

STUDY SERIES  
(*Survey Methodology* #2014-07)

**A Usability Evaluation of the Research and Testing  
Operations Control System (RTOCS) on an iPad Device  
in a Virtual Desktop Interface (VDI) Environment**

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*Disclaimer:* This report is released to inform interested parties of research and to encourage discussion. The views expressed are those of the authors and not necessarily those of the U.S. Census Bureau.



## ABSTRACT

In Spring 2014, the Census Bureau's Human Factors and Usability Research Group conducted a usability evaluation of the Research and Testing Operations Control System (RTOCS) using an iPad2 in preparation for the 2014 Census Test. The RTOCS is used by Field Operation Supervisors (FOS) and Crew Leaders (CL) to manage the work of Census Enumerators. Participants were asked to complete tasks these users will be required to do during field activities. Testing determined that there were high, medium- and low priority issues that could be addressed to make the application work more efficiently for users. High priority issues consist of the delayed response time of the application, and the mapping functionality being frustrating to participants. Medium priority findings consist of the difficulty participants experienced viewing tables within the application. These findings as well as additional usability comments, are discussed in this report.

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## **1. Introduction**

At the request of the Decennial Management Division (DMD), the U.S. Census Bureau's Human Factors and Usability Research Group conducted usability testing of the Research and Testing Operations Control System (RTOCS) using an iPad from February 3, 2014 to February 6, 2014. The RTOCS is used by Field Operation Supervisors (FOS) and Crew Leaders (CL) to manage and assign cases to enumerators, view case status reports, etc. The original code base for RTOCS was written and designed in the 1990s and was used for the 2000 Decennial Census (this system was called OCS). Modifications to this code base were made and used again in 2010 for the Field Verification Operation (FVOCS) and the Census Coverage Measurement Operations (CMOCS). It was decided that the core code base would be reused again for the Decennial 2014 Census Test which adopted the name of Research and Testing Operations Control System (RTOCS). This system was never intended or optimized to be used on a touch screen mobile device. However, with the recent migration to a Virtual Desktop Interface (VDI) environment, this evaluation will identify issues that are potentially problematic to these users using the RTOCS on an iPad 2 device. The main focus of the evaluation was to determine whether FOS' and CL's will be able to use this functionality on the iPad or whether, due to significant usability issues, they will need to use a keyboard/touchpad driven laptop for the upcoming 2014 Census Test.

Testing will include an assessment of the following:

- Are users able to select information accurately using an iPad?
- Does the use of a stylus help improve accuracy?
- Are users able to scroll through tables, screens, etc. (up, down, left, right) to see hidden information on the iPad?
- Are users able to pinch and enlarge the screen to see relevant information on the iPad?
- Do reports display in a way the users can see and understand all of the information?

## **2. Method**

Seven participants took part in the usability evaluation of the RTOCS (including one dry run participant). A dry run session was conducted to ensure that the testing procedures were appropriate for assessing the aforementioned objectives. Results from the dry run session was included in this report because it was comparable to the actual usability sessions in that the procedures and methodology were consistent. All participants were recruited internally from the U.S. Census Bureau (i.e., Census employees). Participants had at least one year internet experience and were unfamiliar with the RTOCS application. Participants varied in their level of experience using an iPad or similar Tablet PC. The mean age of the participants was 37.57 years, (range 23-72 years), and the mean education level was 18 years of schooling (range 16 -22 years). See Table 1 for details about the characteristics of the participants, including demographics and computer and Internet use.

