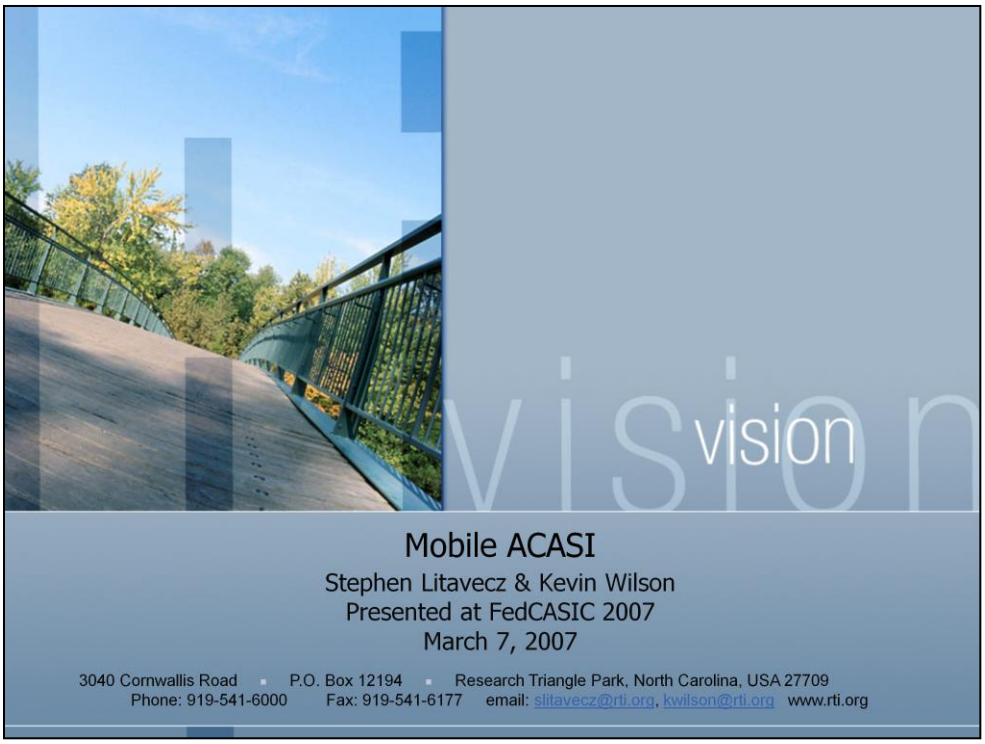
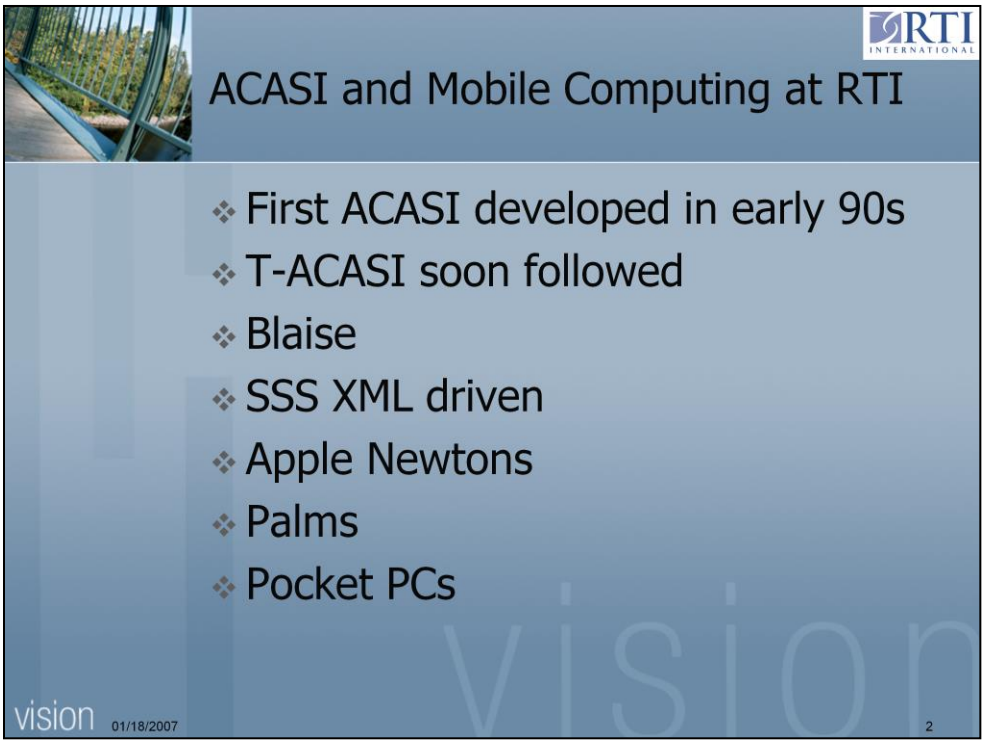


