Assessing Mobile Technologies in Child Protective Services

Broome County
Department of Social Services
District Profile

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Introduction

Demonstration Project

The New York State (NYS) Mobile Technology Demonstration Project is an initiative to assess the use of mobile technologies in child protective services work in New York State. The project, a collaborative effort among the NYS Office of Children and Family Services (OCFS), 23 NYS County Departments of Social Services (DSS), and the Center for Technology in Government (CTG), focused on two core questions – how is mobile technology used in the work setting and did the technology impact the work itself?

In this project, OCFS was responsible for the selection, procurement, and deployment of mobile technologies. The County DSS were also responsible for the deployment of mobile technologies, in addition to the coordination and procurement of wireless connectivity, training, and the selection of Child Protective Services (CPS) staff to participate in the demonstration. CTG was responsible for the independent assessment of the use of the technology.

The *Demonstration Project in 23 Local Social Service Districts* produced profiles for each of the participating districts as well as a summary report. It may be useful to read through the summary report before reading the local district profile as the summary report explains the variability in the CPS environment across the state as well as describes the many polices and practices developed and implemented by districts. The report is available at:
http://www.ctg.albany.edu/publications/reports/demonstration2008.

This profile presents findings for the Broome County DSS. Findings are based on data collected through online surveys, district questionnaires, and analysis of CONNECTIONS data (data collection methodology and timeframe can be found in Appendix A). The field test lasted 55 days from 11/15/07- 1/9/08.

District Deployment

Broome County DSS has approximately 23 CPS staff responsible for child protective services. Broome County is a mostly rural area with one metropolitan center in the Southern Tier of NYS and has a population of over 200,000 residents. The stated goals of the Broome County DSS for participating in the demonstration project were to use mobile technologies to increase CPS caseworker performance, enhance caseworker communication, case access, and workers' ability to investigate child abuse allegations.

The Broome DSS deployed 10 Dell Latitude D620 laptops to 20 caseworkers, three supervisors, and one manager between the dates of 11/8/07 and 11/15/07 (see Appendix B for device specifications). All ten laptops were deployed with external Verizon broadband cards. The laptops primarily rotated among emergency coverage staff each week, in addition, each CPS unit received at least one laptop that was available to sign-out on a first come, first served basis. Each person received individual training and was provided a copy of the OCFS produced guidebook on how to connect to CONNECTIONS and security precautions were discussed with each person. Regardless of the network connections used, all access to the State network was through a virtual private network

(VPN) that secures the transmission to and from the portable device and the network. In addition, PointSec encryption software was installed on each device before deployment.

Finally, no policies changed to support the introduction of mobile technologies before or during the pilot period. Some work practices were modified; for example, emergency coverage staff were instructed to use their laptop to receive new cases (by pulling the record up on the screen) instead of transcribing voice reports from the State Central Registry (SCR) as they had done in the past.

Characteristics of Respondents

A total of 20 CPS caseworkers participated in this study: 13 took the baseline survey (response rate 65%); 8 took the post-pilot survey (response rate 40%); and 6 took both the baseline and post-pilot surveys (response rate 30%).

The length of experience in CPS work, amount of overtime accrued weekly, the number of court days and estimated court waiting time are all important to understanding the overall context of the work environment. The Broome County DSS respondents[1] were moderately experienced in CPS field work, with an average of 5.8 years of experience; 54% reported CPS experience of three years or less. The percentage of respondents reporting overtime of five hours or less in a week dramatically decreased from 83% in the pre-pilot period to 40% in the pilot period. Additionally, the average overtime hours increased from five hours in the pre-pilot period to six hours during the pilot period. The range of overtime hours worked per week changed from 4 - 6 hours in the pre-pilot period to 2 - 8 hours during the pilot period. All of the respondents reported a typical court waiting time of less than one hour and 85% reported spending on average five or fewer days in court per month.

Mobility

The laptops provided caseworkers opportunities to work outside the office environment in new ways. This section reports on how the participants used those opportunities in terms of the type of work done, locations, and issues that influence use. Survey questions inquired about use at home, in court houses, and in the field. Issue questions focused on using the laptop outside of the office, such as (1) difficulty establishing connection, (2) loss of connection, (3) the speed of connection, (4) level of privacy (or personal work space and ability to ensure confidentiality of information), (5) personal safety, and (6) amount of time available to use the laptop. How information was accessed and entered by participants was also examined.