**Table 1. RTOCS Participant characteristics**

Participants	n=7
Gender	
Female	4
Male	3
Age (in years)	37.57 (16.8)
Education	
≤ Some college	0
Bachelors degree	2
Post Bachelors degree	5
Race	
White	4
Black	1
Other	2
Tablet PC experience	
Yes	4
No	3
Average weekly Internet usage (hours)	61.5 (69.9) *
Average hours of social media usage (hours)	15.5 (14.9) *

\*n=6 dry run participant not included

### 3. Procedure

1. Prior to beginning the session, participants were briefly informed about the purpose of the study and the use of the data collected ([Appendix A](#)).
2. Participants were asked to read and sign a consent form ([Appendix C](#)) stating that they understood that the session would be recorded. The consent form also informed participants' of their rights and that they were voluntarily taking part in the study.
3. After the participant signed the consent form, video recording of the session began.
4. Participants were asked to complete a demographic questionnaire and a background questionnaire on their Computer use and Internet experience
5. Participants were given three tasks using the RTOCS application on an iPad (see [Appendix B](#)). These tasks were created by the Usability Research Group (in collaboration with DMD) to assess usability issues with using the application on an iPad2 mobile device. The tasks consisted of common activities FOS' and CL's would use the application to complete (e.g., assign cases to Field Representatives, view case status reports, etc.) Participants were randomly assigned to use either a rubber tip stylus or their finger to complete the tasks to assess whether the use of a stylus improved precision and accuracy in making selections with the application.

6. Participants began each task by first reading the test questions aloud. The test administrator read aloud step-by-step instructions to the participant on how to complete the task. See [Appendix B](#) for complete listing of tasks and instructions.
7. Lastly, debriefing questions ([Appendix D](#)) were asked to get additional feedback about the participants' experience with the application.
8. At the conclusion of the debriefing, the Test Administrator stopped the video recording. Overall, each session lasted approximately 60 minutes.

## 4. Results

The Results section gives detailed findings on participant accuracy, and subjective satisfaction ratings from the RTOCS study.

### 4.1. Participant Accuracy

In usability testing, participant accuracy is defined as the successful completion of tasks using the application. All users were given step-by-step instructions on how to complete the tasks using the application, therefore an objective measure of accuracy is not reported. It is important to note that level of effort varied due to the number of click/taps it took for individual participants to complete intermediate steps for each task. This is mostly attributed to the lack of precision and/or response time with the application.

### 4.2. Participant Satisfaction

At the end of each task participants were asked to complete a subjective satisfaction question (Figure 1) to assess how easy or difficult the task was to complete using the application. Table 2 provides a distribution of satisfaction ratings for each task. [Task 2](#) appears to be the most difficult task to complete with more participants responding that it was difficult to complete. Whereas [Task 3](#) was the easiest task to complete with the majority of participants marking a 1, that it was very easy to complete. It is interesting to note, however, that [Task 3](#) might actually be very difficult if it occurred in a real field setting with multiple cases to view (See Finding 5.2.2.2).

How easy or difficult was it to complete that task?

Very Easy Very Difficult

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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Comments:

**Figure 1. Satisfaction questionnaire administered after each task completion to assess level of difficulty.**

**Table 2. Frequency distribution for satisfaction ratings for Tasks 1-3**

	Task 1	Task 2	Task 3
1 Very easy		16%	66%
2	50%	16%	16%
3	50%	33%	16%
4		16%	
5 Very difficult		16%	

## 5. Usability Results

### 5.1. RTOCS Success

Success is defined as participants being able to perform tasks efficiently and satisfactorily using the RTOCS application on an iPad 2. With the exception of the mapping task (due to some technical difficulties), all participants successfully completed the tasks using the RTOCS application on the iPad. With test administrator instruction, each task took no longer than 10 minutes to complete. Although we have several recommendations to improve the performance and user satisfaction with the application on the iPad, we expect that even with no changes this application can be used by Crew Leaders and Field Office Supervisors in the field for the 2014 Census test.

### 5.2. Usability Issues and Recommendations

In this section, we discuss the results from the RTOCS usability study. We present the usability issues, and the recommendations for improvement.

The usability issues are classified into the following categories:

- High priority: These issues can prevent users from accomplishing their goals. The user-system interaction is interrupted, and no work can continue. This may also include usability issues that occurred most frequently during testing of the application. They are critical and should be addressed quickly.
- Medium priority: These issues reduce the efficiency with which tasks can be completed. They slow down and frustrate the user, but do not necessarily halt the interaction.
- Low priority: These issues are minor, but significant enough to warrant user comments. They negatively impact user satisfaction with the application, but do not directly affect performance.