Good Afternoon. I am Steve Litavecz with RTI. I will be presenting information on the new Mobile ACASI system developed for Pocket PCs. Although I am presenting this material, the main developer of this system is my colleague Kevin Wilson. Kevin came to RTI a couple of years ago and has been working on a lot of the new technology within the division.



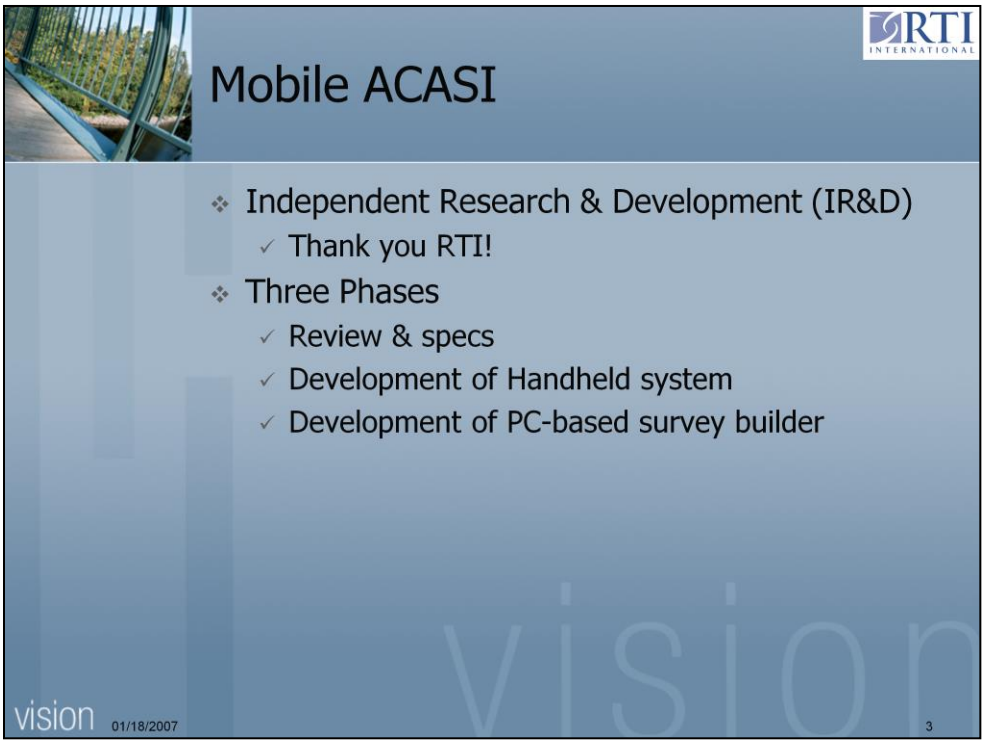
I would like to start with a little history of ACASI and Mobile Computing at RTI. RTI developed their first ACASI system in the early 90s as part of an HIV\sexual behavior study. T-ACASI or Telephone ACASI soon followed, and allowed cost savings of a telephone interview, and allowed personal questions to be asked and answered without a live interviewer.

RTI also uses Blaise for PC-based ACASI systems and has developed an XML driven, PC-based ACASI system call SSS (Simple Survey System). There is nothing simple about its capabilities. It is very diverse and can be updated for project specific question types.

RTI got its start with handheld computers with the Apple Newtons. At one time, RTI had 1200 of these in the field. Work with Newtons went on from 1998 until 2003.

RTI then switched to Palms and almost immediately began working with Pocket PCs. I personally did a lot of the Palm work, with projects involving hospitals across South America. These studies are continuing today.

RTI's involvement with Pocket PCs is pretty well documented. To date we have conducted more than 600,000 screenings and short interviews. There are 700+ interviewers in the field at any one time during the year using Pocket PCs.

