. The concept of a maturity model originated at Carnegie Mellon University in 1986 for the Department of Defense. Mark Paulk, *Capability Maturity Model for Software*, ENCYCLOPEDIA OF SOFTWARE ENGINEERING sof589 (John J. Marciniak ed., 2002).

levels helping the author gain feedback.¹⁰⁵ A form that merits it could then receive continual improvements, focusing on a release schedule that mirrors the subsequent levels. For example, a form might be released at Level 1, again at Levels 1.5, 2, and then finally stop receiving updates when it reaches maturity Level 3.¹⁰⁶

The levels are:¹⁰⁷

Level 1	Equivalent to the existing paper process, with some automation and elimination of irrelevant questions based on the user's responses.
Level 1.5	Language is reviewed and appropriate for a 6th grade reading level.
Level 2	Equivalent to how a newly trained person would conduct a face-to-face interview.
Level 3	Equivalent to how a highly trained person would conduct a face-to-face interview.
Level 4	Equivalent to an interview by a highly trained person and includes robust features that go beyond the paper process. For example, training videos, automated reminders, and with extensive usability testing.

The Level 4 form was included in our process as a mental benchmark. A good example of such an app might be Upsolve—a tool that took hundreds of thousands of dollars and a large team to develop. Keeping this scope in mind helped us stay grounded in choosing whether to add new features or automate a new form.

The maturity model in our project became a mental model that freed us to release work at a regular cadence. We do not share this label with litigants; it is a framing mechanism that drives the prioritization of fixes and allows us to complete many forms rather than polishing and improving a small number of forms forever. This common language around the desired capabilities and sophistication of our forms was especially useful with students and new developers on our team.

The maturity model also became a useful communication tool with partners inside the court. We found that with our first court partner, it was

105. For a discussion of iterative design, see J. Nielsen, *Iterative User-interface Design*, 26 COMPUTER 32–41 (1993).

106. *Id.*

107. *A Maturity Model for Legal Apps*, SUFFOLK LAW SCHOOL LEGAL INNOVATION AND TECHNOLOGY LAB, 2021, <https://suffolklitlab.org/legal-tech-class/docs/legal-tech-overview/maturity-model/> [<https://perma.cc/3G2P-WFJZ>].

easy to receive scattered and inconsistent feedback. By talking directly about the maturity model early on with our second partner, we improved the quality of feedback and our ability to act on feedback. Each page of the interactive app allows the user to click a button to provide feedback. This tool describes the maturity model and asks the partner to assign the feedback to the correct maturity level.

G. How the project has changed the lab and strengthened our pedagogy

Since its founding in 2017, the Legal Innovation and Technology Lab has worked within the context of experiential education. Housed both in the law school's Clinical Programs and its Legal Innovation and Technology Concentration, the Lab has offered a mix of traditional classroom and experiential instruction. Students work on multiple projects, playing the role of a legal technology and innovation consultant for real world clients. Besides traditional classes taught by the Lab's staff, the Lab's two programs incorporate students: a lab class and the LIT Fellows program. LIT fellows are embedded inside a traditional law school clinic. Alongside their traditional case load, the fellows act as internal innovation officers, identifying areas where they can improve the clinic's ability to serve clients. Students in the lab course provide a similar service to external clients such as local non-profits, public defenders, or district attorney's offices.

The Lab also helps steer work in experiential learning courses in other parts of the law school. Students in project-based learning courses may work on a lab project as part of their course work. This work has included assisting clients with knowledge management, the creation of online apps, data analytics, and document automation.¹⁰⁸

The Lab has never sought to turn law students into software engineers. What it has aimed to do is acquaint students with the realm of the possible, to provide them with an understanding of the technology that they and their clients will encounter. To accomplish this, students work with that technology, often as parts of interdisciplinary teams.¹⁰⁹

With the advent of the Document Assembly Line Project, however, the Lab's work shifted from that of a consultancy to something more akin to a startup. At the peak of our efforts in the summer of 2020, the Lab was

108. Suffolk Law School's Legal Innovation and Technology Lab, *Lab Portfolio*, <https://suffolklitlab.org/portfolio/> [<https://perma.cc/FMD9-C3MF>].

109. When possible, we have included undergraduate computer science and business school students as part of our lab course to provide just such a team experience.

working with hundreds of students and volunteers across five continents and eleven time zones. Many of these volunteers contributed only a few hours here or there, but there was a core group of a few dozen full-time team members, including three volunteer project managers. The scope of our work was no longer confined to what we thought would be appropriate for a semester's engagement. Instead, it was dictated by the demands of a pandemic response. We no longer worked together on a single project. Instead, we managed dozens of interrelated projects. On more than one occasion we compared this task to laying track ahead of a moving train. Working in iterative sprints, students learned how to solve problems we could never have anticipated.

