EHR Usability Test Report of IMS, V14 SP1

Report based on ISO/IEC 25062:2006 and NISTIR 7741 Common Industry Format for Usability Test Reports

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EXECUTIVE SUMMARY

A usability test of IMS, version 14SP1, complete EHR, Ambulatory was conducted by Meditab's staff on Dec 12, 2013 over remote tele-conferencing sessions using Go To Meeting. The purpose of this test was to test and validate the usability of the current user interface, and provide evidence of usability in the EHR Under Test (EHRUT). During the usability test, a total of 5 healthcare providers and administrators matching the target demographic criteria served as participants and used the EHRUT in simulated, but representative tasks.

This study collected performance data on tasks typically conducted on an EHR and presented for certification under the ONCHIT program.

The test procedures under the m e a n i n g f u l u s e s t a g e 2 o f t h e O N C H I T p r o gram are the following:

- 170.315 (a)(1) Computerized provider order entry – medications
- 170.315 (a)(2) Computerized provider order entry – laboratory
- 170.315 (a)(3) Computerized provider order entry – diagnostic imaging
- 170.315 (a)(4) Drug-drug, drug-allergy interaction checks
- 170.315 (a)(5) Demographics
- 170.315 (a)(6) Problem list
- 170.315 (a)(7) Medication list
- 170.315 (a)(8) Medication allergy list
- 170.315 (a)(9) Clinical decision support
- 170.315 (a)(14) Implantable device list
- 170.315 (b)(2) Clinical information reconciliation and incorporation
- 170.315 (b)(3) Electronic Prescribing

The tasks presented for usability testing based on the above mentioned test procedure are the following:

1. Record a patient allergy and prescribe a medication that would be contraindicated to that allergy, to get a drug-allergy interaction alert
2. Adjust a drug/drug interaction level
3. Prescribe two medications that are contraindicated to get a drug-drug interaction alert
4. Prescribe a medication for a patient and send it in electronic format
5. Reconcile the medications, allergies and problems from a received CCDA document into the patient's chart.
6. Configure clinical decision support Guidelines (as administrator)
7. Review a clinical decision support guideline and reference information (as a user)
8. Record a patient's lab order
9. Link a diagnostic image to a diagnostic order entered previously in the system for a patient
10. Create new patient record in the system with the following details: Race, Ethnicity, Preferred Language, Birth Sex, Sexual Orientation, Gender Identity, Date of Birth
11. Open a patient record and pull up the existing problem list

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12.   Open a patient record and pull up the existing problem list
13.   Reconcile a medication from the medication history list of the patient
14.   Setup the visibility of Implantable Device Option on Visit Note right panel
15.   Enter the Device name and UDI. Retrieve the Implantable Device information. Basic information of the device is auto populated. Enter data in certain fields (Device Name, Implant By, Implant date, Implantable note). Save the information.

A sub-group of the abovementioned tasks was presented to each participant based on their role. The detailed listing of which role was presented with which tasks is discussed in the Tasks section of this document. Due to the remote nature of this test, all the paperwork (included in Appendices B and C) was discussed and obtained from the participants in advance over email conversations (TOC, Consent form, Demographics questionnaire)

Process: -

During the one hour, one-on-one usability test, each participant was greeted by the administrator, the purpose of the study and the process were reviewed with the participant; they were instructed that they could withdraw at any time. Participants had prior experience with the EHR, but not with all the functionality under test, as some of it was newly developed in the release under test. The administrator introduced the test, and instructed participants to complete a series of tasks (given one at a time) using the EHRUT. During the testing, the administrator timed the test and recorded user performance data on paper and electronically. The administrator did not give the participants assistance in how to complete the task. All participants were provided a brief overview of the newly introduced functionality in the form of a training seminar prior to the test. The contents of the training were the same for all participants. Participants' use of the EHR was recorded for subsequent analysis.

The following types of data were collected for each participant:

- Number of tasks successfully completed without assistance
- Time to complete the tasks
- Number and type of errors
- Path deviations
- Participant's verbalizations
- Participant's satisfaction ratings of the system

All participant data was de-identified – no correspondence could be made from the identity of the participant to the data collected. Following the conclusion of the testing, participants were asked to complete a post-test questionnaire and were compensated with a gift card for their time. Various recommended metrics, in accordance with the examples set forth in the NIST Guide to the Processes. Approach for Improving the Usability of Electronic Health Records, were used to evaluate the usability of the EHR. Following is a summary of the performance and rating data collected on the EHR usability test.

The tasks mentioned here are mentioned in a concise way. The actual steps are also mentioned later in the steps for the physicians, and other participants.

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Task Identifier	Task/measure	N #	Task Success Mean (SD)	Task Time Mean (SD)	Deviations (Observed/ optimal)	Path Deviations (Observed / Optimal)	Errors Mean (SD)	Task Ratings Mean (SD)
TP1	Review Clinical Decision support recommendations and reference information	11	68% (9%)	30.13 (4.12)	0.5	1.0	32% (9%)	4 (1.1)
TP2	Use Computerized physician order entry (CPOE) to create a Medication order	11	67% (8%)	45.5 (5.11)	0.5	1.0	33% (8%)	4.6 (0.5)
TP3	Use CPOE to create a Lab order	11	81% (6%)	59.2 (5.24)	0.5	1.2	19% (6%)	4.4 (0.67)
TP4	Use CPOE to create a Diagnostic study order	11	74% (7%)	52 (3.97)	0.4	1.1	26% (7%)	4.4 (0.67)
TP5	Drug-allergy interaction	11	77% (3%)	52.5 (1.37)	0.5	1.2	23% (3%)	4 (0.83)
TP6	Access patient's active medications list and change a medication	11	85% (8%)	64 (4.75)	0.6	1.1	15% (8%)	3.6 (0.81)
TP7	Access patient's active problem list	11	70% (0)	28 (1.18)	0.3	1.2	30% (0)	4 (0.94)
TP8	Access patient's active medication allergy.	11	69% (11%)	27.7 (4.25)	0.5	1.3	31% (11%)	4.2 (0.79)
TP9	Enable Implantable Device	11	85% (8%)	35.7 (2.89)	0.6	1.2	15% (8%)	3.8 (0.87)
TP10	Retrieve the basic information of Implantable Device	11	83% (8%)	36.6 (3.75)	0.6	1.2	17% (8%)	3.8 (0.87)
TP11	Reconcile medications from medication history	11	69% (10%)	73.5 (10.40)	0.4	1.2	31% (10%)	3.8 (0.87)
TP12	E-prescribe a drug for the patient	11	71% (10%)	56.5 (6.57)	0.5	1.2	29% (10%)	3.8 0.87
TM1	Review Clinical Decision support recommendations and reference information	12	63% (6%)	44.2 (5.09)	0.5	1.1	37% (6%)	3.8 (0.94)
TM2	Use Computerized physician order entry (CPOE) to create a Medication order	12	69% (9%)	65.2 (8.12)	0.4	1.1	31% (9%)	4 (0.90)
TM3	Use CPOE to create a Lab order	12	88% (4%)	71.5 (2.94)	0.5	1.1	12% (4%)	4.4 (0.79)
TM4	Use CPOE to create a Diagnostic study order	12	70% (0)	55.5 (1.27)	0.3	1.1	30% (0)	4.1 (0.72)
TM5	Create drug-drug and	12	90%	67.7	0.6	1.1	10%	3.9