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[1] Participant(s) refers to those CPS caseworkers who tested the technology. Respondent(s) refers to the total number of participants who answered specific questions in either the baseline or post-pilot surveys or participated in the district teleconferences.

Use

Broome County DSS respondents reported using the laptop during normal work hours, after work hours, and when working on-call. Ten laptops were rotated among various units and emergency caseworkers were given exclusive use of a laptop during their time in emergency status (which lasts about one week). Open-ended survey comments revealed that the laptops were rarely taken into the field and that several respondents have not used the laptop in the field because they do not like it or it was already signed-out. Based on comments from those who did use the laptop, it was used primarily in case investigation and interventions and for documentation and reporting activities. Case documentation was the most frequent use, including inputting and updating notes. Other work included reading and reviewing case histories, opening new cases, checking client histories, word processing, and email. Approximately five respondents reported using the laptop to access various forms of information from government Web sites at least once a day, access email at least once a day or more, and access map directions once a day or more.

Several respondents commented on some of the subtle changes in mobility and communication patterns. One respondent stated, "I use the laptop primarily when I am doing emergency coverage. It speeds up my work, frees me from having to talk to the register [the State Central Registry] and hand write reports and allows me to check histories and enter notes directly into the system."

The extent to which caseworkers could access information while out of the office has a big influence on what kinds of mobile work are possible. Respondents reported returning to the office to access case information less frequency during the pilot period. Five respondents reported returning to the office to access information five times or more a week during the pre-pilot period, compared to three respondents returing five time or more during the pilot period. The respondents were in the field approximately the same number of days per week (average about four days) during the pre- and pilot periods.

Broome County DSS had district-provided external broadband cards for ten laptops during the pilot period. Five respondents reported minor obstacles to mobile use in the field and while at home. Problems included the inability to establish a connection and unreliable and slow connections. Lastly, device characteristics such as the built-in mouse were an issue suggesting that the cursor jumped around the screen and that it was frustrating.

Participants were asked about the ease of logging-on to the device. Overall, 29% said it was "Easy," 71% rated it as "Neither difficult nor Easy," and none of the respondents rated the log-on process as "Difficult" or "Extremely difficult."

Location

Table 1 below details the percentage of survey respondents using the laptop at different locations, as well as the average length of time the laptop was used. Five respondents reported using the laptop at home for an average of three hours per week. One respondent reported using the laptop in the field and while at court.

Table 1 - Location and Hours of Laptop Use per Week

	Use of Laptop* (n)	Average length of use per week*
Field	13% (1)	0.33 Hours
Court	13% (1)	0.33 Hours
Home	63% (5)	3.00 Hours
Do not use at all	13% (1)	--

* Based on survey respondents who took the post survey n=8. Total number of testers n=20.

The amount of time caseworkers spend in court suggests that it is an unexploited location for mobile work in many districts. However, respondents in Broome County DSS spend on average four days a month at court, but all (five respondents) reported waiting in court less than one hour during a court visit. Caseworkers may not be using the laptop in the court house or the field because of other competing interests that may limit the amount and type of work they can do. Several respondents mentioned that they do not use the laptop during the day because it is often signed-out by other participants.

Productivity and Efficiency

This analysis uses central database data and survey responses to examine two core questions about possible technology impacts within the Broome County DSS: (1) Are workers more productive with respect to case closings and progress note reporting? and (2) Does timeliness of reporting change?

Case closing is one way to assess any changes in efficiency and productivity. Figure 1 below shows the rate of timely closing of cases (in 60 days or less) increased during the test period, up from 61 in the pre-pilot period to 73 during the pilot period. The number of cases closed in over 60 days increased from 118 in the pre-pilot period to 199 during the pilot period. This is a marked increase in productivity; the total number of cases closed increased substantially from 179 in the pre-pilot period to 272 during the pilot period – a 52% increase. It is important to note that in this county the total number of cases available to be worked on[2] slightly increased from 595 in the pre-pilot period to 607 during the pilot period – a 2.0% increase.

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[2] The number of cases available to be worked on is the total of investigation stages that were open at any time during each of the pre-or pilot periods.