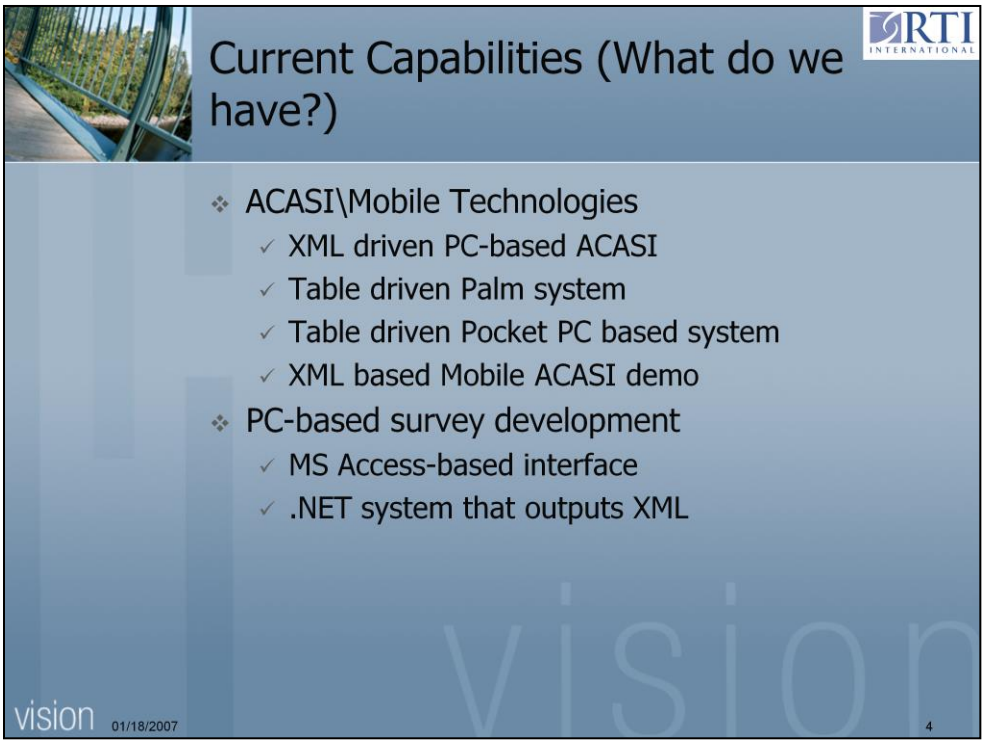


The idea for a mobile ACASI came about because of our heavy involvement in both mobile computing and ACASI interviewing. Someone mentioned the high cost of touch screen laptops and an idea came to life.

The process of developing an ACASI for a handheld device was kicked around for a couple of years. We attempted to add the technology to an existing AppForge system for Palms.

RTI has a program where once per year, employees can apply for an IR&D (an independent research and development) grant to develop new products or to conduct research that is not otherwise funded. I applied for a grant, was rejected, then applied during the next review cycle and was accepted. THANK YOU RTI!

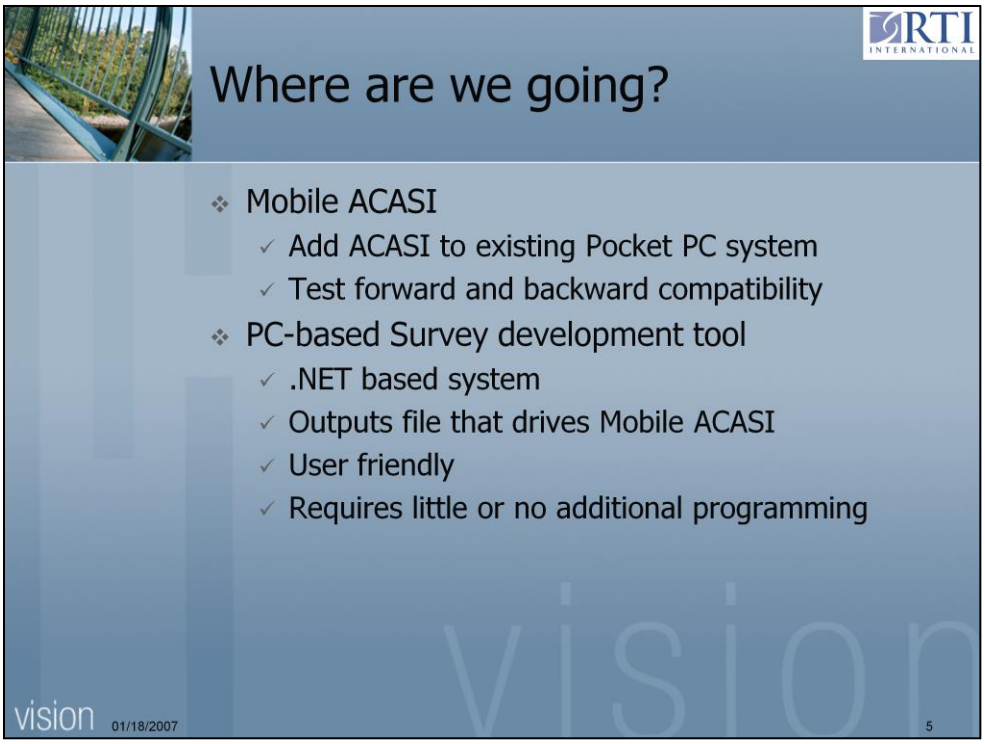
MY IR&D has 3 phases. Phase 1 consisted of researching existing products including commercial products and those developed within RTI. We then created specifications for a system to run ACASI interviews on a Pocket PC, and for a PC-based survey builder, allowing non-technical staff to program a survey or questionnaires for the Mobile ACASI.