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ID	Task	N						
	interventions prior to order completion		(0)	(2.11)			(0)	(0.51)
TM6	Access patient's active medications list and change a medication	12	75% (3%)	70.3 (3.34)	0.4	1.1	25% (3%)	4.3 (0.65)
TM7	Access patient's active medication allergies list and change the allergy info	12	80% (9%)	76.3 (8.64)	0.4	1.1	20% (9%)	4 (0.67)
TM8	Retrieve the basic information of Implantable Device	12	78% (2%)	36.3 (1.39)	0.5	1.1	22% (2%)	3.58 (0.67)
TM9	Enter optional information needed for the Implantable Device	12	60% (6%)	41.55 (4.86)	0.4	1.1	40% (6%)	3.8 (0.94)
TA1	Adjust a drug/drug interaction level for all users	16	76% (10%)	39.4 (5.48)	0.6	1.0	24% (10%)	3.75 (1.0)
TA2	Grant/revoke permission from a group of users to adjust drug/drug interaction level	16	69% (10%)	31.8 (4.87)	0.5	1.1	31% (10%)	4 (0.73)
TA3	Enable Implantable Device screen	16	78% (3%)	42.7 2.04	0.4	1.1	23% (3%)	3.75 (1.06)
TF1	Create a new patient	11	66% (9%)	51.8 (7.47)	0.4	1.2	34% (9%)	3.64 (0.81)
TF2	Retrieve Medications list of patient	11	73% (10%)	32.7 (3.59)	0.4	1.2	27% (10%)	3.55 (0.69)

The results from the System Usability Scale scored the subjective satisfaction with the system based on performance with these tasks to be: 87.75 (calculated based on the Computation of SUS score in Brooke's paper at http://www/usabilitynet.org/trump/documents/Suschapt.doc)

In addition to the performance data, the following qualitative observations were made:

Major findings

• Most users found the system user friendly and easy to use

• Most users indicated the system was easy to learn and consistent across various modules

• Most users easily completed the tasks using the optimal path or with minor deviation

Areas for improvement: -

- Throughout IMS, we can work on improving the speed and efficiency by reducing the number of clicks.
- Usage of implantable devices needs more general educational training, related to the 3 organizations which provide the UID.

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- Since it is a 15+ year old system, users have suggested to change the color and design layout of the screens and modules.

INTRODUCTION

The EHR tested for this study was I M S, Version 1 4 S P 1 . Designed to present medical information to healthcare providers in Ambulatory setting, in the Medical Office as well as the Ambulatory Surgery Centers in the Intelligent Medical Software, the EHRUT consists of various modules that provide end-to-end support for administrative and clinical operations of all types of clinics. The modules include Office visit notes, Patient chart and medical history charting, Electronic Prescribing, Patient education and Clinical Decision Support. The usability testing attempted to represent realistic exercises and conditions and focused primarily on the set of tasks and measures that are presented for certification under the Meaningful Use 2014 certification program and required for the 170.314(g) (3) measure.

The purpose of this study was to test and validate the usability of the current user interface, and provide evidence of usability in the EHR under Test (EHRUT). To this end, measures of effectiveness, efficiency and user satisfaction, such as time to complete a task, success rate in completing the task, as well as overall satisfaction rating with the functionality were captured during the usability testing.

METHOD

INTENDED USERS

The Intended users for the Usability testing of the EHRUT were selected based on their day to day tasks' relevance to the tasks needed to be tested during the Usability study. Their demographics, education, years of experience in their position as well as in the use of the EHRUT were considered. The intended users had to be Providers, MA's and Administrators (based on the type of tasks needed for testing).

PARTICIPANTS

A total of 50 participants were tested on the EHRUT. Participants in the test were Physicians, Medical Assistants and Administrators, Front Desk Representatives from various practices already using and a little familiar with IMS.

None of the participants were from the vendor organization, nor did they have any direct connection to the development of the EHRUT. Participants were not from the testing or supplier organization. Participants were given the opportunity to have the same Orientation and level of training by providing an introductory training on the functionality and features that were new in the application. Participants were compensated with a gift card for their time.

For the test purposes, end-user characteristics were identified and translated into a recruitment screener used to solicit potential participants.

Recruited participants had a mix of backgrounds and demographic characteristics. The following is a table of participants by characteristics, including demographics, professional experience,

computing experience, number of previous EHR's used. Participant names were replaced with Participant IDs so that an individual's data cannot be tied back to individual identities.

Sr No	Part. ID	Gender	Age	Education	Occupation/ Role	Professional Experience (yrs)	Computer Experience **	Product Experience (yrs)	Hrs per day average
1	P1	M	55	Postgraduate	MD	25	Intermediate	5	8
2	P2	M	42	Postgraduate	MD	15	Advanced	4	8
3	P3	F	35	Postgraduate	MD	10	Advanced	3	8
4	P4	F	38	High school diploma	MA	4	Intermediate	3	9
5	P5	F	38	High school diploma	MA	4	Intermediate	3	9
6	P6	M	37	High school diploma	Front Desk	7	Basic	2	8
7	P7	M	31	Diploma in Management Studies	Administrator	8	Advanced	4	9
8	P8	F	40	Diploma in Engineering Sciences	Administrator	12	Intermediate	7	9
9	P9	F	51	Postgraduate	MD	26	Basic	4	9
10	P10	M	46	High school diploma	MA	10	Advanced	6	8
11	P11	M	25	Some College	Front Desk	3	Advanced	2	8
12	P12	F	57	College graduate	Administrator	27	Intermediate	6	8
13	P13	M	32	College graduate	MA	10	Intermediate	3	8
14	P14	F	41	College graduate	MA	12	Intermediate	5	8