The pandemic disrupted the summer plans of law students as internships evaporated, and we worked to provide meaningful experiences not just for our students, but for students from law schools around the country, including Northeastern, Boston College, Boston University, Drexel, Cardozo, the University of South Carolina, and Brooklyn Law School. We found the sweet spot for student involvement often straddled the line between law and technology. We adapted materials from our classes to bring students with no prior coding experience up to speed on our tools and paired them with subject matter experts to make the interactive legal apps legally accurate and more closely match the natural interview style of an experienced legal aid worker. We joked that they were learning the law by teaching it to computers, but ultimately their audience was the user on the other end. What they learned to do was to listen, to empathize with those seeking justice, and to use the levers at their disposal to assist them on their journey.

This project offered an opportunity to implement some of the lessons we have always aimed to teach our students but on an unprecedented scale. A traditional clinical experience does not only offer you the opportunity to work with clients on real world cases. It embeds you in a firm with its own culture and which is itself a member of a larger community. Learning how you fit into that culture and the larger community of lawyers is one of the formative experiences of a young attorney's career and perhaps responsible for the fact that so many law students discover their love for an area of practice while working in a clinic.

For the first time since its founding, the Lab really began to feel like it was part of something bigger than itself. It was finding its community, its place in the world, and its own culture. Students worked alongside attorneys, designers, engineers, and advocates as part of truly interdisciplinary teams, and the results were humbling. Despite never

meeting in person, the team created work product with market value easily in excess of \$1 million and made it available to the world for free. They came to our aid in our time of need, and they learned the value of service in a time of tumult. They showed us what is possible when you marry the public service mission of a clinical program with the drive of innovation. They showed us what a 21st-century clinic can be, and they did it all remotely.

When classes resumed in the fall of 2020, the Lab pivoted to take advantage of this new understanding. Alongside existing opportunities for project work, we began to find ways to incorporate the Assembly Line. Leaning heavily on collaborative tools, we sought to promote and foster the growth of the community that had grown out of the Assembly Line. Students working on projects across classes could for the first time contribute to a larger project as part of a single team.

H. The impact of the work

The CourtFormsOnline.org website has seen wide usage during the pandemic. Just a few thousand people visited in the first months when our early forms were rolled out, but between July of 2020 and January of 2021, the guided forms on the website saw more than 190,000 unique visits. One nationally-utilized form that helped tenants understand if they qualify for the Centers for Disease Control and Prevention's eviction moratorium was successfully used to prepare and email a declaration more than 4,000 times and in all 50 states. Forms on the website helped domestic violence survivors get protection orders. They helped tenants get emergency actions against neglectful property owners. A dozen forms touch on different parts of the ongoing housing crisis—from motions to dismiss to claims for affirmative relief; from security deposit claims to defending against eviction. In at least one case, a form was used to stop a physical eviction. The constable was present, and the user's property was being removed from their home. During this process they used one of our forms to ask for a stay and it was granted, stopping the eviction and returning their property to their home.¹¹⁰ And other forms just helped attorneys with the time and ability to file limited appearances in court.

Beyond the numbers and the specific relief, the forms give access to, the availability of remote any-time assistance for key court forms is hard to overstate. One tenant, using a tool to help defend against an eviction

110. We learned this story from a clerk at the Appeals Court who was responsible for getting this emergency request to the attention of the presiding justice. To protect the privacy interests of the tenant involved, we have chosen not to include the docket number or other identifying details here.

action, submitted an intake to legal aid at 12:30 a.m. No legal aid office or telephone hotline is available at 12:30 a.m. Pandemic relief is important. These needs will continue after the pandemic has ended and existed before the beginning of the pandemic.

Long-term sustainability is an important goal for the Lab. Massachusetts Law Reform Institute, which maintains the state-wide Massachusetts legal information website, was among our most important partners, working to help author and link to our forms. When we chose forms to automate beyond the initial emergency forms identified by the court, we worked closely with MLRI to select forms solving problems that were among the most visited pages on the legal information website and that fit into their long-term mission.¹¹¹ The work that we did to embed this work into our course and lab work was also part of our sustainability plan. A legal tool requires regular updates to accurately reflect the law, and we believe the process behind this maintenance has pedagogical value for our students.

The pandemic was an accelerant for our work and our success. It provided access to a large pool of committed volunteers and a court that recognized the need for urgent action. When projects like this require accessing new funding or convincing a skeptical court, success may not be as rapid. The challenge of waiting for an at times slow-moving court led us to work on projects that could be successful without the court's cooperation and to identify community groups independent of the court that would both adopt and champion our tools. We believe that success can come for a project with even limited resources by leveraging both the tools that Suffolk built and learning from the lessons we gained through hard practice.

IV. A VISION FOR AN OPEN-SOURCE OPEN-STANDARDS FORMS ECOSYSTEM

If the successes of the Document Assembly Line project were to spread, what would that success look like? What would help it succeed? The last 40 years have been full of predictions for the transformation of the legal industry through the adoption of technology. Pilot projects have succeeded without yet causing widespread lasting change.¹¹² In this section, we describe a vision for an open-source forms ecosystem.

111. See Massachusetts Legal Help, <https://masslegalhelp.org> [<https://perma.cc/U3DB-CFL6>].

112. We discuss some successful projects earlier in this paper *supra* note 11. See also Klempner, *supra* note 11. The individual successes do not vitiate our point that there still exists a vast mountain of court processes that can only be completed by completing a form on paper.