What we found was that there were several commercial products for handhelds, a few products that offered PC-based ACASI, but none that offered a Pocket PC based ACASI. Further research showed that there was a small study done with school children, using an ACASI device on handhelds. The software was custom developed for the study and has not been offered elsewhere.

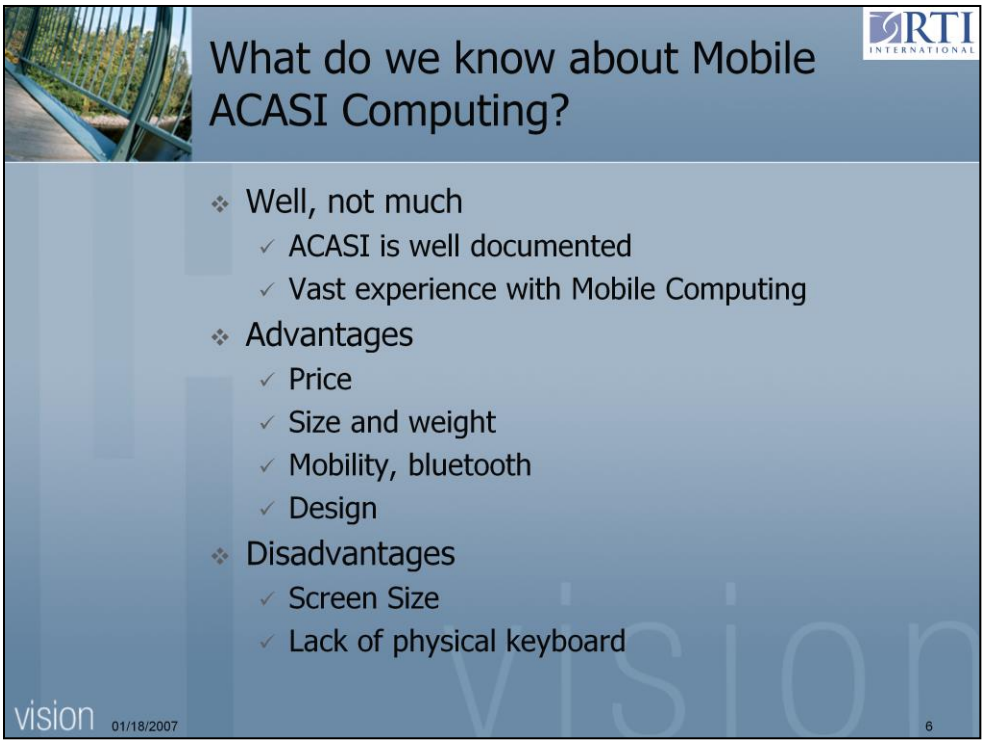
We also looked into the PC-based ACASI system that is XML driven, the table driven Palm systems and the table driven Pocket PC-based systems. From these we had enough information to develop a working prototype of a Mobile ACASI system. This is the system that many of you saw at the exhibit booth yesterday. We will have it available after this session if anyone is interested in see it.