15	P15	M	47	Some College	Front Desk	15	Basic	4	8
16	P16	F	37	College graduate	Administrator	10	Intermediate	4	9
17	P17	F	41	High School Diploma	Front Desk	13	Basic	7	8
18	P18	M	56	College graduate	MA	22	Basic	7	9
19	P19	M	43	College graduate	MA	18	Intermediate	6	9
20	P20	M	49	Some College	Administrator	17	Intermediate	5	8
21	P21	F	53	Postgraduate	MD	24	Intermediate	5	9
22	P22	M	57	College graduate	Administrator	25	Intermediate	4	9
23	P23	F	60	College graduate	Administrator	37	Intermediate	7	8
24	P24	F	28	College graduate	Administrator	5	Advanced	2	9
25	P25	F	55	High School Graduate	Front Desk	20	Advanced	6	8
26	P26	M	55	Postgraduate	MD	21	Advanced	6	9
27	P27	M	46	College graduate	MA	16	Advanced	7	9
28	P28	F	28	High School Diploma	Front Desk	4	Advanced	1	8
29	P29	F	44	College graduate	Administrator	20	Advanced	4	9
30	P30	M	57	College graduate	MA	21	Advanced	3	9
31	P31	M	59	College graduate	MA	23	Advanced	4	8
32	P32	M	63	College graduate	Administrator	35	Advanced	3	8
33	P33	F	54	Some College	Front Desk	30	Intermediate	4	8
34	P34	M	67	Postgraduate	MD	32	Intermediate	3	9
35	P35	F	34	Some college	Administrator	10	Advanced	4	8
36	P36	M	48	College	MA	22	Basic	6	8

				graduate					
37	P37	F	53	College graduate	MA	28	Intermediate	7	8
38	P38	F	49	College graduate	Administrator	21	Intermediate	8	9
39	P39	M	39	Some college	Front Desk	13	Basic	5	8
40	P40	F	33	Some college	Administrator	10	Intermediate	3	9
41	P41	M	37	Some college	Administrator	13	Advanced	4	8
42	P42	F	29	College graduate	Administrator	7	Advanced	3	8
43	P43	M	36	Some college	Front Desk	10	Intermediate	5	8
44	P44	M	34	Postgraduate	MD	14	Intermediate	4	8
45	P45	F	28	Post Graduate	Administrator	8	Advanced	4	8
46	P46	M	38	Postgraduate	MD	13	Advanced	3	8
47	P47	M	40	Post graduate	MD	12	Advanced	3	8
48	P48	F	50	Post graduate	MD	18	Intermediate	3	9
49	P49	F	51	Some College	Front Desk	19	Basic	6	9
50	P50	M	47	College graduate	Front Desk	15	Basic	2	8

*** The proficiency level mentioned here have been defined based on the article from Concordia university,* [Computer Skills: Levels of Proficiency, Concordia University](#)

10 participants (matching the demographics in the section on Participants) were recruited and 10 participated in the usability test. 0 participants failed to show for the study.

Participants were scheduled for 45 minute sessions with 15 minutes in between each session for debrief by the administrator(s) and data logger(s), and to reset systems to proper test conditions. A spreadsheet was used to keep track of the participant schedule, and included each participant's demographic characteristics.

STUDY DESIGN

Overall, the objective of this test was to uncover areas where the application performed well – that is, effectively, efficiently, and with satisfaction – and areas where the application failed to

meet the needs of the participants. The data from this test may serve as a baseline for future tests with an updated version of the same EHR and/or comparison with other EHRs provided the same tasks are used. In short, this testing serves as both a means to record or benchmark current usability, but also to identify areas where improvements can be made.

During the usability test, participants interacted with the EHR. Each participant used the system from the same setup of a remote server, and was provided with the same instructions. The system was evaluated for effectiveness, efficiency and satisfaction as defined by measures collected and analyzed for each participant:

• Number of tasks successfully completed without assistance
• Time to complete the tasks
• Number and types of errors
• Path deviations
• Participant's verbalizations (comments)
• Participant's satisfaction ratings of the system

Additional information about the various measures can be found in the Section on Usability Metrics.

TASKS

A number of tasks were constructed that would be realistic and representative of the kinds of activities a user might do within this EHR and representative of the functionality presented for certification for the 2015

Meaningful Use program for ONCHIT certification had a test which included:

1. Use Computerized physician order entry (CPOE) to create a Medication order
2. Use Computerized physician order entry (CPOE) to view and modify a Medication order
3. Use CPOE to create a Lab order
4. Use CPOE to view and modify a Lab order
5. Use CPOE to create a Diagnostic study (Radiology) order
6. Use CPOE to view and modify a Diagnostic study (Radiology) order
7. Record a patient allergy and prescribe a medication that would be contraindicated to that allergy, to get a drug-allergy interaction alert
8. Adjust a drug/drug interaction level
9. Prescribe two medications that are contraindicated to get a drug-drug interaction alert
10. Review patient's active medications list.
11. Review patient's active problem list.
12. Modify an existing medication.
13. Review patient's allergy list
14. Modify an existing problem status

15. Modify an existing allergy
16. Prescribe a medication for a patient and send it in electronic format
17. Reconcile the medications, allergies and problems from a received CCDA document into the patient's chart.
18. Configure clinical decision support Guidelines (as administrator)
19. Review a clinical decision support guideline and reference information (as a user)
20. Create a new patient record, to collect the information such as Race, Ethnicity, Preferred Language, Birth sex, Sexual Orientation, Gender Identity, Date of Birth
21. Review and modify the newly added patient. Update the information of Preferred Language and Ethnicity
22. Make the Implantable device option visible in the Visit Note
23. Enter the device name and UDI to retrieve and autofill the basic information of the device
24. Manually enter the other optional information about the Implantable device

The tasks were selected based on the measures presented for certification on Meaningful Use 2015 program and required for Test Procedure §170.314(g)(3) Safety-enhanced design. These tasks are also representative of some of the most commonly performed tasks by the personnel recruited for participation.

The following breakdown of the tasks was presented to the users based on their role.

