



Re-Engineered Field Operations Powered by a Unified Platform

FedCASIC 2019 | April 17, 2019

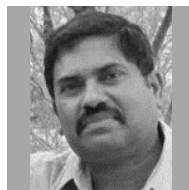
Pegasystems, Inc.



Pegasystems Presenter Introductions



TJ Oleksiak
Account Executive
US Federal Gov't
[Pegasystems](#)



Raghu Govindaraj
Principal System Architect
Pega Consulting
[Pegasystems](#)



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Principal System Architect
Pega Consulting
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Context for Today's Talk

The 2020 Census

Goals and Key Innovation Areas

Overarching Goal: To count everyone once, only once, and in the right place

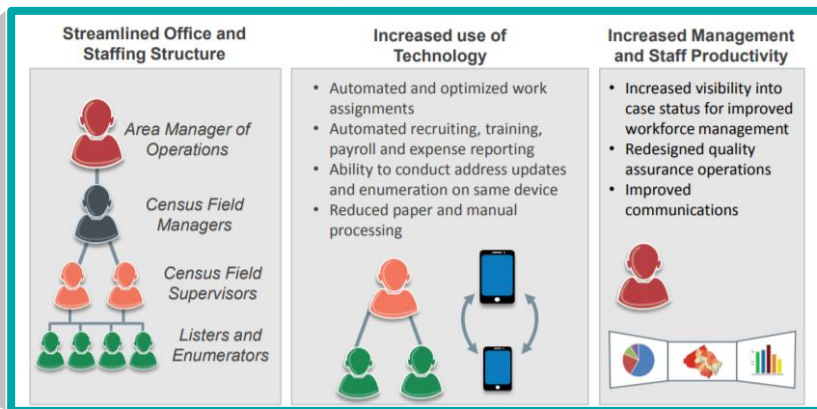
Challenge Goal: Conduct a 2020 Census at a lower cost per housing unit (adjusted for inflation) than the 2010 Census, while maintaining high quality results

Focus on Four Key Innovation Areas



2020 Census: Count the Population Reengineering Field Operations

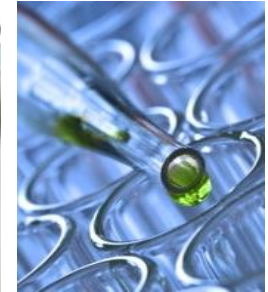
Use technology to more efficiently and effectively manage the 2020 Census fieldwork.



Reengineering the 2020 Census, Presentation to the Committee on National Statistics Public Seminar October 23, 2015: Slide 5 ([link](#))

2020 Census Program Update Presentation to the National Advisory Committee, June 14, 2018 Albert E. Fontenot, Jr., Associate Director Decennial Census Programs, Slide 12 ([link](#))

Who is Pega? Who uses Pega?