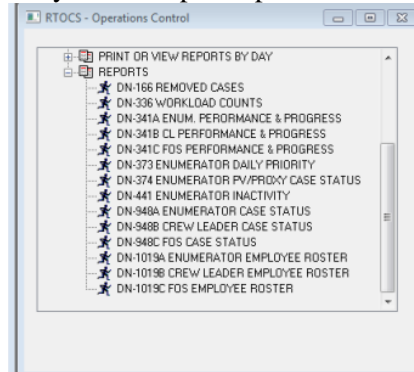
#### 5.2.1. High Priority

##### 5.2.1.1. *The application is not responsive and there appears to be a slight delay in registering selections*

While making menu selections on the RTOCS Operations Control menu (Figure 2) and manipulating windows, all participants commented that the application was not responsive. They often had to select items multiple times for a change to be made in the application. For example, when selecting the geography for [Task 1](#), one participant had to tap the '2390' geography four times in order for it to

register. Similarly, another participant had to tap geography '3-0103' five times to make the selection. During debriefing, the same participant commented "It appeared that the device wasn't responding to me".

It is important to note that there may be items on the Operations Control Menu that require double taps for selection and others that require only a single tap. It was difficult for participants to differentiate this. After completing [Task 2](#) one participant wrote in the satisfaction comments, "Was it slow or my finger too light? Had to tap multiple times to select". We observed difficulty with the finger and with the stylus when participants were making selections on the application.



**Figure 2. Menu items on the Operations Control was not responsive to users selection**

#### **Recommendation:**

Increase the sensitivity of the application so that user selections are easily detected. Shorten the time delay between when an item is selected and when the change occurs in the application. This issue may be attributed to network connectivity so we recommend using a network that is efficient for the use of the RTOCS.

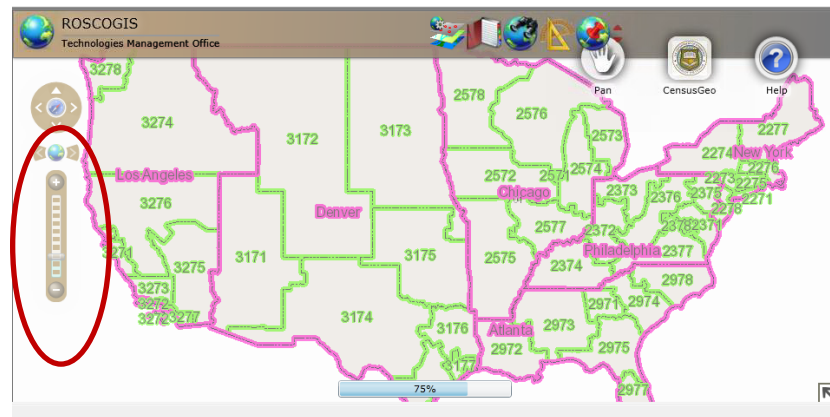
##### **5.2.1.2. Map functionality is not optimal for users**

While completing [Task 2](#) part C (e.g., View staff home location and workload on a map for the same case (9001-3000-0000)), participants experienced difficulty navigating the map. Participants were instructed to use the zoom tool provided on the map (noted by red oval in Figure 3) to zoom in to view content. There were instances where the map unexpectedly zoomed in too far after only a few clicks of the zooming tool. One participant commented "It wasn't clear to me that I was so zoomed in".

Many participants attempted to use the pinch to zoom feature when interacting with the map and were disappointed when they were unable to navigate in that way. During debriefing one participant commented that this lack of functionality made interacting with the map "frustrating". In the satisfaction comments for this task another participant noted "The scale on the map for zooming -HATE IT!!!!". When asked about her experience using the zooming tool to interact with the map, another participant commented "It's okay to use the control, but it would be easier if we could use the hand [referring to the pinch to zoom]." Similarly,



another participant commented, “I went to scroll like I would on the iPad, it was zooming in but not on the application and I had to use the application device to zoom, not just pinch and touch”.