Physician (considering that the basic setup for labs, and everything was done)

1. Use Computerized physician order entry (CPOE) to create, modify and view a Medication order
2. Use CPOE to create, modify and view a Lab order (use HL7 labs for it)-(modification will require deleting the old order)
3. Use CPOE to create, modify and view a Diagnostic study order- modification will include deleting the old data
4. Record a patient allergy and prescribe a medication that would be contradicted to that allergy, to get a drug-allergy interaction alert- (choose patient in which some allergy in included and then add a prescription for the patient related to that allergy only; also the medication can or cannot be present in the favorites list)
5. Prescribe two medications that are contraindicated to get a drug-drug interaction alert-20 sec (same steps as above)
6. Review patient's active medications list (user are free to choose any patient and review the criteria.)
7. Record a new medication (time might vary, based on if the medication is present in favorites or not)

8. Modify an existing medication (same consideration as above)
9. Review patient's allergy list (Open patient master and review the allergy already set for this patient).
10. Record a new allergy (Open a patient's record and add a new allergy)

11. Modify an existing allergy (the old entry should be deleted)
12. Review a clinical decision support guideline and reference information (as a user) (based on number of items linked, and the setup done)
13. Prescribe a medication for a patient and send it in electronic format-(consider the setup for e-prescription is done)
14. Enable the Implantable device in the setup
15. Enter the Device name and the UDI for the implantable device to retrieve the basic \ information
16. Manually enter the optional information related to the implantable device

Medical Assistant (MA)

1. Use Computerized physician order entry (CPOE) to create, modify and view a Medication order
2. Use CPOE to create, modify and view a Lab order
3. Use CPOE to create, modify and view a Diagnostic study order
4. Record a patient allergy and prescribe a medication that would be contraindicated to that allergy, to get a drug-allergy interaction alert
5. Prescribe two medications that are contraindicated to get a drug-drug interaction alert
6. Review patient's active medications list.
7. Record a new medication.
8. Modify and existing medication.
9. Review patient's allergy list
10. Record a new allergy
11. Modify an existing allergy
12. Reconcile the medications using formulary- based on the data received by surescript
13. Enter the Implantable Device Name and UDI in the patient Visit note to retrieve the device's basic information

Administrator
1. Adjust a drug/drug interaction level for all users
2. Grant/revoke permission from a group of users to adjust drug/drug interaction level.
3. Enable the Implantable Device in the setup screen so that MA or Provider can access the screen to enter the Implantable Device details

Front Desk
1. Create a new patient
2. Open an existing patient record to change information

PROCEDURES

Upon connection to the online meeting tool (Go To Meeting), participants were greeted; their identity was verified and matched with a name on the participant schedule. Participants were then assigned a participant ID. Each participant had reviewed and signed an informed consent and release form prior to the study (See Appendix C). Signed documents where then provided to them back via scan or fax. A representative from the test team witnessed the participant's signature.

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To ensure that the test ran smoothly, a usability administrator who also considered data logging, participated. The usability testing staff/ administrator conducting the test was experienced usability practitioner with 9 years' experience, holding a Diploma in Management Studies. The administrator moderated the session including administering instructions and tasks. The administrator also monitored task times, obtained post-task rating data, and took notes on participant comments.

Participants were instructed to perform the tasks (see specific instructions below):

- As quickly as possible making as few errors and deviations as possible.
- Without assistance; administrators could give immaterial guidance and clarification on tasks, but not instructions on use.
- Without using a think aloud technique.

Task timing began once the administrator finished reading the question. The task time was stopped once the participant indicated they had successfully completed the task. Scoring is discussed below in the Data Scoring section.

Following the session, the administrator gave the participant the post-test System Usability Scale questionnaire (see Appendix E), and thanked each individual for their participation. The participants were from various types of clinics and they were kind enough to take the test, without any monetary compensation. They had the opportunity to work on the new build for the test and they were told that based on their response, the EHR will be making feasible changes in the actual build. The participants were cooperative throughout the test which was conducted over a GTM session.

Participants' demographic information, task success rate, time on task, errors, deviations, verbal responses, and post-test questionnaire were recorded into a spreadsheet.

Participants were thanked for their time and compensated.

TEST LOCATION

The test was conducted over Go To Meeting session. Each participant was given an individual timing slot and unique meeting id, to avoid group participating on the tasks.

TEST ENVIRONMENT

All participants were tested over a remote conferencing session using Go To Meeting, The participants were requested in advance to secure a quiet room with minimal distractions and a computer that could connect to the internet via a Go To Meeting session. The administrator and the participants were the only ones on the call.

The EHR would be typically used in a healthcare office or Ambulatory Surgery Center facility. In this instance, the testing was conducted over the Go To Meeting session. The participants used a mouse and keyboard when interacting with the EHRUT. The participants were given remote

control of the administrator's workstation to perform the tasks, since the testing was being performed on an un-released version in a local environment.

IMS was set up using the recommended standard screen resolution settings. Technically, the system performance (i.e., response time) was slightly slower compared to what actual users would experience in a field implementation, because of the GTM session.

TEST FORMS AND TOOLS

During the usability test, various documents and instruments were used, including:

1. Informed Consent and Non-Disclosure Agreement (Appendix D)
2. Moderator's Guide (Appendix E)
3. Post-test System Satisfaction Questionnaire (Appendix F)

Examples of these documents can be found in above mentioned Appendices. The participants' interaction with the EHRUT was captured and recorded digitally with screen shots taken over Go To Meeting sessions.

PARTICIPANT INSTRUCTIONS

The administrator reads the following instructions aloud to each participant (also see the full moderator's guide in Appendix E:

"Thank you for participating in this study. Our session today will last approximately 105 minutes. Two sessions of 45 minutes each with a break of 15 minutes between two sessions. If you have finished the tasks assigned to you before the time allotted in the first session, you may continue with the tasks from session 2 as well. During that time, you will take a look at the new build of IMS Version 14SP1, and specifically some functionality and task required ONCHIT Certification. Most of these tasks you are already familiar with and they are part of your day to day workflows.

I will ask you to complete the tasks using the system and answer some questions. We are interested in how easy (or how difficult) this system is to use, and how we could improve it. You will be asked to complete these tasks on your own trying to do them as quickly as possible with the fewest possible steps, errors or deviations. Do not do anything more than asked. If you get lost or have difficulty I cannot answer or help you with anything to do with the system itself, but I can remind you the test data or the task itself if you need me to repeat it. Please save your detailed comments until the end of a task or the end of the session as a whole when we can discuss freely. Please be honest with your opinions.