**6 OF THE
TOP 10**

GLOBAL
BANKS

**7 OF THE
TOP 10**

INSURANCE
COMPANIES

TOP 8

LARGEST
HEALTHCARE
PAYERS

**5 OF THE 6
LARGEST**

FEDERAL
DEPARTMENTS

**300M SERVICED
CONSTITUENTS
A DAY**

PUBLIC SECTOR

**8 OF THE
TOP 10**

COMMUNICATIONS
SERVICE
PROVIDERS

**8 OF THE
TOP 10**

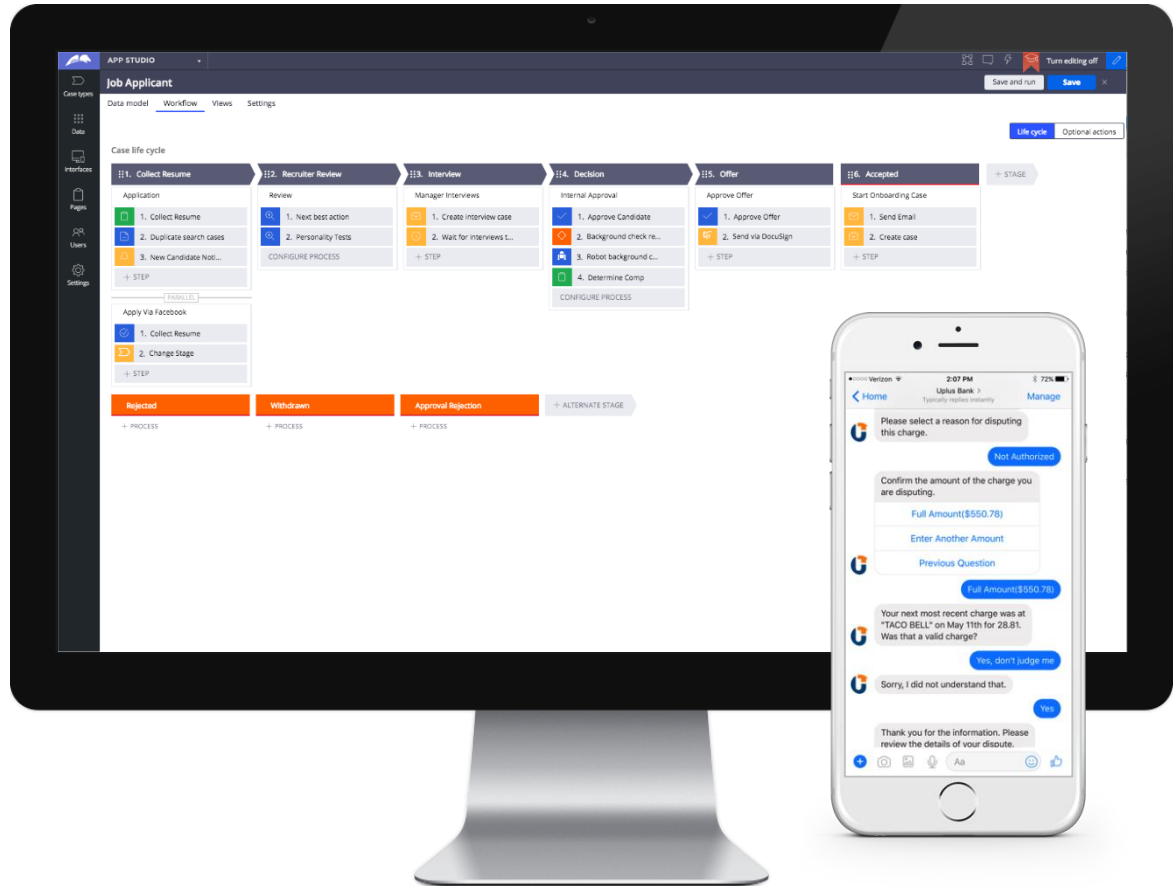
LIFE SCIENCES

- Software company founded in 1983 in Cambridge, MA - USA
- 4,000+ employees worldwide
- Public company since 1996, NASDAQ: PEGA
- Multiple patents and awards for software innovation

Core to Pega: Low Code Development

A shared language for innovation

- Business and IT collaborate in a single environment.
- Business friendly models define application behavior.
- Continuous and real-time collaboration between business and IT.
- Software that Writes your Software™. Auto-generated:
 - Java
 - HTML5 / CSS3
 - JavaScript
 - SQL
- Proven to deliver 12X faster than code.
- Quickly scale and extend your apps.
- Future Proof Architecture.



Enterprise Census and Surveys Enabling (ECaSE) Platform

Pega software selected for Enterprise Survey Operations (2020 and beyond)

Market Leading Unified COTS Platform



**LEADER IN
CASE
MANAGEMENT**



**LEADER IN
REAL-TIME
DECISIONS**



**LEADER IN
BPM**



**#1 in Digital Process
Automation (DPA)**

Census COTS Capability Assessment and Analysis Findings – May 2016

- Commercial Best Practices
- Cloud Choice / Elasticity
- Reuse / Layer Cake
- Software that Writes Software helps “future proof”
- Speed to Value: “The resulting functionality from a ten-day sprint was often comparable to the results of in-house custom development of approximately six months.”
- Innovations (e.g. mobile offline)
- Flexibility (e.g. mobile platform independence)



Figure 3: In-Scope Business Functional Need Assessment

What Is Pega Providing for the 2020 Census?