Specifically, we propose three key lessons of the Document Assembly Line project that can be replicated and expanded to increase access to justice:

1. The adoption of open source, or at least permissive open-source style, remixing of both code and common shared elements.¹¹³
2. The use of standardized work processes, including assembly-line style development.
3. The widespread adoption of open standards, including those for electronic filing or email delivery.

These three suggestions are both modest and radical. Modest because not only do these suggestions save time, but they are free to implement. Radical because a model based on shared code has been out of reach for the last 20 years even as individual form projects have been quite successful.¹¹⁴ We have seen these lessons applied to the private sector and to an extent in the civic tech movement. Now we need to extend those lessons to how we address the access to justice problem.

An organization that wants to adopt our recommendations need not start from scratch. As with a franchise, interested “partners” may adopt our core technologies and operating procedures, allowing them to learn from our work and pick up where we left off in another jurisdiction. Unlike a franchise, however, our work is available for free and comes with an unrestrictive license to modify and adapt it.

113. The Creative Commons license under which the XKCD web comic is licensed is an example of such permissive sharing. It is also what allowed us to make use of multiple XKCD comics below. *See* XKCD, <https://xkcd.com/license.html> [<https://perma.cc/5FCN-S7MH>].

114. *See supra* note 112.

A. How standards are born

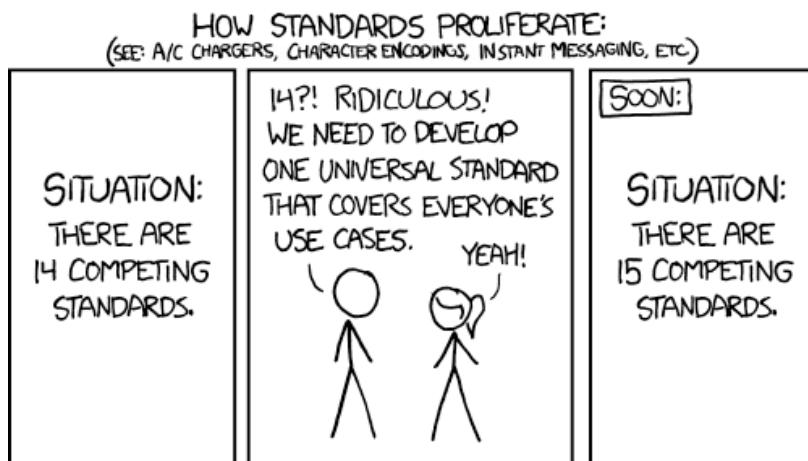


Figure 1: XKCD #927, Copyright 2021 Randall Munroe (Available online at <https://xkcd.com/927/> [<https://perma.cc/N7DT-WE7E>]).

Standards and conventions facilitate communication.¹¹⁵ There are many paths to standards. Some standards are created by official entities, which may include committees, such as the International Standards Organization (ISO)¹¹⁶ or governments. Others are created by fiat: they become standards because a dominant market player has adopted them and other participants in the market wish to maintain compatibility with the market leader. Rarely, standards are developed without a committee and a single market leader.

Unless they are mandated by a government entity with the power of force, standards gain adoption when they are sufficiently useful. Often, they are useful only when they are widely adopted.

The Document Assembly Line project lacks the force of either an official committee or a government agency. Yet we believe that our project's demonstrated value and the free tools that we are building can lead to a successful replication. Two jurisdictions are working directly with Suffolk to replicate our work: Louisiana and Illinois. As part of our onboarding of those two jurisdictions, Suffolk hosted an open four-week "bootcamp" in February of 2021 that drew more than 50 developers from around the world. These developers represent legal aid programs, private developers, and nonprofits across the United States and three continents.

115. Colarusso and Rickard, *supra* note 14 at 390–92.

116. International Organization For Standardization, International Standards Organization, ISO - *About us*, ISO (2021), <https://www.iso.org/about-us.html> [<https://perma.cc/WK26-8XX7>].

The project offered training in the tools that we built and the processes that we used to launch the Assembly Line. We hope that this is just the beginning.