The product you will be using today is IMS version 14 SP1, test environment. This is not the final release. Some of the data may not make sense as it is test data. All of the information that you provide will be kept confidential and your name will not be associated with your comments and overall test results at any time.
Do you have any questions or concerns? "

Following the procedural instructions, participants were shown the EHR, the administrator gave the participant control of keyboard and mouse on their workstation, and then the administrator gave the following instructions:

"For each task, I will read the description to you and say "Begin." At that point, please perform the task and say "Done" once you believe you have successfully completed the task. I would like to request that you not talk aloud or verbalize while you are doing the tasks. I will ask you your impressions about the task once you are done. We will start each task from the My Activities screen. We will use the same login information and the same patient. We have an appointment for this patient on your schedule."

Participants were then given the tasks to complete: 16 for Physician, 13 for MA's and, 3 for the administrators, and 2 for Front Desk Staff. Tasks are listed in the moderator's guide in Appendix E.

USABILITY METRICS

According to the NIST Guide to the Processes Approach for Improving the Usability of Electronic Health Records, EHRs should support a process that provides a high level of usability for all users. The goal is for users to interact with the system effectively, efficiently, and with an acceptable level of satisfaction. To this end, metrics for effectiveness, efficiency and user satisfaction were captured during the usability testing. The goals of the test were to assess:

1. Effectiveness of IMS by measuring participant success rates and errors
2. Efficiency of IMS by measuring the average task time and path deviations
3. Satisfaction with IMS by measuring ease of use ratings

DATA SCORING

The following table details how tasks were scored, errors evaluated, and the time data analyzed.

Measure	Rationale and Scoring
Effectiveness: Task Success	A task was counted as a "Success" if the participant was able to achieve the correct outcome, without assistance, within the time allotted on a per task basis. The total number of successes were calculated for each task and then divided by the total number of times that task was attempted. The results are provided as a percentage. Task times were recorded for successes. Observed task times divided by the optimal time for each task is a measure of optimal efficiency. Optimal task performance time, as benchmarked by expert performance under realistic conditions, is recorded when constructing tasks. Target task times used for task times in the Moderator's Guide must be operationally defined by taking multiple measures of optimal performance and multiplying by some factor [e.g., 1.25] that allows some time buffer because the participants are presumably not trained to expert performance. Thus, if expert, optimal performance on a task was [x] seconds then allotted task time performance was [x * 1.25] seconds. This ratio should be aggregated across tasks and reported with mean and

	variance scores.
Effectiveness: Task Failures	If the participant abandoned the task, did not reach the correct answer or performed it incorrectly, or reached the end of the allotted time before successful completion, the task was counted as an "Failures." No task times were taken for errors. The total number of errors was calculated for each task and then divided by the total number of times that task was attempted. Not all deviations would be counted as errors. This should also be expressed as the mean number of failed tasks per participant. On a qualitative level, an enumeration of errors and error types should be collected.
Efficiency: Task Deviations	The participant's path (i.e., steps) through the application was recorded. Deviations occur if the participant, for example, went to a wrong screen, clicked on an incorrect menu item, followed an incorrect link, or interacted incorrectly with an on-screen control. This path was compared to the optimal path. The number of steps in the observed path is divided by the number of optimal steps to provide a ratio of path deviation. It is strongly recommended that task deviations be reported. Optimal paths (i.e., procedural steps) should be recorded when constructing tasks
Efficiency: Task Time	Each task was timed from when the administrator said "Begin" until the participant said, "Done." If he or she failed to say "Done," the time was stopped when the participant stopped performing the task. Only task times for tasks that were successfully completed were included in the average task time analysis. Average time per task was calculated for each task. Variance measures (standard deviation and standard error) were also calculated.
Satisfaction: Task Rating	Participant's subjective impression of the ease of use of the application was measured by administering both a simple post-task question as well as a post-session questionnaire. After each task, the participant was asked to rate "Overall, this task was:" on a scale of 1 (Very Difficult) to 5 (Very Easy). These data are averaged across participants. Common convention is that average ratings for systems judged easy to use should be 3.3 or above. To measure participants' confidence in and likeability of the [EHRUT] overall, the testing team administered the System Usability Scale (SUS) post-test questionnaire. Questions included, "I think I would like to use this system frequently," "I thought the system was easy to use," and "I would imagine that most people would learn to use this system very quickly." See full System Usability Score questionnaire in Appendix E.

Results

Data Analysis and Reporting

The results of the usability test were calculated according to the methods specified in the Usability Metrices section above. Participants who failed to follow session and task instructions

had their task relevant data excluded from the analyses. The only exclusions were made for individual tasks but not for an entire study.

The usability testing results for the EHRUT are detailed below. The results should be seen considering the objectives and goals outlined in Study design section.

Task Identifier	Task/measure	N #	Task Success Mean (SD)	Task Time Mean (SD)	Deviations (Observed/ optimal)	Path Deviations Deviations (Observed / Optimal)	Errors Mean (SD)	Task Ratings Mean (SD)
TP1	Review Clinical Decision support recommendations and reference information	11	68% (9%)	30.13 (4.12)	0.5	1.0	32% (9%)	4 (1.1)
TP2	Use Computerized physician order entry (CPOE) to create a Medication order	11	67% (8%)	45.5 (5.11)	0.5	1.0	33% (8%)	4.6 (0.5)
TP3	Use CPOE to create a Lab order	11	81% (6%)	59.2 (5.24)	0.5	1.2	19% (6%)	4.4 (0.67)
TP4	Use CPOE to create a Diagnostic study order	11	74% (7%)	52 (3.97)	0.4	1.1	26% (7%)	4.4 (0.67)
TP5	Drug-allergy interaction	11	77% (3%)	52.5 (1.37)	0.5	1.2	23% (3%)	4 (0.83)
TP6	Access patient's active medications list and change a medication	11	85% (8%)	64 (4.75)	0.6	1.1	15% (8%)	3.6 (0.81)
TP7	Access patient's active problem list	11	70% (0)	28 (1.18)	0.3	1.2	30% (0)	4 (0.94)
TP8	Access patient's active medication allergy.	11	69% (11%)	27.7 (4.25)	0.5	1.3	31% (11%)	4.2 (0.79)
TP9	Enable Implantable Device	11	85% (8%)	35.7 (2.89)	0.6	1.2	15% (8%)	3.8 (0.87)
TP10	Retrieve the basic information of Implantable Device	11	83% (8%)	36.6 (3.75)	0.6	1.2	17% (8%)	3.8 (0.87)
TP11	Reconcile medications from medication history	11	69% (10%)	73.5 (10.40)	0.4	1.2	31% (10%)	3.8 (0.87)
TP12	E-prescribe a drug for the patient	11	71% (10%)	56.5 (6.57)	0.5	1.2	29% (10%)	3.8 0.87
TM1	Review Clinical Decision support recommendations and reference information	12	63% (6%)	44.2 (5.09)	0.5	1.1	37% (6%)	3.8 (0.94)
TM2	Use Computerized physician order entry (CPOE) to create a Medication order	12	69% (9%)	65.2 (8.12)	0.4	1.1	31% (9%)	4 (0.90)