In addition, we began looking at the tools that were being used to develop questionnaires for these systems. What we found was that questionnaires for the current Pocket PC system were written directly into an Access table, with very few folks knowing how to do it. An interface is being developed for PC-based XML driven ACASI, but currently, those who develop questionnaires for it simply write an XML file using an XML editor. We have a very nice, easy to use interface available for the Palm system, that had almost all features that we wanted. This is the one we are using as a basis for the development of a new PC-based questionnaire builder.



Where are we going? Although we have a very nice, XML driven working prototype, we will be adding ACASI capabilities to our current GSS (Pocket PC based) system. This will give our division more experience with handheld development and will allow us to only maintain one handheld system for ACASI and non-ACASI interview. We will test the system to ensure ACASI capabilities, but also to ensure that it is backward compatible, so that the same EXE will still work for older questionnaires.

We plan to put a great deal of effort into developing a PC-based questionnaire development tool that will be easy to use, will require little or no additional programming to get the quex working, and that will be compatible with handheld system. We will also be open to having it creating quex in other formats as requested.



What do we know about mobile ACASI? Well, the truth is, not very much. The effectiveness of PC-based ACASIs is well documented. RTI has vast experience with mobile computing. I was asked to address how the technology will be received by children and older adults. Although not a scientific study, I can tell you that I have 2 children, one 7 and one 5 years of age. My 7 year old reads constantly, going through more that 100 pages per night. My 5 year old is just catching on to reading, knows a lot of words, but still guesses at many. As an example, when a word starts with "TH" he always assumes that this word is "THREE." I asked my children to complete a simple survey. The only instruction I gave them was to click on the response they wanted to choose, and to click on the next button to continue.

After they were finished, I reviewed the data and asked them about how they responded to the questions. Their responses consistently matched the data. Although further study is needed, I believe the use of this technology with school-aged children will be positive.

As for the elderly, I know that RTI does not exclude interviewers based on their age, and that the majority of interviewers working on handheld surveys are not spring chickens. Therefore, I believe that once respondents feel comfortable with the device, there will not be problems with its use.

What are the advantages of using Pocket PCs to conduct ACASI interview?

Well, cost is one. Although the price of laptops continues to decrease, the cost of touch screens is still high, and the screen is the most vulnerable part of a laptop. The cost of an Pocket PC is less than that of adding a touch screen to a laptop.

Size and weight. For studies that have group interview, handhelds will assist the inteviewer by not having them all several laptops. Another advantage is that they can be concealed when traveling in high risk areas. The interviewer does not have to carry a laptop bag around.

The Pocket PCs mobility is a great advantage. How often would you let someone come into your house, set up a laptop at your table, use your power,etc… With a pocket PC, short ACASIs could be done at the doorstep.

The built-in bluetooth on many Pocket PCs allow us to use wireless headphones and head sets.

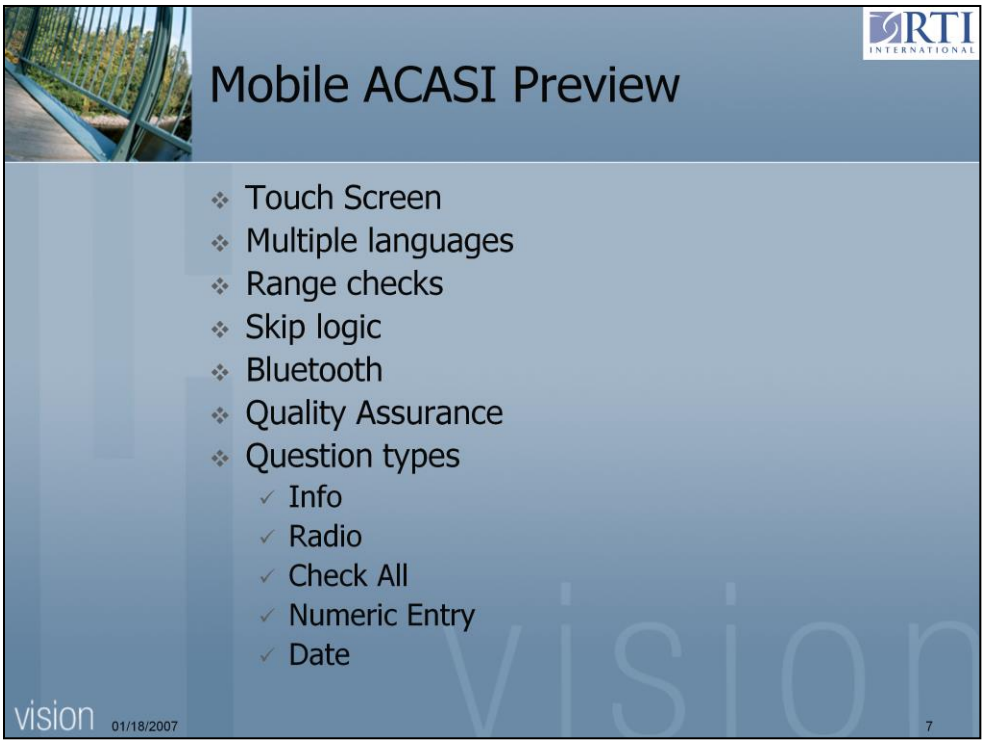
And finally their design. It is compact, easy to use, easy to carry, and has few moving parts. When I worked for my last company, I worked on a study that used laptops to conduct ACASI internviews with kids. We found that we had a lot of hardware problems and could easily explain why. It turns out the kids were poping the keyboards out of the laptops and taking parts out.