**Figure 3. Participants experienced difficulty navigating the map using the zooming tool**

**Recommendation:**

Enable the pinch to zoom functionality on the map so that it is consistent with how users interact with mapping applications on a mobile device.

**5.2.2. Medium Priority**

**5.2.2.1. Scrolling to view tables was difficult for some participants**

[Task 3](#) (View the DN-948B Crew Leader Status Report and scroll over to find the percent Proxy for CLD 3-0103) required participants to use a table to locate information. Due to the table display size, similar to the one shown in Figure 4, participants had to scroll horizontally to view content. While all participants were able to successfully scroll and obtain the information they needed to successfully complete the task, some experienced difficulty with scrolling initially. Participants had to tap and hold multiple times on the scroll bar to get it to work. The difficulty with scrolling appears to be attributed to the lack of responsiveness on the application and the time it takes for selections to be processed within the application (e.g., time delay).

**Recommendation:**

Increase the sensitivity of the scroll bar so that it detects users actions

**5.2.2.2. Likelihood of reading data on table wrong when in report view – with multiple data in table.**

In the lab setting, we only had a handful of cases loaded on the system. We did not notice users struggling to find the answer to the task question about the percent of proxy cases completed (Task 3). However, in the field during an actual operation, it is likely that a user, because of the need to scroll far to the right, will lose sight of which row the specific Case ID is located. One participant actually commented that since the Case ID is on the left of the document (in the first column) it would be very easy to inaccurately report the percent proxy for the Case ID since the Case ID scrolls out of view when moving to the right to view the percent proxy column.

State (1)	County (2)	Tract (3)	AA (4)	Total Cases (5)	Removed Cases (6)	Remaining Cases (7)
IL	McDonough	010400	00-0001	8	3	5
			00-0004	3	2	1
			00-0005	20	0	20
CLD 1-0101 Total		1	3	31	5	26

Figure 4. Table display requires horizontal scrolling to view content

### Recommendation:

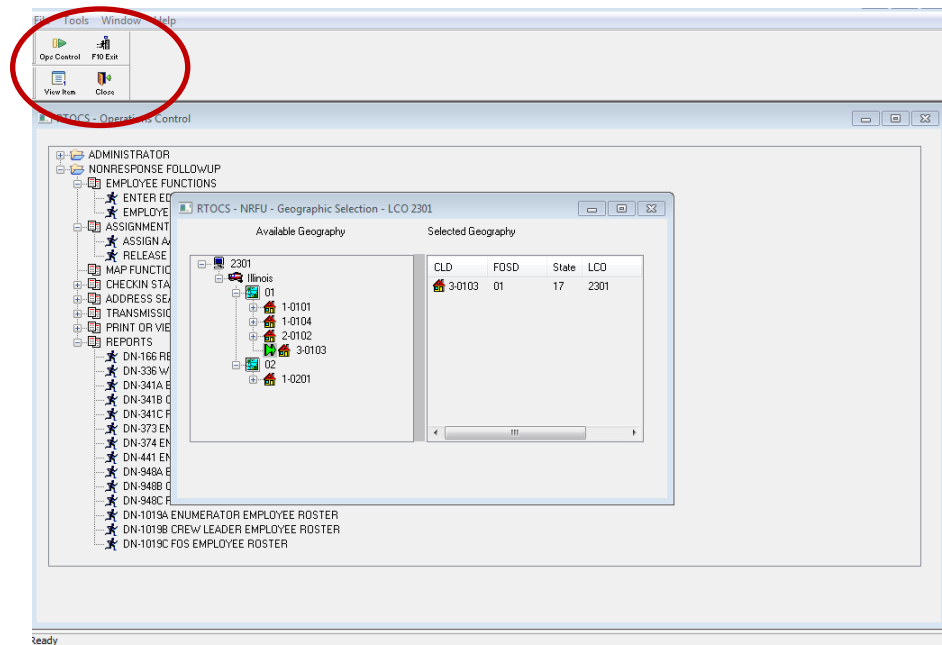
Adapt features common in excel such as freezing the first column pane so that the Case id column remains visible as the user scrolls horizontally. Additionally, the use of color shading can help users differentiate between table rows.