TM3	Use CPOE to create a Lab order	12	88% (4%)	71.5 (2.94)	0.5	1.1	12% (4%)	4.4 (0.79)
TM4	Use CPOE to create a Diagnostic study order	12	70% (0)	55.5 (1.27)	0.3	1.1	30% (0)	4.1 (0.72)
TM5	Create drug-drug and interventions prior to order completion	12	90% (0)	67.7 (2.11)	0.6	1.1	10% (0)	3.9 (0.51)
TM6	Access patient's active medications list and change a medication	12	75% (3%)	70.3 (3.34)	0.4	1.1	25% (3%)	4.3 (0.65)
TM7	Access patient's active medication allergies list and change the allergy info	12	80% (9%)	76.3 (8.64)	0.4	1.1	20% (9%)	4 (0.67)
TM8	Retrieve the basic information of Implantable Device	12	78% (2%)	36.3 (1.39)	0.5	1.1	22% (2%)	3.58 (0.67)
TM9	Enter optional information needed for the Implantable Device	12	60% (6%)	41.55 (4.86)	0.4	1.1	40% (6%)	3.8 (0.94)
TA1	Adjust a drug/drug interaction level for all users	16	76% (10%)	39.4 (5.48)	0.6	1.0	24% (10%)	3.75 (1.0)
TA2	Grant/revoke permission from a group of users to adjust drug/drug interaction level	16	69% (10%)	31.8 (4.87)	0.5	1.1	31% (10%)	4 (0.73)
TA3	Enable Implantable Device screen	16	78% (3%)	42.7 2.04	0.4	1.1	23% (3%)	3.75 (1.06)
TF1	Create a new patient	11	66% (9%)	51.8 (7.47)	0.4	1.2	34% (9%)	3.64 (0.81)
TF2	Retrieve Medications list of patient	11	73% (10%)	32.7 (3.59)	0.4	1.2	27% (10%)	3.55 (0.69)

The results from the SUS (System Usability Scale) scored the subjective satisfaction with the system based on performance with these tasks to be 87.75. Broadly interpreted, scores under 60 represents systems with poor usability, scores over 80 would be considered above average.

Discussions of the findings

The major areas that were the focus of the test had to deal with the task supporting the ONCHIT 2015 certification. The list of task is discussed in the tasks section. Overall, those areas revolved around CPOE, electronic Prescribing, Drug/Drug/Allergy interactions, Implantable Devices and clinical decision support. The task rating indicated that most users found these tasks easy to perform. The verbal comments and feedback regarding the areas of improvement also were aligned with the statistical data presented by the task time deviations, task success and ratings.

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Effectiveness

Based on the success, failure and path deviation data, the success rating of the majority of the tasks were between 80% to 100%. The path deviation data also shows that only a small percentage of users demonstrated the completion of task with major deviations. Most users performed the task with either no or minor deviations. This data indicates high level of effectiveness of the functionality under test.

Efficiency

Based on the observation of the task time and deviations data most of the task took on an average 1.2 times longer for the users to perform as compared to expert performance. This indicates that there is still some room for improvement on the efficiency of the application. Some discounting can be considered for the network deviation as well as for the variations between different users.

Satisfaction

Based on the task ratings and SUS results data, most users are very satisfied with the system, consider it user friendly, easy to learn and use, and consistent across various modules. The SUS rating of the application and functionality under test was 81

Major findings

Overall, most the participants identified the application as user friendly, easy to use, easy to learn. They indicated that the EHRUT is consistent across various modules, which make it easier to adjust to the new releases and learn the new functionality quickly. There are several areas that the users identified as their "favorites", among which:

- how easily the application allows to record multiple medications for patient history,
- how easy it is to follow the information for the encounters in the "document" format,
- that the application "thinks like a provider"
- the application is specialty specific.

When comparing the EHRUT with other EHR's used, they indicated that the system was easier to use and more consistent, as well as more advanced in the User Interface and overall usability.

Areas for Improvement

Some of the common areas for improvement were identified based on the comments from the users, as well as from the observations of user interaction with the system in the performance of specific tasks, and basing on the analysis of path deviations, task success and ratings, as well as comparative analysis of average task time to the "optimal" task time. Those areas are:

- Since it is a 15+ year old system, users have suggested to change the color and design layout of the screens and modules.

- The medication reconciliation is being done as a source from Surescript. Since this is a new window and it is a new feature altogether, so the clients will need proper training.
- Usage of implantable devices needs more general educational training, related to the 3 organizations which provide the UDI.

APPENDICES

The following appendices include supplemental data for this usability test report. Following is a list of the appendices provided:

A. Participants demographics
B. Participants demographics questionnaire
C. Non-Disclosure agreement
D. Moderator's Guide
E. System usability Scale Questionnaire

Appendix A
PARTICIPANT DEMOGRAPHICS:
Following is a high-level overview of the participants in this study.