Enterprise Census and Surveys Enabling (ECaSE) Platform Capabilities

CASE MANAGEMENT

1

ECaSE OCS

Survey Operational Control System



Survey

The “central brain” that ingests address and probability data, plans survey operations, produces operational “workloads” and tracks progress of response data collection across survey modes (channels).



3

ECaSE FOCS

Field Operational Control System



Field

Ingests the remaining workloads for field operations, such as Address Canvassing or Non-Response Follow Up and helps distribute the workloads to the mobile devices of individual Field Representatives and Enumerators.



5

Mobile Case Management

Dashboard & Monitoring, Time and Expense



Control and Monitor

The Dashboard for managing the mobile operations and tracking of progress of the Enumerators in the field.



DATA COLLECTION

2

ECaSE ISR

Internet Self Response



Internet Data Collection

The web-based data collection instrument that will be public facing for the 2020 Census. Anticipated to have peak volume of 600k concurrent users with a total potential workload of 150m+ households.



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ECaSE Enumeration (ENUM)

Enumeration / Non-Response Follow up



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Enterprise Census and Surveys Enabling (ECaSE) Platform *Key Delivery Achievements & Results*

- **Speed to Delivery:** 2017 Census Test ISR delivered in 6 months.
- **Secure:** Internet Self Response (ISR) penetration tested by third party for the 2017 Census Test and there were no major findings reported. Census continues to test for security with government and commercial partners.
- **Scalable:** Tests prove ISR scales to 600k concurrent users. Performance and scale testing for ENUM underway; Architecture designed for elasticity to scale up or down on AWS GovCloud infrastructure.
- **Enablement & Self-Sufficiency:** Agile Development; Pega Enablement focus and progress.

“I’m happy to report we could scale ISR to the needed number of concurrent users, as defined by the demand models and infrastructure in the cloud. Based on results, the 2020 Census Executive Steering Committee has made the decision to use ECaSE ISR as THE ISR SOLUTION for the 2020 Census.” – Atri Kalluri, Chief, Decennial IT Directorate (DITD), at 2020 Census Program Management Review (PMR), January 26, 2018

2018 End-To-End Test Results and 2020 Census Operations Readiness

2018 End to End Test Achievements :

- **Field Enumeration, “We’ve now successfully tested these technological advances that will allow for a more efficient use of our workforce for the 2020 Census. In the 2018 Census Test, we were able to complete 1.56 cases per hour worked, compared to 1.05 in the 2010 Census.” – Al Fontenot**

<https://www.census.gov/newsroom/press-releases/2018/census-demonstrates-readiness-for-2020-census.html>

- **“The relative ease with which the temporary staff we hire as enumerators were able to utilize the technology was great. There was some concern that the iPhones might not come as easily to retired folks as millennials. ... I was out in the field with a veteran of several censuses, a retired woman, and she was able to use it like a pro. That’s why we saw increased productivity among enumerators.” – Ron Jarmin**

<https://www.providencejournal.com/news/20180924/us-census-bureaus-test-of-high-tech-in-ri-success-director-says>

2018 Census Test

Thank You Providence, RI



The **2018 Census Test** is the culmination of more than a **decade of research** and the last major milestone before the **2020 Census**.

All systems deployed and integrated effectively.

Response Rate

52.3%

More than half of all households responded to the test on their own (surpassing our goal for the test).



Of those who responded on their own, **6 in every 10** did so **online.***



61%
Internet

7%
Phone

31%
Mail

Arabic
English
Chinese
Russian
Tagalog
Vietnamese
Korean
Spanish
Languages Tested

(These languages were tested for phone response. Additional languages totaling 12 non-English languages will be available for Internet and phone response in the 2020 Census.)

* Percentages do not add to 100 due to rounding.

Note: This graphic excludes households who received hand-delivered questionnaires rather than mailed materials (less than 1 percent of households).

Those who did not respond to the mailed questionnaire on their own were visited by one of the **700+ census takers** hired for the 2018 Census Test.