### 5.2.3.Low priority

#### 5.2.3.1. *Manipulating windows was not intuitive*

While performing tasks participants were instructed to open and close windows, view content, save content, etc.. To do this, they needed to utilize the top tool bar located outside the window view to manipulate the screen (See Figure 5). This was not immediately obvious as most participants were looking for the functionality inside the window they were viewing.

It also appears that the top tool bar icons actually move around on the screen, depending on what screen is open. For example, one participant went to click on the save button and it was not in the same location of where she had only recently clicked. This confused her. Additionally, there were other windows for which the tool bar completely disappeared and was inaccessible to the user.



**Figure 5. Icons used to manipulate active windows were not easily accessible to participants.**

**Recommendation:**

Resize and stabilize the icons so that they are noticeable on the application and easily accessible to users. In addition, include the functions available in the top bar on individual windows so that there is less confusion on how to manipulate screens.

**5.2.3.2. Stylus tested was not preferred**

No participant preferred using the stylus over their finger to complete the tasks. Four participants were assigned to the stylus condition where they were asked to complete the tasks using the stylus. The stylus did not improve user performance. In fact when asked to use a stylus to redo a task, one participant commented “Stylus seemed less responsive than finger”.

**Recommendation:**

Explore alternative stylus tools (e.g., a fiber tip stylus) to see if there is increased precision with the application.

**5.2.3.3. Pinch to zoom did not function as expected**

We showed participants how to pinch to zoom, but most of them preferred to attempt to tap on the “normal view” of the application. The pinch to zoom did not work as participants expected it to. One participant indicated that the pinch to zoom would take more time since she had to reorient the window each time she used it. Additionally, the top tool bar icons disappeared when the pinch to zoom function was used. To use any of those icons, the display had to be minimized.

**Recommendation:**

When using the pinch to zoom functionality, refocus the screen so that it is centered on the device and do not let the top tool bar icons disappear.

## **6. Additional Usability Comments**

In addition to the usability issues cited in the previous section (from participants overt behaviors/actions), the usability team made the following additional assessments based on observations and expertise:

### **6.1. Target size of selections were too small**

The target size of options was quite small on the RTOCS application. To address this, participants would use the pinch to zoom functionality to enlarge the screen. While the pinch to zoom functionality was common for most participants, not all participants were aware of this feature on the application.

The small target size of selections may have led to increased imprecision of target selection, requiring multiple taps noted in Section 5.2.1.1. An alternative would be to increase the target size of selections. For example, in the Operations Control Menu, make the entire label name a target versus only the icons.

### **6.2. Application functionality is not consistent with tablet users expectations**

While most participants did have experience using a Tablet PC (4 out of 7), there were instances when navigating the iPad was inconsistent with their expectations. For example, the pinch to zoom functionality did not work on the application as it does on a Tablet PC, particularly on the map (See Sections 5.2.1.2 and 0). In addition, the VDI environment most resembles a desktop PC which may have been off-putting to some participants. One participant commented, “These formats are for Windows....so that’s the reason I feel weird. Using the iPad with Windows.....I feel like I am using a computer right now for my desk”. Another participant stated, “I have the iPad mini....But I am just in shock with the Windows. I know that you can use the Windows but not in the iPad....I am like....in a computer right now....Still in shock”.

It is important that the functionality of the application be consistent with users expectations so that there is an easier transfer of knowledge on how to navigate the app and a more pleasurable experience.

### **6.3. Log in issues with VDI and other technical difficulties**

During testing, participants experienced issues with stability of the VDI environment. It was observed that the VDI client would go “in and out” in the middle of sessions. VDI displayed an error that it had “maxed out” in one

instance. Given the prevalence of VDI users, it is important that it is able to accommodate the high demand/volume of users.

These issues with the VDI environment ultimately resulted in one participant having to be rescheduled and another not being able to participate in the usability evaluation at all (due to scheduling constraints).