Gender

Sex	No of Participants
Male	26
Female	24

Age

Age Group	No of Participants
20-29	5
30-39	14
40-49	14
50-59	14
60-69	3

Education

Education	No of Participants
College Graduate	19
Diploma in Engineering Sciences	1
Diploma in Management Studies	1
High School Diploma/Graduate	7
Post Graduate	12
Some College	10

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Occupation/Role

Occupation/Role	No of Participants
MD	11
MA	12
Administrator	16
Front Desk Staff	11

Professional Experience

Professional Experience	No of Participants
0-10 years	16
11-20 years	18
21-30 years	13
31-40 years	3

Computer Experience

Computer Experience	No of Participants
Basic	9
Intermediate	21
Advanced	20

Product Experience

Product Experience	No of Participants
0-3 years	17
4-6 years	26
>7 years	7

Appendix B

PARTICIPANT DEMOGRAPHICS QUESTIONNAIRE

Please complete the following information for the Usability Study

Name	
Age group	
	a)20-29 b)30-39 c)40-49 d)50-59 e)60-69 f)70-79 *<Write the option in the field against Age>*
Your current title	
	a)MD b)MA c)Administrator d)Front Desk Staff *<Write the option in the field against Age>*
How long have you held this title? *(in years)*	
What is your primary work environment? *(Please provide approximate **percentage** breakdown if you*	a) Private Practice/Office b) Ambulatory Surgery Center c) Hospital

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	Task/Frequency	Sometimes	Never
work in more than once setting)			
How many years have you used IMS?			
How many hours per day on average do you use IMS?			
How many EHRs have you used before IMS?			
	Create/modify/review medication orders		
	Create/modify/review Lab orders		
	Create/modify/review Dx Study orders		
	Drug/Drug/Allergy interaction checks		
	Adjust severity level of drug/drug interactions		
	Record/update patient medications list		
	Review patient medications		
	Review patient medications list		
	Record/update patient medication allergies list		
	Review patient medication allergies list		
	Reconcile patient's active medications, problems and/or allergies		
	Configure Clinical Decision support guidelines		
Indicate your primary use and frequency of the following tasks within IMS (mark all that apply)	View Clinical Decision support guidelines/recommendations		
	Configuring Implantable Devices		

Appendix C

NON-DISCLOSURE AGREEMENT (NDA)

This Agreement is entered as of _____, 2017, between _____ ("the Participant") and the testing organization Meditab Software Inc.

The Participant acknowledges his or her voluntary participation in today's usability study may bring the Participant into possession of Confidential Information. The term "Confidential Information" means all technical and commercial information of a proprietary or confidential nature which is disclosed by Meditab Software, Inc., or otherwise acquired by the Participant, in the course of today's study.

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By way of illustration, but not limitation, Confidential Information includes trade secrets, processes, formulae, data, know-how, products, designs, drawings, computer aided design files and other computer files, computer software, ideas, improvements, inventions, training methods and materials, marketing techniques, plans, strategies, budgets, financial information, or forecasts.

Any information the Participant acquires relating to this product during this study is confidential and proprietary to Meditab Software Inc. and is being disclosed solely for the purposes of the Participant's participation in today's usability study. By signing this form the Participant acknowledges that s/he will receive monetary compensation for feedback and will not disclose this confidential information obtained today to anyone else or any other organizations.

Participant's printed name:

Signature: Date:

INFORMED CONSENT FORM

Meditab Software Inc. would like to thank you for participating in this study for IMS Version 14 SP1. If you decide to participate, you will be asked to perform several tasks using the application and give your feedback. The study will last about 105 minutes.

Agreement

I understand and agree that as a voluntary participant in the present study conducted by Meditab Software Inc. I am free to withdraw consent or discontinue participation at any time. I understand and agree to participate in the study conducted and recorded by IMS.

I understand and consent to the use and release of the recordings by IMS.

I understand that the information and recording is for research purposes only and that my name and image will not be used for any purpose other than research.

I relinquish any rights to the recording and understand the recording may be copied and used by IMS without further permission.

I understand and agree that the purpose of this study is to make software applications more useful and usable in the future.

I understand and agree that the data collected from this study may be shared with outside of IMS. I understand and agree that data confidentiality is assured, because only de-identified data – i.e., identification numbers not names – will be used in analysis and reporting of the results.

I agree to immediately raise any concerns or areas of discomfort with the study administrator.

I understand that I can leave at any time.

Please check one of the following:

YES, I have read the above statement and agree to be a participant.

NO, I choose not to participate in this study.

Signature:_____Date:_____

Appendix D

MODERATOR'S GUIDE ON CONDUCTING THE USABILITY TEST FOR IMS, Version 14 SP1.

Administrator:
Data logger:
Date/time:
Participant number:
Location:

Prior to testing
  ➢ Confirm schedule with Participants
  ➢ Ensure EHRUT lab environment is running properly
  ➢ Ensure lab and data recording equipment is running properly

Prior to each participant:
  ➢ Reset application
  ➢ Start session recordings with Go To Meeting
  ➢ Verify the Go To Meeting folder is on a local drive and a folder
     you can easily locate

Prior to starting testing
  ➢ Verify the participant's identity and match them on the schedule
  ➢ Assign the participant ID
  ➢ Review the NDA and Informed consent form and have the participant sign the
     form
  ➢ Provide the remote link and test credentials to the participant to verify if they are able to
     log in remotely
  ➢ Walk the participant through enabling the ActiveX control to make sure they can log in
  ➢ Ask the participant if they have the test data reference sheet printed

Prior to each task:
  ➢ Reset application to starting point for next task

After each participant:
  ➢ End session recordings with Go To Meeting

Prior to starting the session, provide a brief overview of the new functionality in
Guidelines for the reference link.

Orientation (5 minutes)

Thank you for participating in this study. Our session today will last approximately 60 minutes. During that time you will take a look at the new build of IMS, and specifically some functionality and tasks required for Meaningful Use Certification. Most of these tasks you are already familiar with and they are part of your day to day workflows.

I will ask you to complete the tasks using the system and answer some questions. We are interested in how easy (or how difficult) this system is to use, and how we could improve it. You will be

asked to complete these tasks on your own trying to do them as quickly as possible with the fewest possible

steps, errors or deviations. Do not do anything more than asked. If you get lost or have difficulty I cannot answer or help you with anything to do with the system itself, but I can remind you the test data or the task itself if you need me to repeat it. Please save your detailed comments until the end of a task or the end of the session when we can discuss freely. Please be honest with your opinions.

The product you will be using today is IMS, Version 14 SP1, test environment. This is not the final release. Some of the data may not make sense as it is test data.

All the information that you provide will be kept confidential and your name will not be associated with your comments and overall test results at any time.

Do you have any questions or concerns?

TASK Administration and Documentation

For each task, take the participant to the starting point, provide the Individual Task Instructions outlined below and use the provided excel spreadsheet to complete the following information:

A. Success:

    1= Easily completed
    2 = Completed with difficulty (Provide details)
    3 = Not completed

B. Rating:

    1 = "Very Easy"

    5 = "Very Difficult"

C. Administrator Comments

Individual Task Instructions

Provide the login information and the Patient name that will be used for testing. These will be the same for all tasks. Each task needs to start at IMS Home Page (right after the user logs in).