The **test results** showed the Census Bureau was able to **successfully:**

- Automate** processes for recruiting, hiring and training.
- Reduce** workload by using administrative records to eliminate vacant housing units first.
- Optimize** routing of field staff assignments.
- Capture and transmit** interview data safely and securely.



United States*
Census
Bureau

U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU
[census.gov](https://www.census.gov)

Source: 2018 Census Test
www.census.gov/2018censustest

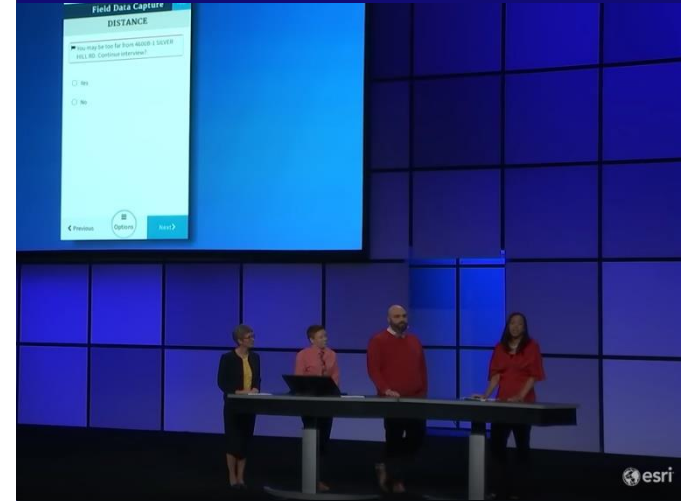
Publicly Available Demonstrations

Internet Self Response (ISR)

- At the 2020 Census PMR from January 2017, Census staff delivered a 10 minute demo of the Pega-powered ECaSE Internet Self Response (ISR) instrument. The presentation was delivered by Jason Reese, ISR Product Owner from Census.
- To watch the ISR demo from the PMR you can go to https://youtu.be/p8hk8Vi5R_A and fast forward to **01:02:30**.

Enumeration (ENUM)

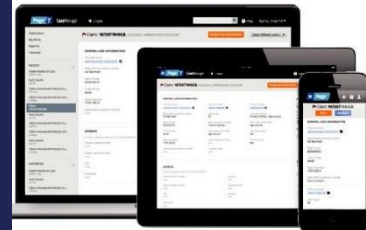
- **PMR:**
 - At the 2020 Census Program Management Review (PMR) from April 2018, our customer delivered a 20+ minute live demo of an Pega Mobile 2020 Census field enumeration application.
 - The recording is here: <https://www.census.gov/library/video/2018/2018-04-20-2020-pmr.html>
 - The backstory on Non Response Follow Up Operations (i.e. functional overview) begins at **1:05:30**
 - The actual **live demo of Pega ECaSE ENUM starts at 1:13:55**. It runs through 1:37.
- **ESRI Federal Users Conference:**
 - At the ESRI Federal User's Conference in January 2019, Census Deputy Director, Ron Jarmin, delivered a 30 minute keynote on the mainstage. Featured in the Census presentation was about 4-5 minutes on the Pega Field Enumeration application and it's integration with the ESRI maps. You can see the Field Enumeration portion starting at 16:30 at <https://www.youtube.com/watch?v=GsxATzr5b0Y>



"the team demoed what is arguably the most transformative tool of all: an app called ECaSE, which some 350,000 census workers will use as they take to the streets on foot next year to follow up with the estimated 60 million households that are expected not to respond to the census the first time around. The app, which was developed in partnership with a contractor, will run on iPhone 8 devices provided by the bureau, and will personalize canvassers' routes based on their work availability, the languages they speak, and the best time of day to visit each household. The data they collect will be encrypted and automatically uploaded to the Census Bureau's central repository. The goal is to replace, or at least radically reduce, the 17 million pages of paper maps that the bureau printed out for the 2010 census and the 50 million paper questionnaires that field workers had to tote around with them. And because the tools are expected to make field workers more efficient, the bureau expects to hire roughly half as many people as it did in 2010." <https://www.wired.com/story/us-census-2020-goes-digital/>

“FOCS”