B. On the shoulders of giants

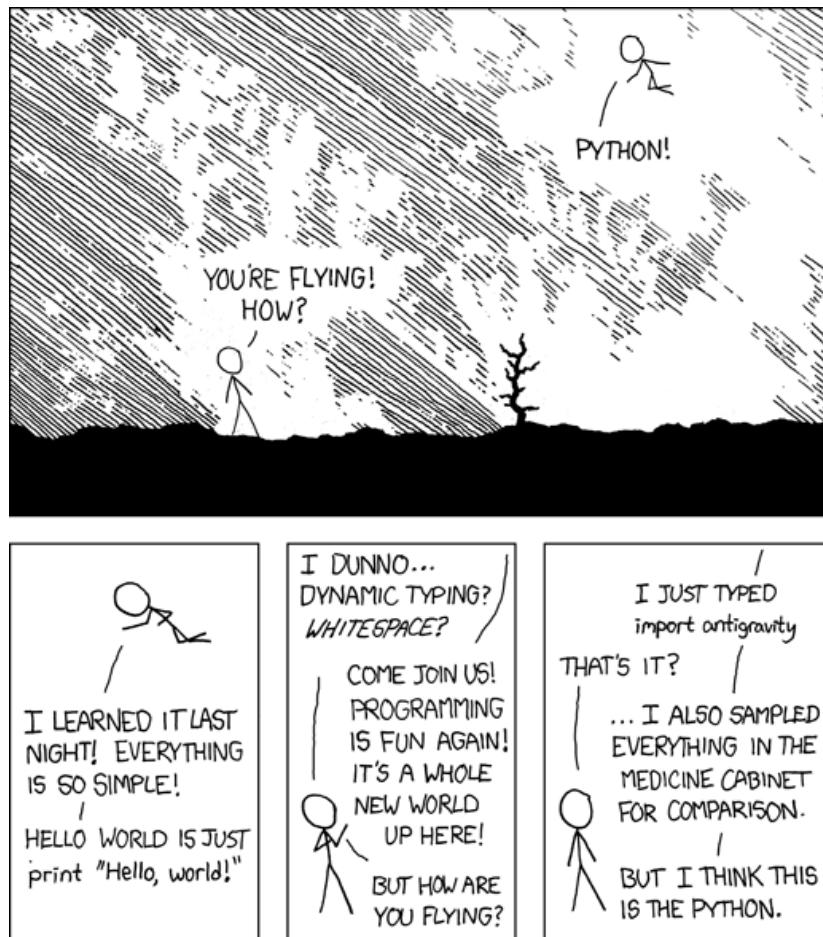


Figure 2: XKCD #353, Copyright 2021 Randall Munroe (Available online at <https://xkcd.com/353/>).

In Figure 2 above, Cueball's excitement at the world of possibilities created by Python's open-source libraries is palpable. We confess having the same excitement when exposed to the Docassemble platform after having programmed in HotDocs and other graphical tools. Each completed Python library becomes like a Lego building block that you can use to build a bigger project. To benefit from its power, you can just add

it to your project. You do not need to know how to inject plastic to make a perfect little block. In some ways, open-source¹¹⁷ coding is also like the common law.¹¹⁸ Once the precedent is set, we can instead work on addressing just the novel aspects of whatever we are building.

Open source is about both give and take. Borrow open-source libraries, and the norm is that you contribute some of your work back to the collective commons. This makes open source an amazing tool for accelerating development. The more developers who use an open-source tool, the better it can become with less work by each individual contributor. Among the best-known open-source projects in the world, Linux, the operating system with the most users worldwide,¹¹⁹ is contributed to by a wide range of authors, from hobbyists scratching a personal itch to Fortune 500 companies.

The open-source culture is not only about sharing code.¹²⁰ A vision for an open-source forms ecosystem could also share things like prewritten translated, 6th-grade reading level questions to cover the basics, such as the litigant's name and addresses; the variable name schema, which controls both how information is collected, and the internal names assigned to data that the app collects; and conventions like the structure and order of questions. The same economies of scale that helped the Assembly Line project succeed in rapid automation within one organization could spread across the entire ecosystem.

Another way that the sharing of ideas can help is in developing a common look and feel for interactive legal applications. The wider website and app space are both seeing an explosion of different visual metaphors, particularly when compared to the relative sameness of desktop applications in the 1990s and early 2000s. This wide variety,

117. Eric S. Raymond is the author of the best-known text explaining the open source movement. See ERIC S. RAYMOND, THE CATHEDRAL & THE BAZAAR: MUSINGS ON LINUX AND OPEN SOURCE BY AN ACCIDENTAL REVOLUTIONARY (2001).

118. Toby Grytafey has compellingly made this connection, most recently at Docacon 2019. See Toby Grytafey, *Speaking the Same Language* (Jun. 25, 2019), <https://www.youtube.com/watch?v=Ism2qR3e9Yc> [<https://perma.cc/K6F7-WCB3>].

119. Shahron Williams van Rooij, *Adopting Open-Source Software Applications in U.S. Higher Education: A Cross-Disciplinary Review of the Literature*, 79 REVIEW OF EDUCATIONAL RESEARCH 682–701, 685 (2009).

120. It is worth noting that we are hardly unique in advocating the power of building an open source ecosystem to accelerate software development, especially in an academic or non-profit context. See, e.g., Katie Malone & Rich Wolski, *Doing Data Science on the Shoulders of Giants: The Value of Open Source Software for the Data Science Community*, HARVARD DATA SCIENCE REVIEW (2020), <https://hdsr.mitpress.mit.edu/pub/xsrt4zs2> [<https://perma.cc/PBW9-RLDW>]. In higher education, see van Rooij, *supra* note 119.

while visually exciting, is not helpful for people forced to use multiple platforms that each have their own look and feel.¹²¹

While question-driven apps that assemble forms are not new, litigants, especially in the target population for access to justice initiatives, will benefit when they can see a common set of conventions across the many independent interviews they may need to use. These conventions might include a common visual language and structure, like the placement of opening screens, menus, labels for buttons, terms of use, and conventions for downloading and sending completed documents electronically. The New York State Bar Association has started to develop a list of standards for these tools, which they call Best Practice Guidelines.¹²²

A mutually beneficial open-source forms ecosystem does not need to be prescriptive. Sharing of variables, structure, and pre-written questions, so long as they save developers time and are useful, will naturally help tame the wild landscape of interactive legal apps. This is especially true when the examples that gain popularity have been vetted by usability experts and end-user testing. Developers will benefit from reduced cost and time, and litigants will benefit from reduced cognitive load while switching from one platform to another. While the individual terms might be debated, this common visual language will help litigants be able to use and understand each new app more quickly.