*For each task, I will read the description to you and say "Begin." At that point, please perform the task and say "Done" once you believe you have successfully completed the task. I would like to request that you **not** talk aloud or verbalize while you are doing the tasks. I will ask you your impressions about the task once you are done. We will start each task from the IMS home page.*

Here are the tasks:-

Physician			
Task Id	Task Description	Sub Details	Feedback/ Rating
TP1	Review Clinical Decision support recommendations and reference information	View the patient chart Review the reference information provided for the recommendation. Suppress the alert for the rest of the day.	Rate on scale from 1 to 5 Comments/feedback?
TP2	Use Computerized physician order entry (CPOE) to create a Medication order	Prescribe Medication: Omeprazole 20 mg tablet by mouth once daily. Send electronically through Surescripts.	Rate on scale from 1 to 5 Comments/feedback?
TP3	Use CPOE to create a Lab order	Add the following Laboratory Order: Cholesterol in HDL in serum or plasma	Rate on scale from 1 to 5 Comments/feedback?
TP4	Use CPOE to create a Diagnostic study order	Add the following Dx Study (Radiology/Imaging) Orders: CT scan abdomen with contrast	Rate on scale from 1 to 5 Comments/feedback?
TP5	Drug-allergy interaction	Add a patient allergy: Penicillin and then prescribe Keflex. Suppress the alert to continue prescribing.	Rate on scale from 1 to 5 Comments/feedback? Return to IMS home page
TP6	Access patient's active medications list and change a medication	Review recorded medications and update: The frequency of Nexium from daily to every six hours	Rate on scale from 1 to 5 Comments/feedback? Return to IMS home page
TP7	Access patient's active problem list	Review recorded problem list of the patient	Rate on scale from 1 to 5 Comments/feedback? Return to IMS home page
TP8	Access patient's active medication allergy.	Record allergy: Potassium, manifestation: Nausea	Rate on scale from 1 to 5 Comments/feedback? Return to IMS home page
TP9	Enable Implantable Device	Open the setup screen and enable the Implantable device	Rate on scale from 1 to 5

		option Assign this Implantable Device only to Physician and MA group	Comments/feedback? Return to IMS home page
TP10	Retrieve the basic information of Implantable Device	Open the Implantable Device Screen in Visit Note Enter the Implantable Device name and UDI in the screen and retrieve the information	Rate on scale from 1 to 5 Comments/feedback? Return to IMS home page
TP11	Reconcile medications from medication history	Perform eligibility request and medication history request to Surescripts, and reconcile a medication from the list	Rate on scale from 1 to 5 Comments/feedback? Return to IMS home page
TP12	E-prescribe a drug for the patient	Write a prescription with the drug Mucinex Maximum Strength	Rate on scale from 1 to 5 Comments/feedback? Return to IMS home page
MA Tasks			
TM1	Review Clinical Decision support recommendations and reference information	Same as above for Physician	Rate on scale from 1 to 5 Comments/feedback?
TM2	Use Computerized physician order entry (CPOE) to create a Medication order	Same as above for Physician	Rate on scale from 1 to 5 Comments/feedback?
TM3	Use CPOE to create a Lab order	Same as above for Physician	Rate on scale from 1 to 5 Comments/feedback?
TM4	Use CPOE to create a Diagnostic study order	Same as above for Physician	Rate on scale from 1 to 5 Comments/feedback?
TM5	Create drug-drug and interventions prior to order completion	Same as above for Physician	Rate on scale from 1 to 5 Comments/feedback?
TM6	Access patient's active medications list and change a medication	Same as above for Physician	Rate on scale from 1 to 5 Comments/feedback?
TM7	Access patient's active medication allergies list and change the allergy info	Same as above for Physician	Rate on scale from 1 to 5 Comments/feedback?
TM8	Retrieve the basic information of Implantable Device	Same as above for Physician	Rate on scale from 1 to 5 Comments/feedback?
TM9	Enter optional information needed for the Implantable	Same as above for Physician	Rate on scale from 1 to 5

	Device		Comments/feedback?
Administrators			
TA1	Adjust a drug/drug interaction level for all users	Set the interaction level. View and modify the existing interaction level.	Rate on scale from 1 to 5 Comments/feedback?
TA2	Grant/revoke permission from a group of users to adjust drug/drug interaction level	Grant permission to MDs in the clinic to set the interaction level for Drug/drug interactions. Revoke permission from MAs in the clinic from being able to set the interaction level for Drug/Drug interactions.	Rate on scale from 1 to 5 Comments/feedback?
TA3	Enable Implantable Device screen	Select the show on Visit Note option for Implantable Screen Set the groups/physicians or roles that can view the Implantable Device Screen	Rate on scale from 1 to 5 Comments/feedback?
Front Desk Office Staff			
TF1	Create a new patient	Add a new patient in Patient Master screen Add the Race, Ethnicity, Preferred Language, Birth Sex, Sexual Orientation, Gender Identity, Date of Birth	Rate on scale from 1 to 5 Comments/feedback?
TF2	Retrieve Medications list of patient	Open the chart view and pop up the list of active medications of the patient	Rate on scale from 1 to 5 Comments/feedback?

Final Questions (*5 Minutes*)

> ➢ What is your overall impression of the functionality under test?
> ➢ What is your overall impression of the system?
> ➢ What aspects of the system do you like most?
> ➢ What aspects of the system do you like least?
> ➢ Compare this system to other systems you have used (if any)

Appendix E

System Usability Scale Questionnaire

Participant number: _____   Date: _____

Sl No	Description	Strongly Agree				Strongly Disagree
1	I found the tasks were easy to identify and perform based on the amount of training	1	2	3	4	5
2	I found the system unnecessarily complex	1	2	3	4	5
3	I thought the system was easy to use	1	2	3	4	5
4	I think that I would need the support of a technical person to be able to use this system	1	2	3	4	5
5	I found the various functions in this system were well integrated	1	2	3	4	5
6	I thought there was too much inconsistency in this system	1	2	3	4	5
7	I would imagine that most people would learn to use this system very quickly	1	2	3	4	5
8	I found the system very cumbersome to use	1	2	3	4	5
9	I felt very confident using the system	1	2	3	4	5
10	I needed to learn a lot of things before I could get going with this system	1	2	3	4	5

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NOTE: The scale of 1 to 5 was reversed (1 meaning strongly agree, instead of disagree). For SUS calculations, the scale was adjusted to mirror the SUS scale in Brooke's paper, to accurately reflect the score formula.