Figure 1 - Number of Broome County DSS Cases Closed Pre-Pilot and During Pilot

Number of cases closed
Pre-pilot and during-pilot - Broome County DSS
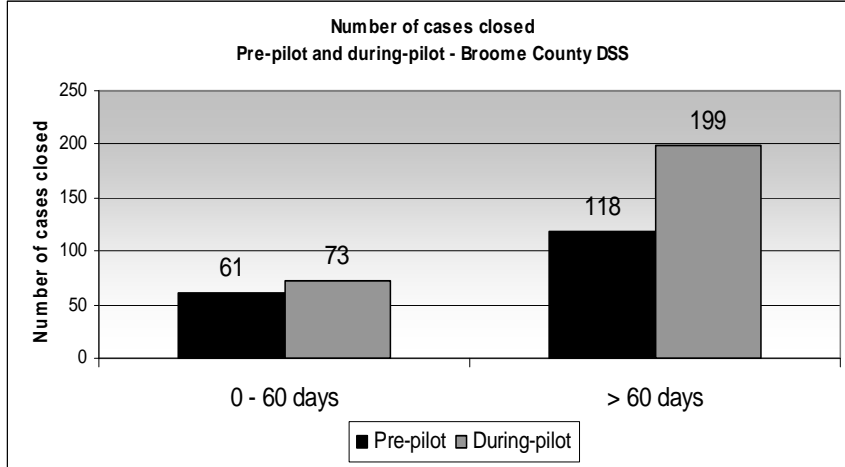
Another indicator of timeliness is elapsed time – or the number of days between an event and the posting of documentation regarding that event in the central database system. Figure 2 below shows trends in the elapsed time between progress note entry and the related event. During both periods, the majority of all progress notes were entered by the second day following the event. In addition, upwards of 60% of all notes for the pilot period were entered by the fifth day after an event. But contrary to expectations, the proportion of progress notes entered in each time period in the pilot period is consistently below that of the pre-pilot period, which saw over 80% of all notes entered by the fifth day. By this measure, timeliness decreased somewhat during the pilot period.

Figure 2 - Proportion of Progress Notes Entered by Days Following Event

Proportion of Progress Notes Submitted
Pre-pilot During-pilot - Broome County DSS
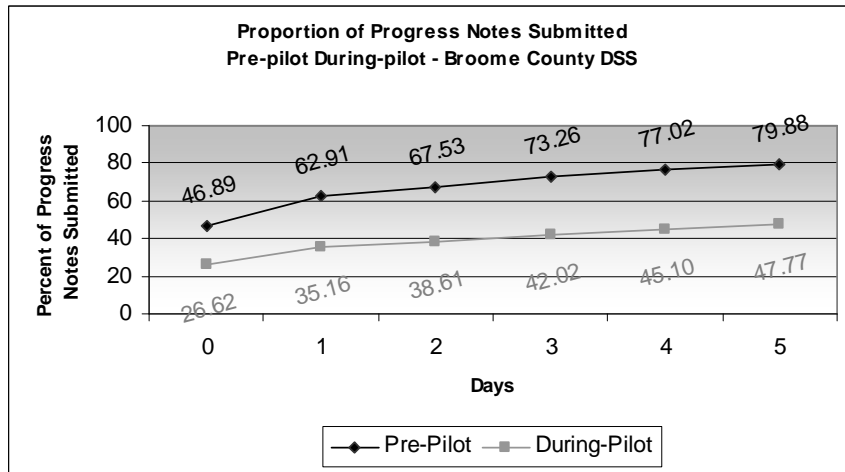
There may be multiple reasons for this decrease in the timeliness of note entry including that the overall increase in case closings during the pilot period may have changed the usual pattern of progress note entry. There was clearly an effort put into closings cases during the pilot period that could have had this effect. Some additional adjustments to deployment and work processes may be necessary to take full advantage of the laptops. One respondent reported, "The keyboard on the laptop is smaller than a normal keyboard and I am very prone to typing errors when using it. If working from home, I prefer to dictate or use my desktop as I spend less time proofreading and correcting mistakes. Also, although my unit has two laptops, the same two workers have them

constantly. This is not a huge issue as I prefer not to use them, but has created problems for others in the unit." Adjusting to these issues can be part of the learning process in adapting to the new technologies.