We do not claim to be proposing something entirely new here. The Innovations in Technology Conference, for example, is one way that the access to justice community already convenes annually to share best practices and talk about projects, and their support has been instrumental to the success of existing tools such as A2J Author.¹²³ Another place for informal collaboration is the Legal Services National Technology Assistance Project (LSNTAP) email list.¹²⁴ Rather, we propose that allowing authors to directly share code and model questions may be a catalyst to turn informal idea-sharing into replication.

121. RAYMONDE GUINDON, COGNITIVE SCIENCE AND ITS APPLICATIONS FOR HUMAN-COMPUTER INTERACTION 59 (2013).

122. American Bar Association, *ABA Best Practice Guidelines for Online Legal Document Providers*, <https://www.americanbar.org/content/dam/aba/images/news/2019/08/am-hod-resolutions/10a.pdf> [<https://perma.cc/Y3L3-CXD2>].

123. See Staudt, *supra* note 1.

124. The LSNTAP mailing list is a place for largely informal information sharing and question and answer gathering, funded by the Legal Services Corporation.

C. The value of agile development

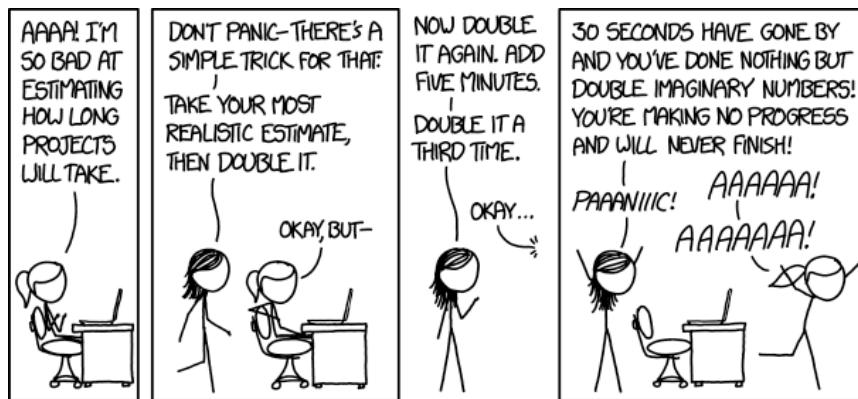


Figure 3: XKCD #1658, Copyright 2021 Randall Munroe (Available online at <https://xkcd.com/1658/> [<https://perma.cc/9P9F-F7MD>]).

In late 2013, the Department of Health and Human Services launched an online insurance exchange—HealthCare.gov. The launch and name of the site quickly became synonymous with government failure and technical incompetence, the focus of public ridicule and late-night comedy routines.¹²⁵ Despite millions of visits to the site, only six people were able to register for insurance on its first day.¹²⁶ This spurred the Government Accountability Office to launch several reviews along with the creation of scholarly postmortems and case studies.¹²⁷ Yet for those familiar with the successful effort to fix the site, HealthCare.gov now represents a success story, an example of how government can do tech well.¹²⁸ The effort also holds a central place in the history of forward-looking government tech shops such as the US Digital Service and 18F.¹²⁹

125. See Leonidas Anthopoulos, Christopher G. Reddick, Irene Giannakidou, & Nikolaos Mavridis, *Why e-Government Projects Fail? An Analysis of the Healthcare.gov Website*, 33 GOVERNMENT INFORMATION QUARTERLY 161–173 (2016). See also Saturday Night Live, *Obamacare Website Tips* (2013), https://www.youtube.com/watch?v=_rzQeDOGDxI [<https://perma.cc/RV9Y-U7DQ>].

126. Adrianne Jeffries, *After Healthcare.gov, Can the Government Make its Technology Suck Less?*, THE VERGE (2014), <https://www.theverge.com/2014/4/2/5573594/are-we-serious-about-making-government-tech-suck-less> [<https://perma.cc/U7GX-KDF>].

127. See e.g., U. S. Government Accountability Office, *Healthcare.gov: Ineffective Planning and Oversight Practices Underscore the Need for Improved Contract Management* (2014), <https://www.gao.gov/products/GAO-14-694> [<https://perma.cc/E95U-3FTK>]. See also 125 and Janis L Gogan, Elizabeth J Davidson & Jeffrey Proudfoot, *The HealthCare.gov project*, 6 J. INFO. TECH. TEACHING CASES 99–110 (2016).