The handheld does not have anything to open, but it will require an SD card to hold wav files. Short of covering the SD card with duct tape, it is vulnerable.

Disadvantages – Screen size continues to be a problem. We try to limit scrolling when there is a lot of text. Responses must be concise. Definitely a problem with long, complex questions.

The lack of a physical keyboard is an issue if your quex contains open ended questions. With a laptop, you can

activate the keyboard. A virtual keyboard is a possibility, as is an add-on exterior keyboard. But then, you might as well have a laptop. Best case is to avoid open ended questions. I will touch on this topic again later.

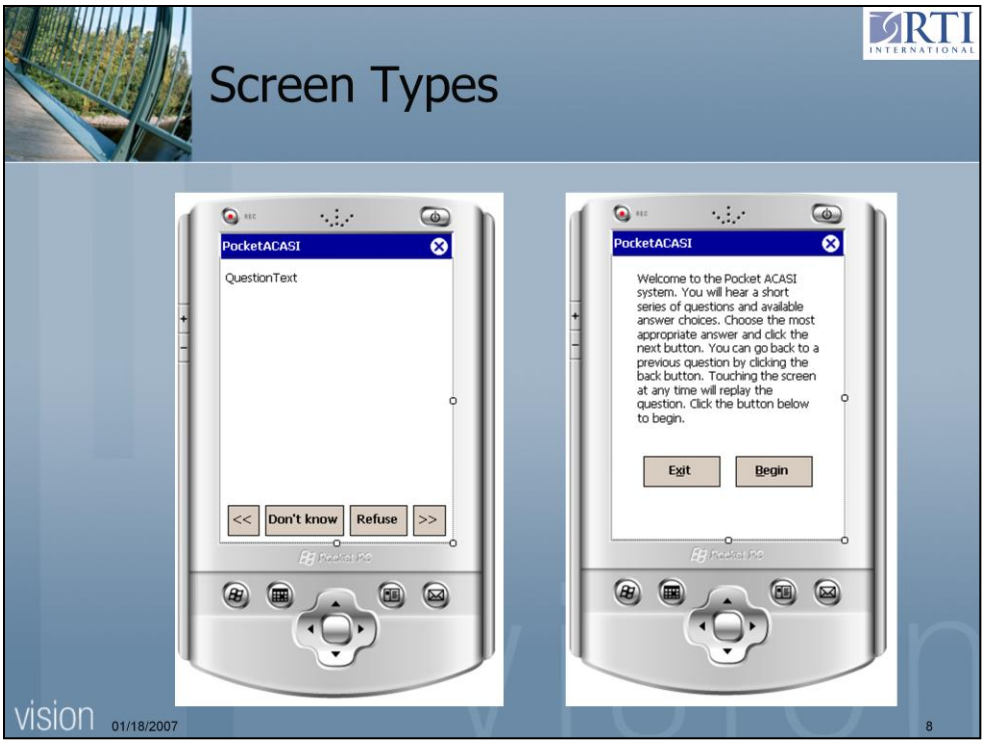


Now, to talk about what we have… The Mobile ACASI (obviously) uses a touch screen to record responses. Responses are highlighted as they are read, and also when they are selected. This ensures that low literacy participants are able to answer as they expect. In addition, the question may be repeated at any time by clicking on the screen.