Participants were asked to what extent using a laptop made a difference in CPS work compared to not having the laptop. Five different areas were examined: (1) timeliness of documentation, (2) ability to do work in court, (3) ability to access case information, (4) communication with supervisors, and (5) service to clients. Respondents were asked to rate the difference on a five-point scale where 1 = "Much worse," 3 = "About the same," and 5 = "Much better."

Most respondents reported the use of laptops improved their work in terms of timeliness and accessing information, with none reporting a negative impact (Table 2 below).

Table 2 - Perceived Change Timeliness and Work Impacts – Broome County DSS

	Much worse (n)	Somewhat worse (n)	About the same (n)	Somewhat better (n)	Much better (n)
Timeliness of documentation	0%(0)	0%(0)	60%(3)	20%(1)	20%(1)
Ability to do work in court	0%(0)	0%(0)	80%(4)	20%(1)	0%(0)
Ability to access case information	0%(0)	0%(0)	80%(4)	20%(1)	0%(0)
Communication with supervisors	0%(0)	0%(0)	100%(5)	0%(0)	0%(0)
Service to clients	0%(0)	0%(0)	80%(4)	20%(1)	0%(0)

Overall, two respondents reported timeliness of documentation was "Somewhat better" or "Much better" using the laptop. And one respondent reported the ability to access case information as being "Somewhat better" or "Much better" using the laptop. Respondents reported no improvement in communicating with supervisors and only one reported positive impacts in providing service to clients. Ability to work in court improved for one respondent.

For some respondents, the value of the portability was significant. One reported:

> I use the laptop primarily when I am doing emergency coverage. It speeds my work, frees me up from having to talk to the register and hand write reports and allows me to check histories and enter notes directly into the system. It allows me to work from home at night, so I can get more accomplished in a more comfortable environment.

Some respondents reported that the low reliability and speed of the wireless connections were a problem when using the laptops in the field, which could account for these modest levels of reported improvement in productivity. They also reported that laptops were not always available when desired because they were signed out to other caseworkers. None, however, reported a negative impact on timeliness, which is somewhat inconsistent with the timeliness of documentation results obtained from the central data base. It is possible that the reduction in timeliness seen in those results was too small to be noticed by the caseworkers.

Satisfaction

The overall level of satisfaction with the laptops was moderate. Figure 3 below shows that three of the six respondents expressed being "Somewhat satisfied" or "Very satisfied." One respondent reported being "Somewhat dissatisfied" with the laptops, while two respondents indicated that they were "Neither Dissatisfied/Satisfied."

Figure 3 - Overall User Satisfaction with the Laptops
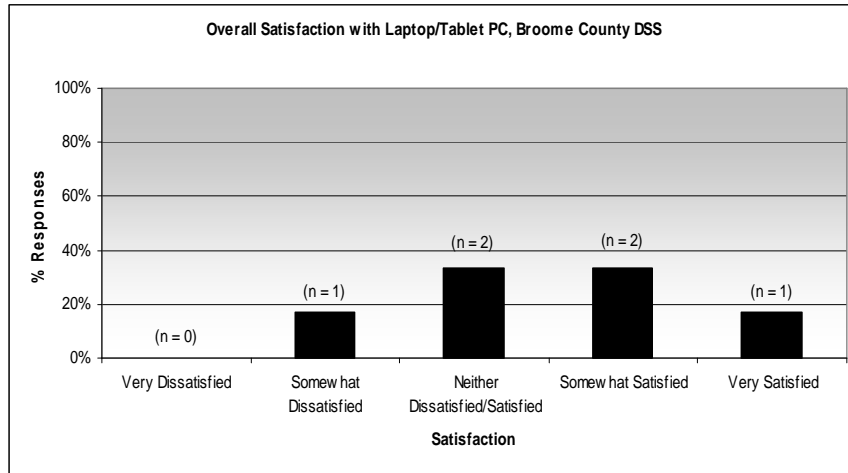
Based on survey respondents who took the post survey n = 8. Total number of testers n = 20

Individual, organizational or managerial factors may be influencing these overall satisfaction levels. One respondent reported:

> The laptop is a great tool and a great start…however it is VERY slow and there is inconsistent access to the H drive. I have found that it is faster for me to use my personal laptop using a Word doc. and then pasting it into CONNECTIONS at the office.