128. Jeffries, *supra* note 120.

129. Meyer Robenson, *The Secret Startup That Saved the Worst Website in America*, THE ATLANTIC (Jul. 9, 2015), <https://www.theatlantic.com/technology/archive/2015/07/the-secret->

There were several reasons for the site's initial failure, many of them relating to project management. A non-exhaustive list is suggested by Anthopoulos, et al., including:

(1) Unrealistic requirements—the website was extremely complex, one of the most complex ever created by the federal government; (2) Technical complexity: there were 55 contractors, 36 states, and 300 private insurers with over 4000 plans; (3) Lack of management leadership: there was difficulty with keeping the project on track, not effective leadership from HHS Secretary Sebelius and staff within [Centers for Medicare and Medicaid Services]; and (4) Inadequate testing: with reports noting that the website was only tested two weeks before the launch, when it needed much more thorough testing.¹³⁰

The launch was so bad that post launch the President was weighing whether to scrap the project and start over.¹³¹ Yet, in roughly two months, an ad hoc team of engineers and fixers, many from outside of government, turned the site around, not only creating a site that worked, but one that was continually improving.¹³² Much has been written about the subsequent cultural transfer from Silicon Valley to Washington sparked by this intervention,¹³³ but at the core of this new tech ethos was a commitment to agile project management and user-centered design.¹³⁴

To understand the benefits of agile management methods, it is helpful to contrast them to the historical alternative: the *waterfall* method.¹³⁵ In the waterfall method, a project manager or client creates a set of milestones or phases which a contractor must complete before advancing to the next phase.¹³⁶ Payment is provided in installments linked to each completed milestone.¹³⁷ But each milestone rarely looks like a completed product. When pictured as a set of descending steps with progress flowing from the top down, this arrangement evokes a waterfall.

startup-saved-healthcare-gov-the-worst-website-in-america/397784/ [https://perma.cc/2HXW-NMS3].

130. Anthopoulos et al., *supra* note 125 at 166.

131. Steven Brill, *Obama's Trauma Team*, TIME, <https://time.com/10228/obamas-trauma-team/> [https://perma.cc/MJJ8-YWUC].

132. *Id.*

133. Jack Moore, *Invasion of the Innovators*, GOVERNMENT EXECUTIVE (2015), <https://www.govexec.com/feature/invasion-innovators/> [https://perma.cc/A73A-35KJ].

134. Ines Mergel, *Agile Innovation Management in Government: A Research Agenda*, 33 GOVERNMENT INFORMATION QUARTERLY 516–23 (2016).

135. Andrei et al., *supra* note 90 at 126.

136. *Id.*

137. Lindsay Young, *18F: Digital Service Delivery: Using Agile and DevOps to Get Better Results Than a Change Control Board* (2021), <https://18f.gsa.gov/2021/03/02/using-agile-and-devops-to-get-better-results-than-a-change-control-board/> [https://perma.cc/MV38-CBPD].

Unfortunately, the waterfall method requires an agency or client to accurately predict each step for a project's completion before work has begun. Because software projects can be duplicated for free, most so-called software engineering solves a new problem each time. For this reason, it is much harder to predict the scope of a software project than the construction of a building or a bridge. Couple this with the fact that such projects often limit user exposure to the software until the project's completion, and you have a recipe for disaster. If experience is an indicator, such an approach leaves much to be desired. Consider US Digital Services co-founder Haley van Dyck's observation in 2016 that 40% of federal government IT projects were never completed and 95% were over budget and behind schedule.¹³⁸

Agile approaches present an alternative method for managing complexity. Instead of relying on precise predictions of the distant future and commitment to preplanned milestones and a final project that succeeds or fails on delivery, they structure work around short iterative sprints that aim to produce incremental output for clients. Each sprint produces a work product that can be tested and evaluated by an end-user. At the end of each sprint, the user provides feedback, and planning for the next sprint can proceed with knowledge of what is and is not working. Central to this approach is the centering of client satisfaction, "through early and continuous delivery of valuable software."¹³⁹ This places the user at the center of the design process, requiring developers to understand their clients and their needs.

In the wake of the failure and the subsequent success of HealthCare.gov, the US Digital Service was established with one of the site's fixers at the helm.¹⁴⁰ Aimed at formalizing the approaches that helped save HealthCare.gov, the US Digital Services articulated these in two foundational documents: The Digital Services Playbook¹⁴¹ and The TechFAR Handbook.¹⁴² Respectively, they lay out a set of model methods such as "Build the service using agile and iterative practices," and how

138. Kate Torgovnick, *What Happens When You Disrupt the White House: Haley Van Dyck at TED2016*, TED BLOG (Feb. 16, 2016, 12:05 PM), <https://blog.ted.com/what-happens-when-you-disrupt-the-white-house-haley-van-dyck-speaks-at-ted2016/> [https://perma.cc/CXG3-8MPL].

139. *Principles Behind the Agile Manifesto*, AGILE SOFTWARE, <https://agilemanifesto.org/principles.html> [https://perma.cc/7TXD-ZZ4G].