The system works in multiple languages, enforces range checks, and skip logic. The skip logic can be complex, the current handheld system includes an interpreter for logic.

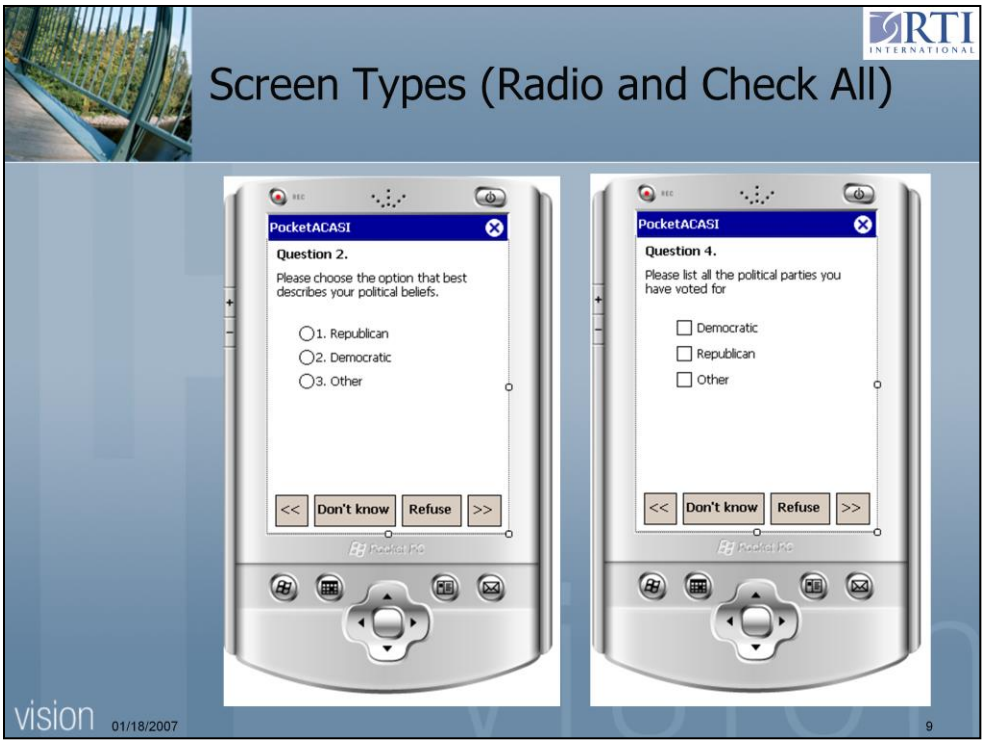
Bluetooth allows us to have wireless headsets, if required.

Each question must be answered, or the respondent may actively choose to skip. There will be no missing data. The skip logic ensures the correct answers are asked, and each response is date\time stamped. If the respondent backs up, the old response is flagged, but not deleted.