Laptop use generally was not seen as contributing to lower job-related stress; three of the five respondents said that it did not reduce stress, while the other two said it did. Those who reported a reduction in stress attributed this to their ability to catch up on their work and having the flexibility of working on documentation outside of the office. One respondent said, "I am able to complete my work at home. Before having the laptop I was doing notes at home and having the secretaries put them into CONNECTIONS. Now I am able to complete them myself, and do the actual CONNECTIONS work at home after hours, on the weekends, and time-off." The most frequently mentioned reason respondents noted for not reducing stress was that the laptops were generally unavailable for use given the existing sign-out process. A few respondents expressed this similar sentiment, "I do not have a laptop assigned to me, I would probably like to have a laptop personally assigned to me. The current sign-out system with one laptop per worker unit is insufficient."

All six respondents would recommend the use of laptops to colleagues. The reasons mentioned included ability to use time more efficiently, increased flexibility in respondents' ability to do work, increased timeliness of documentation, and increased access to information. One caseworker pointed out that, "Even though I have said the use of the laptop does not necessarily assist me with

my job. I do believe it is a beneficial tool to have, especially for those that do emergency coverage. Plus, it is one step in assisting caseworkers with getting their job done."

APPENDIX A – Methodology, Data Collection, and Timeline

There were three streams of data collection throughout the project. Two online surveys, as well as data from the central OCFS CONNECTIONS database, provided quantitative data to assess various productivity, satisfaction, and timeliness measures. In addition, the different uses and locations of use were documented. This data was supplemented by qualitative data gathered from ten district teleconferences. Each method is described in greater detail below.

Online Surveys

Two separate surveys, a baseline and post-pilot survey, were administered. The surveys collected data about respondents' perceptions and attitudes using the laptop or tablet PC within several areas of CPS work – work practice, work time, demographic information, mobility/location, skill and stress levels, technology acceptance, training, and use of technology. The surveys were developed over a period of a several months and a pre-survey was tested. The surveys were modified based on the pilot survey results and the project team's knowledge and understanding of CPS work. The online surveys were developed and administered through commercial software (Survey Monkey).

The names, email addresses, and titles of participating CPS caseworkers were collected from each of the participating County DSS. Personalized survey invitations were emailed to participants. The baseline survey was administered prior the deployment of laptops or tablet PCs to participating caseworkers. The baseline survey was open for three weeks starting on 9/21/07 and ending on 10/5/07.

The post-pilot survey was administered three months following the deployment of laptops. The survey was open for one week; starting on 1/3/08 and ending on 1/10/08. Data was collected from three new thematic categories: the impact of laptops on caseworkers' daily activities, mobility-related issues, and technical difficulties experienced during the pilot. Data quality checks were performed and the data was recoded as needed.

Teleconferences

During the week of December 10 – 14, 2007, CTG held separate teleconferences with project participants in 10 County DSS in NYS to learn more about how they were using the laptops and tablets deployed for CPS work. Participating County DSS were chosen by CTG and the NYS OCFS liaisons. Criteria for choosing the districts included (1) how long they had the technologies in use, and (2) districts that provided a full range of geographical representation across the state, in terms of rural and urban settings and overall size.

Each district participated in one teleconference with CTG interviewers. All participants were given sample questions before the teleconferences that dealt with deployment, connectivity, use and location, changes in work, issues/concerns, policy implications, and overall benefits of laptop use. The following table shows the districts interviewed and the number of participants in each call.

Table 3 – Teleconference time and participant information

County DSS	Date of Teleconference Interview	# of Caseworkers	#of Supervisors	Other(s) Participating
Albany	12/10/07	6	0	LAN Administrator
Chemung	12/1107	6	1	-
Clinton	12/10/07	7	1	-
Nassau	12/13/07	13	0	Assistant Director
Niagara	12/10/07	2	2	Staff Development Coordinator; IT Representative
Onondaga	12/11/07	8	0	IT Representative
Orleans	12/11/07	3	0	LAN Administrator
Putnam	12/13/07	3	1	-
Ulster	12/15/07	4	3	-
Washington	12/12/07	4	0	-