Additionally, while using the mapping functionality for [Task 2](#) part C, a Silverlight error message would appear upon selection of a location, hindering the user from viewing location details. Some participants were unable to complete the mapping task because they could not interact with the map. The Human Factors and Usability Research Group conducted a usability test on TIGERWeb in 2012. During that test, we were informed that the map and overlays are coded in Silverlight (Quach and Nichols, 2013). There seemed to be a programming issue with TIGERWeb during some, but not all, of the usability sessions while testing RTOCS.

This inconvenience in accessing the VDI environment and other technical issues within the application is important to note, as it is likely to occur in the field.

## 7. Conclusion

While we did observe that participants were able to use the application on an iPad device, it was not optimal. Many of the inherent features of mobile devices, and iPad in particular, did not work as participants expected and anticipated. Most noticeable, the pinch and zoom commonly used on the iPad was clunky, and appeared to zoom windows off to the side or on areas of the screen in an unexpected manner. This may be why participants did not use the pinch and zoom feature more often. Participants in fact, did not often resort to using the pinch to zoom functionality, even when participants were struggling with tapping an item or area of the screen.

As we look forward to 2020, it is imperative that any application that will be used on an iPad be specifically developed in an IOS iPad operating system. As well, any development of a mobile solution should involve usability testing so that user feedback can be incorporated early in the development cycle. Having a system specifically developed for the iPad would likely incorporate the mobile features and functionality that users expect. Having such an optimized system could go a long way to solving the issues we saw in this round of testing.

## 8. References

Quach, V. and Nichols, E. (2013). TIGERweb: Usability Study Results and Recommendations U.S. Census Bureau: (*Survey Methodology* #2013-23). Last accessed February 19, 2014 at <http://www.census.gov/srd/papers/pdf/ssm2013-23.pdf>

## Appendix A: RTOCS Protocol

Date \_\_\_\_\_; Participant # \_\_\_\_\_; Researcher: \_\_\_\_\_

### **General Introduction: RTOCS Usability Testing**

*[Gather Commitment Research envelope/materials]*

*[Start Commitment Research time]*

Thank you for your time today. My name is \_\_\_\_\_ and I work here with the Human Factors and Usability Research Group. I will be working with you today. We will be evaluating the design of a Census Bureau application on an iPad by having you interact with it. Your experience with the application and the device is an essential part of our work. I did not create the application, so please feel free to share both your positive and negative reactions to it. We are not evaluating you or your skills. Rather, you are helping us see how well the application works. The entire session should last about an hour. Your comments and feedback will be used to improve the application.

First, I would like to ask you to read and sign this consent form.

*[Hand the participant the consent form; give time to read and sign; sign your own name and date if you have not already done so.]*

It explains the purpose of today's session and informs you of your rights as a participant. It also tells you that we would like to videotape the session, with your permission, to get an accurate record of your feedback. Only those of us connected with the project will review the recording and any other data collected during the session, and the information will be used solely for research purposes.

Today, we will be working on a few projects together.

1: First, we'll do a word recall task. We are going to work on that now. This is a short exercise that gives us information about memory.

*[Proctor the memory task—this is in testing docs folder on M drive: 2013Commitment Research Study]*

Ok great. I now have a demographic questionnaire that I'd like you to fill out.

*[Hand the demographic questionnaire to participant and wait in the room while they fill it out and return it to you]*

The application we will be working with is used by Census employees in the field. It allows supervisors/crew leaders the ability to assign cases to interviewers, view status reports, etc. Here are a set of tasks you will complete using the application. *[Place the tasks on the table by the participant]* I will give you step by step instructions on how to complete them. If you run into any difficulties while working on the tasks, it will be the result of the design of the application, not your skills or abilities. This application is intended for people like you. If you have a problem using parts of

it, please don't blame yourself. We are going to use your comments and experiences as well as comments and experiences of other participants to help improve it. Again, I did not create the application, so don't feel like you have to hold back on your thoughts to be polite to me. We appreciate your help so we can make the application work well for everyone.

As you work with the application, I may interrupt you to ask more questions about your experience and thoughts as you complete the tasks.