140. Nancy Scola, *White House Launches 'U.S. Digital Service,' with HealthCare.gov Fixer at the Helm*, WASHINGTON POST (Aug. 11, 2014, 1:33 PM), <https://www.washingtonpost.com/news/the-switch/wp/2014/08/11/white-house-launches-u-s-digital-service-with-healthcare.gov-fixer-at-the-helm/> [https://perma.cc/F7A6-4KTH].

141. U.S. Digital Service, *supra* note 94.

142. U.S. Digital Service, *The TechFAR Handbook*, <https://techfarhub.cio.gov/handbook/> [https://perma.cc/7CD9-5MCN].

federal agencies can navigate the Federal Acquisition Regulation (FAR) to implement these methods. It is important to note the pairing of a document on best practices with a guide for implementation within the framework of procurement. It can be tempting to see failures such as the launch of HealthCare.gov or, more recently, poorly performing sites for scheduling COVID vaccination as illustrative of incompetence without fully recognizing the challenges faced by such projects, including the need to operate within existing organizational constraints—such as procurement. Failure to see this context and the role of structural constraints can lead to the impression that problems are easier to solve than reality would allow.¹⁴³ It is worth noting that many of those who worked on the HealthCare.gov rescue pulled fifteen-hour workdays and experienced mental and physical health effects as a result.¹⁴⁴ There are no shortcuts, and it always takes a team effort.

As the name suggests, the promise of the Agile method is its ability to help development teams adapt to complex and constantly changing environments. Our experience with the Assembly Line, the ultimate success of HealthCare.gov, and the codification of these principles within The Digital Services Playbook presents a compelling roadmap for its adoption as a step towards a more vibrant forms ecosystem.

143. Though they bear a resemblance to the story of software engineers swooping in to save HealthCare.gov, narratives that elevate individual actors and simple solutions risk minimizing this broader context. See Sharon Otterman, *N.Y.'s Vaccine Websites Weren't Working. He Built a New One for \$50.*, THE NEW YORK TIMES (Feb. 9, 2021), <https://www.nytimes.com/2021/02/09/nyregion/vaccine-website-appointment-nyc.html> [<https://perma.cc/T4BC-R9YE>]. See also Dan Hon, *The \$50 Vaccine Website We Don't Need*, NEW AMERICA (Feb. 10, 2021), <http://newamerica.org/pit/blog/the-50-vaccine-website-we-dont-need/> [<https://perma.cc/524E-YLR3>]. Narratives that hold up "\$50" solutions differ from those trumpeting the eventual success of HealthCare.gov in that they often fail to consider or address the causes of system failure. As Cyd Harrell has noted in her advice to those seeking to enter the civic tech space, "But our job as a civic technologist isn't to be the hero of the stories we stumble into halfway through; it's to understand the people who have already been in place doing the work, and who want to use tech to make improvements." HARRELL, *supra* note 73 at 30.

144. HARRELL, *supra* note 73 at 138.

D. How e-filing standards could change the world

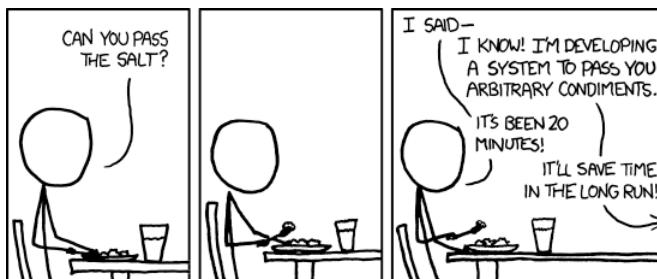


Figure 4: XKCD #974, Copyright 2021 Randall Munroe (Available online at <https://xkcd.com/974/>).

Key to the success of an open-source forms ecosystem is the ability for litigants to deliver their work directly, from within the interface of an interactive legal application. Each additional step beyond completing the form itself will reduce the number of litigants able to access the court and defer access to justice. As discussed above in Section III.E, e-filing can be the bridge between the simple guided process of an interactive legal app and the intimidating and challenging-to-access world of the court.

Suffolk's approach to this problem is simple: we are building software that can connect an interactive legal app to a court's case management system and releasing it for free to the world.¹⁴⁵ Any entity, whether a legal aid program, court, or commercial vendor, can make use of our work without charge.

Our code will be part of the Assembly Line framework, which means a vendor who wants a complete solution can build an app rapidly with model questions and connect e-filing all in one place. A vendor who wants to use just the e-filing integration with an existing forms platform, such as A2J Author or LawHelpInteractive, can install the tool on their own server and connect to a court system with a simplified API.

The first version of our tool will address an existing standard: OASIS LegalXML ECF v4.¹⁴⁶ The largest vendor that has adopted this standard is Tyler Technologies. We will also work with at least one court system that has built its own case management system and will use the ECF standard to accept digital filings. We hope that the free availability of this reference implementation for the most popular existing standard will help

145. Our work will be released under the same, permissive, MIT license that Docassemble uses.

146. OASIS, *Electronic Court Filing Version 4.01* (2013), <http://docs.oasis-open.org/legalxml-courtfiling/specs/ecf/v4.01/ecf-v4.01-spec-os/ecf-v4.01-spec-os.html> [https://perma.cc/ZX74-VQUH].

more courts provide the ability for third parties to use e-filing and for more interactive legal app vendors to adopt this technology.