CONNECTIONS Data

The overall objective for using CONNECTIONS data was to measure the effect of the use of mobile technologies on CPS work practices by using data from the central database. The CONNECTIONS dataset (i.e., the central database) contained information on case records and caseworkers' progress notes. The information contained within each of these records included: Stage ID, Person ID, time-related information about the *investigation stage* (Intake Start Date, Investigation Stage Start Date, Investigation Stage End Date); *progress notes information* (Progress Notes ID, Progress Notes Event Date, Progress Notes Time, Progress Notes Entry Date, Progress Notes Types, Progress Notes Purposes); *safety assessments* (Safety Submit Date, Safety Approval Date) logged by caseworkers in each County DSS. The CONNECTIONS data was pulled by the date a progress note was entered by participants during two timeframes, the pre- and during-pilot phases (09/10/07 – 11/09/07 and 11/10/07 – 01/09/08 respectively). A total of 6,982 progress note entries and 786 unique investigation stages made up the dataset from 20 caseworkers.

Appendix B – Device Specifications

All devices were selected, procured, imaged, and delivered to the County DSS by OCFS.

Laptop

Latitude D620, Intel Core 2 Duo T5500, 1.66GHz, 667Mhz, 2ML2 Cache, Dual Core, 14.1 inch Wide Screen WXGA LCD for Latitude D620, 1.0GB, DDR2-667 SDRAM, 1 DIMM for Dell Latitude Notebooks, Internal English Keyboard for Latitude Notebooks, Intel Integrated Graphics Media Accelerator 950 Latitude D620, 60GB Hard Drive 9.5MM, 5400RPMfor Dell Latitude DX20, Standard Touchpad for LatitudeD620, No Floppy Drive for Latitude D-Family Notebooks, Windows XP Professional, SP2 with media, for Latitude English, Factory Installed, Dell Black USB 2 Button Optical Mouse with Scroll for Latitude.

Tablet

HP Compaq tc4400 Tablet PC 26 EN376AV Product - HP Compaq tc4400 Tablet PC, Operating system - Genuine Windows® Vista Business, VISTA label - Microsoft® Vista Ready Label, Form Ultramobile form factor, Intel® Core™2 Duo Processor T5600, (1.83GHz, 2MB cache, 667MHz FSB), Intel® Centrino® Duo Label, 1024MB (667MHz, DDRII memory, 1 DIMM), 80GB Hard drive (5400 rpm), 12.1-inch TFT XGA WVA Display with Fingerprint Reader, 56K Modem, 10/100/1000 NIC, 6-cell high capacity Lithium Ion internal battery, Digital Eraser Pen with tether and clip, Keyboard with Enhanced Dual Pointing, Intel® Pro Wireless 3945ABG, security - Embedded TPM 1.2 security chip, and three year worldwide limited warranty.

Appendix C – The Center for Technology in Government (CTG)

The Center for Technology in Government (CTG) is an applied research center committed to improving government and public services through policy, management, and technology innovation. Through its program of partnership, research, and innovation, the Center provides government organizations and individuals with an array of tools and resources designed to support the development of a digital government. The goal of every CTG partnership project is to build knowledge that improves the way government works. CTG projects have helped state, local, and federal agencies increase productivity and coordination, reduce costs, enhance quality, and deliver better services to citizens and businesses. The results generated by each project add to a growing knowledge base designed to support the work of both government professionals and academic researchers. CTG receives funding through the University at Albany's state allocation, as well through grants and awards from foundations and federal agencies such as the National Science Foundation.

Since its creation in 1993, the Center has:

- conducted almost 50 partnership projects, which produced outcomes that have helped state, local, and federal government agencies improve services and operations;
- collaborated with nearly 100 government agencies, 42 private companies, and 14 academic institutions and research organizations;
- issued over 100 guides, reports, and online resources designed to support the work of government professionals, and over 300 scholarly articles that have contributed to the field of research on IT innovation in government organizations;
- developed and evaluated 12 prototype systems that answered critical policy, management, organizational, and technology questions;
- obtained 37 research grants and fee-for-service contracts for over $10 million;
- been honored with 16 state and national awards such as the Ford Foundation's Innovations in American Government award;
- given over 250 trainings, workshops, and conference presentations provided data; and
- support to more than 20 doctoral dissertations and masters projects.

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