Field Operational Control System



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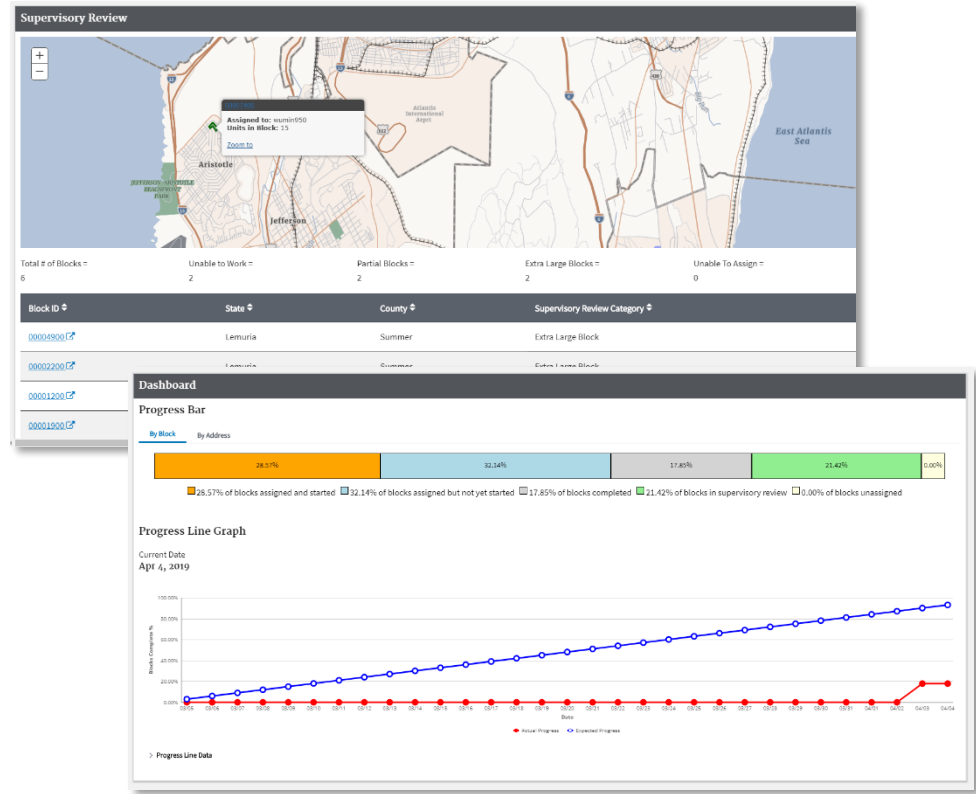
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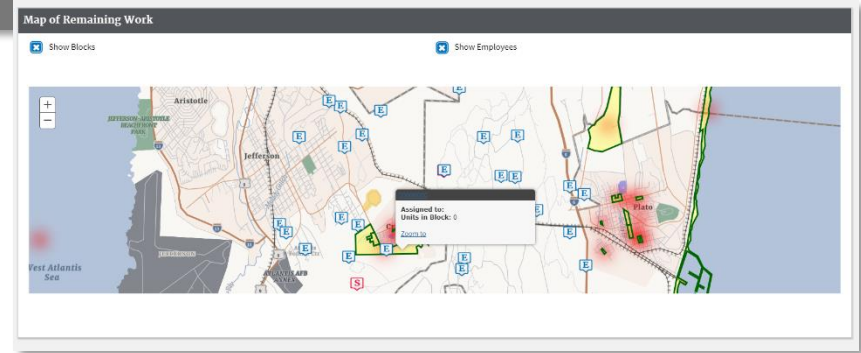
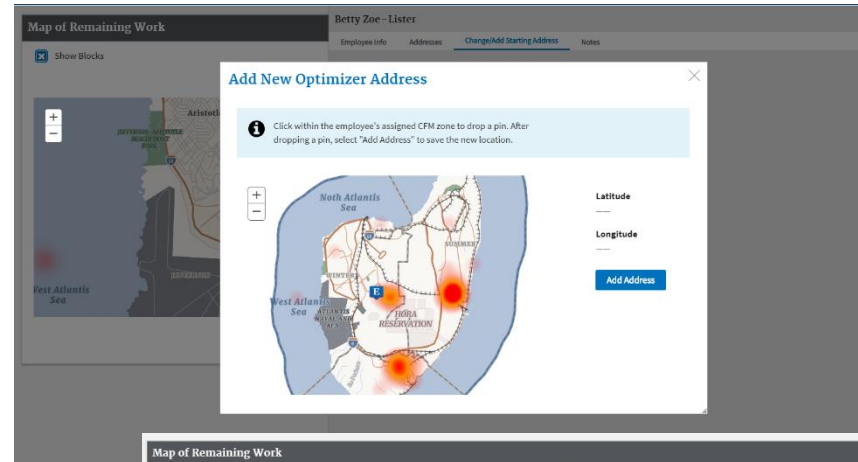
Field Cases Overview