By releasing this software for free and providing documentation and free training, we hope to spur a new wave of legal app building. Courts around the country are now imposing mandatory e-filing.¹⁴⁷ They recognize that e-filing can save clerks time, but e-filing without forms integration can impose an additional burden on litigants.

E. The attorney's role in a world of legal software



Figure 5: XKCD #208, Copyright 2021 Randall Munroe (Available online at <https://xkcd.com/208/> [<https://perma.cc/L46A-R39J>]).

The involvement of attorneys as subject matter experts in the authoring of Assembly Line interviews demonstrates their value in the automated form production process. Not all attorneys will find themselves

147. Recent states to impose mandatory e-filing for at least some case types include Massachusetts, Illinois, and New Hampshire. Housing Court Standing Order 1-20, *supra* note 100; *E-Business for the Courts - Electronic Filing Initiatives*, <https://www.illinoiscourts.gov/Resources/8e1a09bb-b628-4279-9ff3-b917ffae2884/012216.pdf> [<https://perma.cc/LY84-T26T>]; *New Hampshire Circuit Court - Electronic Filing Pilot Rules*, <https://www.courts.state.nh.us/rules/dmcr/dmcr-sup-efile.htm> [<https://perma.cc/6LW8-WWXA>].

in automation roles. They will, however, find themselves in a world where the tools of information workers are increasingly used to help individual attorneys serve many clients. For example, one day after the release of the CDC's eviction moratorium, Suffolk had automated the form.¹⁴⁸ In the next few months, over 4,000 tenants from across the country used it to assert their rights. There is no way a traditional housing clinic could have helped as many people file a notice.

The Assembly Line experience also underscores the value of operating as part of an interdisciplinary team. Teams that bring substantive knowledge together with software development expertise can deliver more work quickly than teams that need to look outside and translate software language into subject language in several round trips.

We want YOU to build the next Court Forms Online. The Assembly Line model described above is not just a methodology. Our work is now the equivalent of a franchise starter kit: a drop-in ready platform that can be customized for any jurisdiction. Partners in Illinois and Louisiana are actively engaged in reproducing our work. In order to facilitate reproduction of our work, we designed an open, free, four-week class, called the Document Assembly Line Bootcamp, that teaches interested organizations how to: automate documents from start to finish; apply the agile method; use Trello; use GitHub for version control; and add organization-specific databases of courts, logos, and instruction text.¹⁴⁹ More than 50 participants from around the world joined for at least one class, with about 30 attending all four.

In addition to detailed documentation, the starter kit allows an author to customize elements including:

- The layout and content of different standardized elements of the interactive legal apps that the jurisdiction wishes to create.
- The list and detailed information relating to courts in the targeted jurisdiction.
- The logos, fonts, visual appearance and branding.

Once customized, these elements can give each form a consistent look and feel.

148. Bob Ambrogi, *Suffolk's LIT Lab Releases Eviction Moratorium Tool to Help Tenants Exercise Their Rights*, LAWSITES (Sept. 2, 2020), <https://www.lawsitesblog.com/2020/09/suffolks-lit-lab-releases-eviction-moratorium-tool-to-help-tenants-exercise-their-rights.html> [https://perma.cc/E84A-VMXJ].

149. Suffolk Legal Innovation and Technology Lab, *Suffolk LIT Lab's Document Assembly Line Bootcamp* (2021), <https://suffolklitlab.org/docassemble-AssemblyLine-documentation/docs/bootcamp/> [https://perma.cc/9969-XLNE].

V. CONCLUSION

The justice system moved quickly to expand access to the courts during the pandemic. Mobile-first document assembly with integrated filing is just one area where courts began to open up. These changes increased access to justice during the pandemic, and we can see how they will continue to in the future. Just as with physical curb cuts, these improvements have benefits that extend beyond the need for social distancing. We must not go backwards. The vision we have laid out is a way to join forces, standardize, and simplify our common work. Now is the time to take a lesson from the agile playbook and stop to evaluate what worked and what did not. We have been given a preview of a possible future. For the benefit of improved access to justice, attorneys need to find a way to participate in it.

Our experience working with students, practicing attorneys, paraprofessionals, and advocates of all stripes, have made it clear that our vision for a future of an open-source open-standards forms ecosystem is attainable. Successful interactive legal apps are already in existence around the nation. We think that what will allow these successes to replicate, and scale is the adoption of standard processes and templates, user-centered agile methodologies, and assembly-line-inspired workflows. Whether this will be enough to foster the growth of the ecosystem we envision depends on a community of people working together to carry the load, a community in which practitioners of law work alongside other professionals in interdisciplinary teams to solve problems as they arise.

As we consider these communities, we look forward to seeing what our new partners in Illinois and Louisiana will do as they work with us to replicate the Assembly Line's work, producing their own interactive legal apps using our process and incorporating true e-filing beyond the simple encrypted emails of Massachusetts's pandemic implementation. We think this is reason for optimism.