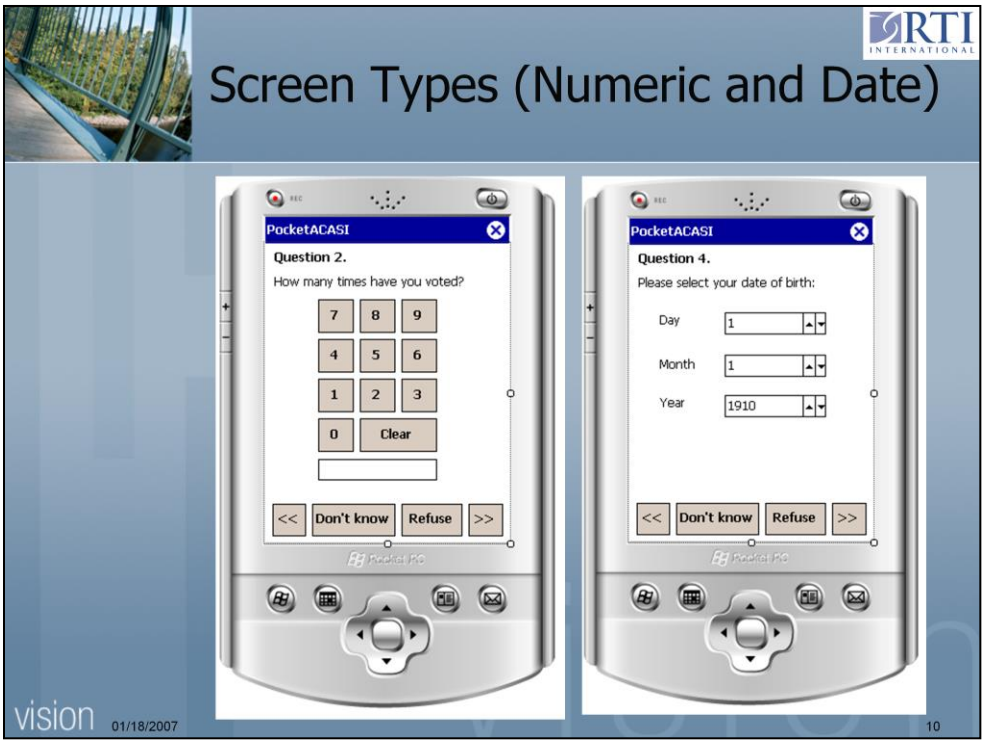


The system uses one main screen for all questions. This includes responses for dk and refuse, along with buttons to move through the survey.

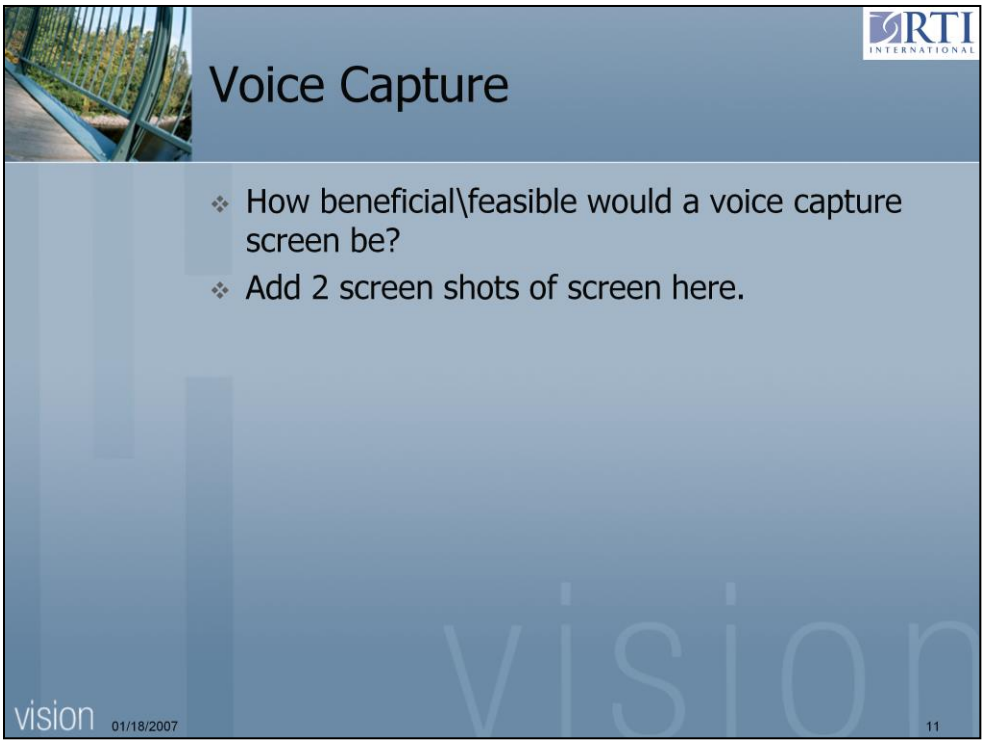
An informational screen is available to tell the user something. It can be anything from “welcome to the survey” to “the next few questions will talk relate to your mother”



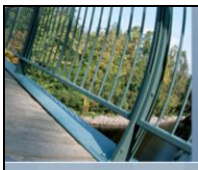
Here we see the Radio button or select only one and the check all.



Here we have numeric entry and a date screen. The numeric entry is very clear, though we plan to revisit the date capture. When asking for DOB or a date will a wide year range, we may ask for the year in a numeric screen, then use a calendar type screen to capture the month and year. Depends on the client.



I'd like to go back and discuss the need for an open text field. Suppose we developed a screen that stated to "press the button to begin recording" and "press again to end recording", in order to capture an open text response. It would require having a human go back and key, but it would allow an open ended question. By a show of hands, how many of you think this would be useful and feasible for the user?



Q & A