- Form teams of field workers based on geography
- Manage field worker availability
- Manage field worker performance
- Manage work assignment
- Perform Case Reviews by Supervisor
- Manage operation progress
- Detect and Manage Fraud



Managing Remaining Work and Re-assigning Cases

- Ability to easily view work remaining by area
- Ability to assign workers to work areas



Team Management, Building, and Availability

- Visually associate field workers with supervisors
- Visually build teams of field workers
- Manage work based on availability of field workers
- Alert supervisors of shortages of worker

The screenshot displays the 'Build a Team' interface. At the top, there are dropdown menus for 'Census Supervisor/Manager' (Ted Humano) and 'Available Employees Residing in Zone' (99). Below this is a map of a coastal area with labels for Aristotle, Jefferson, and Plato. A tooltip for 'Name: Dan McCool' is visible over the map. Below the map are 'Assign' and 'Remove' buttons. The interface is divided into two main sections: 'Available Employees' and 'Employees Assigned'. The 'Available Employees' section lists Donna Nombres and Jack Zoe, both in the 'Lister' position. The 'Employees Assigned' section is currently empty. Below these sections is a detailed availability grid for several employees.

NAME	THU 04/04/19	FRI 04/05/19	SAT 04/06/19	SUN 04/07/19	MON 04/08/19
Blau, Jane	10:00 AM - 11:00 PM (3 hours)	3:00 PM - 5:00 PM (2 hours)	9:00 AM - 12:00 PM (3 hours)	9:00 AM - 5:00 PM (4 hours)	No Availability
Nee, Peter	9:00 AM - 5:00 PM (7 hours)	9:00 AM - 5:00 PM (7 hours)	10:00 AM - 4:00 PM (5 hours)	9:00 AM - 11:00 AM (2 hours)	No Availability
Burd, Sam	10:00 AM - 3:00 PM (4 hours)	9:00 AM - 5:00 PM (5 hours)	9:00 AM - 5:00 PM (4 hours)	9:00 AM - 5:00 PM (7 hours)	No Availability
Woo, Wendy	9:00 AM - 5:00 PM (5 hours)	9:00 AM - 5:00 PM (4 hours)	9:00 AM - 5:00 PM (4 hours)	9:00 AM - 5:00 PM (6 hours)	No Availability
Con, Elizabeth	No Availability	No Availability	No Availability (3.25 hours)	9:00 AM - 3:00 PM	No Availability
Moe, Ellie	No Availability	No Availability	No Availability	9:00 AM - 5:00 PM (4 hours)	No Availability

Managing T&E Cases

- Payroll and Expense submission
- Payroll and Expense Approval
- Detect Fraudulent Payroll and Expense Submissions

Timesheets Requiring Certification

Time and Expense Approver
Larry Loe

Submitter Name	Work Date	Submission Date	Total Hours Claimed	Review Timesheet	Transmission Failure
Annie Koe	04/02/2019	04/02/2019	8	Review Timesheet	
Miguel Alguero	04/02/2019	04/02/2019	8	Review Timesheet	
Rob Suleto	04/02/2019	04/02/2019	1	Review Timesheet	
Tony Humano	04/02/2019	04/02/2019	1	Review Timesheet	
Terry Roe	03/31/2019	03/31/2019	1	Review Timesheet	
Harry Habitant	04/02/2019	04/02/2019	.75	Review Timesheet	