Ok, before we begin I have a questionnaire that I would like for you to complete. It asks questions about your computer and internet experience.

*[Open Background Questionnaire, location M:\USABLE\2013 Commitment Research Study\Questionnaire Links and go into control room.]*

Now we will get started. Do you have any questions before we begin?

Ok, while you work with the application I ask that you keep at least one hand holding the iPad at all times to support it. We will begin each task by having you read the task aloud. Please read the first task?

*[Remain in the room with the participant. Give step by step instructions on how to complete the task-administer probes as needed]- See TA Task sheet for complete instructions.[ At the end of each task, have participant turn over the task sheet and answer the Satisfaction question-probe as needed].*

This concludes this portion of our session.

*[[Open Background Questionnaire, location M:\USABLE\2013 Commitment Research Study\Questionnaire Links and go into control room.]*

*[Return to the participant room, Administer Debriefing questions]*

*[After debriefing is complete-- Now proctor the research component]*

I just need to step out and get something.

*[Exit the room to retrieve and open the randomly selected envelope.]*

*If envelope says "C" go back into participant's testing room and say:]*

Now it's time for our final set of questions. Please answer these questions, I'll be in the other room.

*[Open the link FQ Questionnaire—located at (M:\USABLE\2013 Commitment Research Study\Questionnaire Links) Then leave the room.]*

*If envelope says "T" get Commitment sign sheet out red folder go back into participant's testing room and say]*

Now it's time for our final set of questions. When you answer the questions that you'll see on the following screens, it's very important that you take your time and think carefully so that you answer each question as accurately as possible.

Are you willing to commit to answer each question as accurately as you can?

*[After the respondent says yes, the test administrator will lay down the commitment paper]:*

Please read this over, check this box,

*[point to the box and the paper that you will be having them sign]*

and sign your name if you are willing to commit to answer each question as accurately as you can.

*[Open the link FQ Questionnaire—located at (M:\USABLE\2013 Commitment Research Study\Questionnaire Links) Then leave the room.]*





### Commitment to Accuracy

When you answer the questions that you'll see on the following screens, it's very important that you take your time and think carefully so that you answer each question as accurately as possible.

Are you willing to commit to answer each question as accurately as you can?

Please check this box and sign your name if you are willing to commit to answer each question as accurately as you can.

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### Appendix B: RTOCS Tasks and Procedures

Task	Scenario	Procedure
<b>Task 1: Assign case to Enumerator</b>	You are a Crew Leader in charge of a field operation for the American Community Survey, and need to assign	A. Assign Assignment Area's  From Operations Control Menu → <b>Nonresponse Followup</b> + (tree diagram) → <b>Assignment Functions</b> + → <b>Assign AA's</b> → <i>select geography 2390 (may be 2390-2397)</i>

	<p>cases to an Interviewer.</p>	<p>→ <i>select geography Maryland</i>  → <i>select geography 01</i>  → <i>select geography 1-0101</i>  → <i>Double tap to select geography 321061 AND 321062 (Make sure both are selected)</i> → <b>Select View Item</b> (top toolbar)  → <b>Highlight Assignment Area 321061</b>  → <i>tap box in Employee column</i>  → <b>Assign to Loe, Maria</b>  → <b>Tap Ok</b>  → <b>Tap Save</b></p> <p>B. Assign cases  → <b>Highlight Assignment Area 321062</b>  → <b>Select Assign Cases</b> (top toolbar)  → <b>Assign caseid 9107-5000-0000</b> by tapping on the box in the employee column for that case  → <b>Highlight Humano, Roberto</b>  → <b>Tap Ok button</b>  → <b>Tap Save button</b></p> <p>→ <b>Tap Close button</b> (top toolbar)  → <b>Tap Close button</b> (top toolbar)</p>
<p><b>Task 2: Reassign case</b></p>	<p>You recently had to reassign a case to a different Interviewer.</p> <p>View the address for caseid <b>9001-3000-0000</b></p> <p>Update the case notes for the case (<b>9001-3000-0000</b>)</p> <p>View staff home location and workload on a map for the same case (<b>9001-3000-0000</b>).</p>	<p>A. View address for particular case ID  From Operations Control Menu  → <b>Checkin Status</b>  → <b>View/Reassign</b>  → <i>select geography 2390 (may be 2390-2397)</i>  → <i>select geography Maryland</i>  → <i>select geography 01</i>  → <i>select geography 3-0103</i>  → <i>Double tap to select geography 321084</i>  → <b>Select View Item</b> (top toolbar)  → <b>Highlight caseid 9002-5000-0000</b>  → <b>Scroll over to right and locate address for this caseid.</b>  → <b>Provide Answer:</b></p> <hr/> <p>B. To view/add case notes  → <b>Highlight caseid 9001-3000-0000</b>  → <b>View More</b> (top toolbar)  → <b>Tap Add Note button</b>  → <b>Tap drop-down arrow at the top of screen and tap Keyboard button to bring up keyboard</b>  → <b>Type Test Test Test in notes box</b>  → <b>Tap button on keyboard located in the bottom right corner (looks like a keyboard) to close keyboard</b>  → <b>Tap Save button</b>  → <b>Tap Ok</b>  → <b>Tap Close button</b></p>

		<p>C. View staff home location and workload on a map.</p> <p>→<b>Highlight caseid 9001-3000-0000</b></p> <p>→<b>Tap Map button</b> (top toolbar)</p> <p>→<b>Zoom in using this tool</b> (<i>direct participant to zooming tool on map</i>)  <b>to see the workload</b> (represented with green boxes) <b>and enumerator home locations</b> (represented with blue homes)</p> <p>→<b>locate the caseid notes on your task: 9001-3000-0000</b></p> <p>→<b>Tap on it :9001-3000-0000</b></p> <p>→<b>What is the AA for 9001-3000-0000?</b></p> <p><b>Answer:</b> _____</p> <p>→<b>Tap Close button</b> (<i>top toolbar</i>)</p> <p>→<b>Tap Close button</b> (top toolbar)</p> <p>→<b>Tap Close button</b> (top toolbar)</p>
<b>Task 3: View Reports</b>	You would like to view the status report for a particular assignment.	<p>From Operations Control Menu</p> <p>→<b>Reports</b></p> <p>→<b>Open DN-948B Crew Leader Status Report</b></p> <p>→<b>What is the %Proxy for CLD 3-0103? Hint: You will need to scroll to the right.</b></p>
	View the DN-948B Crew Leader Status Report and scroll over to find the %Proxy for CLD 3-0103.	<p><b>Provide Answer:</b> _____</p>

## Appendix C: Consent form



### **Consent Form For Individual Participants Usability Testing of the Research & Testing Operations Control System (RTOCS) application**

Each year the Census Bureau conducts many different usability evaluations. For example, the Census Bureau routinely tests the wording, layout and behavior of products, such as Web sites and online surveys and questionnaires in order to obtain the best information possible.

You have volunteered to take part in a study to improve the usability of the RTOCS. In order to have a complete record of your comments, your usability session will be videotaped. We plan to use the tapes to improve the design of the product. Only staff directly involved in the research project will have access to the tapes. Your participation is voluntary and your answers will remain strictly confidential.

This usability study is being conducted under the authority of Title 13 USC. The OMB control number for this study is 0607-0725. This valid approval number legally certifies this information collection.

**I have volunteered to participate in this Census Bureau usability study, and I give permission for my tapes to be used for the purposes stated above.**

Participant's Name: \_\_\_\_\_

Participant's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Researcher's Name: \_\_\_\_\_

Researcher's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

## Appendix D: Debriefing Questions

- 1) Do you own or use an iPad or another type of tablet device?
- 2) Do you have any comments about the iPad device that you just worked with?
- 3) Did you have any problems completing any of the tasks? If so, which one? What made this task difficult to complete?
- 4) Was it easy or difficult to complete the tasks using your finger? Using the stylus that was provided?

*If participant did not use a stylus during session, have them complete a task using the stylus and whether it made the task easier to complete.*

*Selected Task:* \_\_\_\_\_

*Comments:*