Time and Expense

Summary
04/03/2019

STATUS: NOT ATTESTED
TOTAL TIME WORKED: 8.00

[Summary](#) [Expenses](#)

WORK TYPE Regular GOE	PAY TYPE Regular
TOTAL HOURS 8.00	
START TIME 9:00 AM	END TIME 5:00 PM

[Previous](#) [Next](#)

Enumeration (“ENUM”)

Mobile Field Enumeration Application



Build
for
Change®

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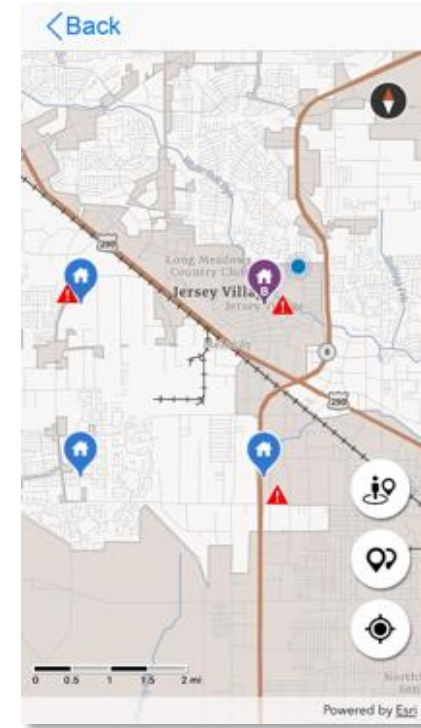
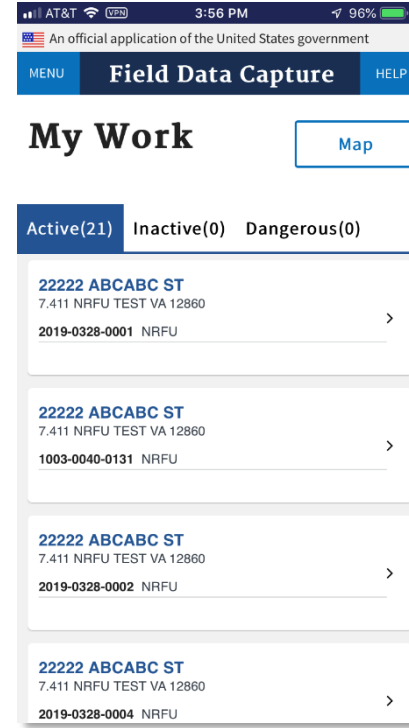
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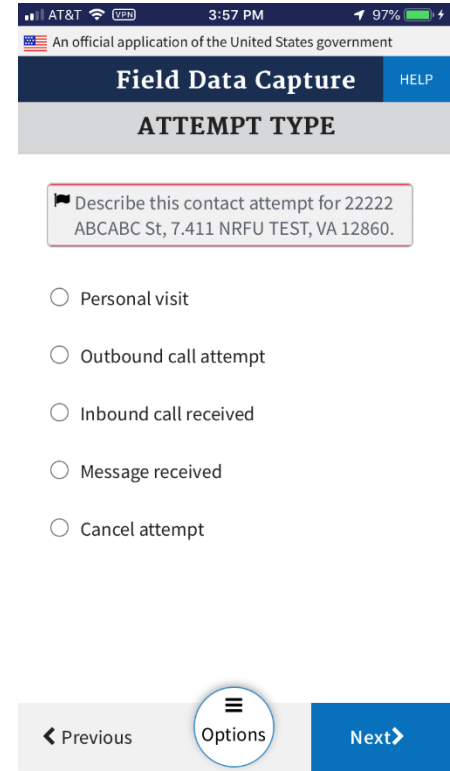
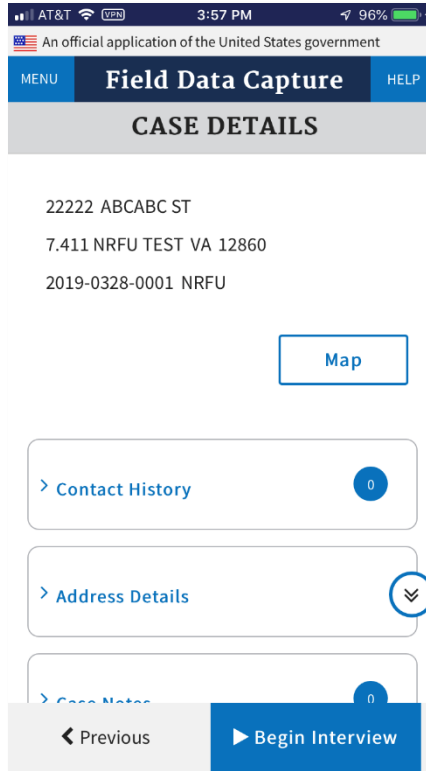
Field Data Capture: My Work

- List of survey cases assigned for that day
- Work on assigned survey case
- Check the map for assigned cases location
- Work offline and online
- Survey syncs automatically when the device reaches coverage area



Field Data Capture: Working a Case

- Enumerators can check for the location of the survey case
- Enumerators can record household members information like name, age and other details
- Enumerators can change the language during the interview to Spanish and back to English at any given time
- Enumerators can record attempted notes for a survey case being worked on
- Enumerators can record dangerous address notes for each survey case being worked



Field Data Capture: Time And Expense

- Enumerators can record their time and expenses
- Record time spent for survey or training
- Mileage consumed for the survey or training
- Time & Expenses History will provide enumerators a clear view of submitted T&E status (accepted/pending)

Week of 03/31/19 to 04/06/19

Accepted TRANSMITTED-PENDING

0 0

Current Week's Time

	Accepted	TRANSMITTED-PENDING
Sun Mar 31, 2019	0	0
Mon Apr 1, 2019	0	0

Month Day Year

Apr 04 2019

Work Type

Training

Start Time

09 00 AM

End Time

05 00 PM

Clear

Add

Hours

Field Data Capture: Time And Expense (cont'd)

- Expenses incurred during survey or training
- Ability to take pictures of the receipt from the application and attaching it to the expense
- Submit the expenses for approval

The screenshot shows the 'Mileage' form in the 'Field Data Capture' app. The form includes the following fields and options:

- Total Miles Driven:** A text input field containing the number '25'.
- From:** A dropdown menu with 'Home' selected.
- To:** A dropdown menu with 'Training' selected.
- Add:** A blue button to submit the entry.
- Do you have any additional expenses?:** Radio buttons for 'Yes' (selected) and 'No'.
- Navigation:** 'Previous' and 'Next' buttons at the bottom.

The screenshot shows the 'Expenses' form in the 'Field Data Capture' app. The form includes the following fields and options:

- Expense Type:** A dropdown menu with 'Parking' selected.
- Expense Amount(s):** A text input field containing the number '10'.
- Comment:** A text input field containing the word 'Parking'.
- Modal:** A white modal with a blue border is open, showing three options: 'Take Photo or Video', 'Photo and Video Library', and 'Record Audio'. A 'Cancel' button is at the bottom of the modal.

Field Data Capture: Work Availability

- Enumerators can record their availability by week
- Record their availability / Non availability for each day
- Based on enumerators availability survey cases are assigned to them

AT&T 3:50 PM 96%

An official application of the United States government

MENU **Field Data Capture** HELP

Work Availability
(Single Day View)

Saturday, 04/06/2019

Not Available

From

8 00 AM

To

4 00 PM

Add

Total Hours Available

8

Cancel Submit

AT&T 3:53 PM 96%

An official application of the United States government

MENU **Field Data Capture** HELP

Work Availability
(5-Day View)

Friday, 04/05/2019
No Availability

Saturday, 04/06/2019
10:00 AM - 1:00 PM
(3 hours)

Sunday, 04/07/2019
9:00 AM - 2:00 PM
(5 hours)

Monday, 04/08/2019

Tuesday, 04/09/2019

Cancel Submit



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Build for Change[®]