

Mobile Computing Technology



Today's mobile devices offer powerful computing capabilities for rich, user-friendly data capture. RTI International has expertise in a variety of mobile and handheld systems customized for diverse applications and populations. Our current mobile computing technology uses multiple platforms that can be employed for web-enabled or stand-alone use in field surveys, health research, environmental monitoring, and automated delivery of personalized information.

At the forefront of mobile computing technology, our systems can administer questionnaires in multiple languages, perform observational data collection, and assist in managing health interventions. We also use mobile devices to collect individual and public health data, and we specialize in wireless mobile sensors and personal electronic health record applications. Platforms include smartphones, PDAs, tablets, netbooks, and other handheld devices. Additionally, we provide services in information sharing, technology transfer, and capacity building for international projects.

Areas of Expertise

Core areas for mobile technology development include

- Field interviewer-based data collection for household interviewing
- Prevalence and behavioral surveys for surveillance, including multi-language international surveys
- Mobile health intervention tools that benefit patients and health care providers
- Establishment surveys, intercept surveys, point-of-sale and observational data collection
- Environmental assessments

General Survey System (GSS) Platform. One of RTI's most heavily used mobile technologies is the GSS designed for mobile computing devices. In production for over 5 years, it currently enables field interviewers using handheld computers to capture interview or inventory data, such as vendor surveys, intercept surveys, and household doorway screening and interviewing. A PC-based environment for instrument development and data processing is available. GSS features include

- Range and validity checking
- Enumeration
- Support for multiple languages and complex Unicode fonts (Vietnamese, Arabic, Mandarin).
- GPS capture
- Complex data capture logic and sequences
- Sample selection in real time
- Case management and status recording
- Large-capacity data storage
- Data file and input statements for use in statistical software



Health Monitoring and Intervention. RTI has recently developed the Personal Health Monitor (PHM) for tracking the development of post-traumatic stress disorder. Psychometric health scales can be used with self-reported stressors and behavioral diaries, such as mood status, work stress, dietary intake, substance use, and exercise patterns. Investigators customize data collection by configuring available instruments and protocols. RTI is developing a personal health intervention tool (PHIT) that augments the PHM platform with self-help intervention resources and applications. PHIT includes a smart phone, physiological sensors, and software that integrate health assessments with an intelligent executive program that manages informational and behavioral interventions based on established guidelines. Using mobile technologies, PHIT can help monitor health status, manage interventions, and maintain treatment compliance, thereby improving wellness and enhancing recovery.

Project Highlights

Global Adult Tobacco Survey (GATS). Under the Bloomberg Initiative to Reduce Tobacco Use, the GATS project has implemented RTI software on a global scale. The GATS GSS has been used to collect data in over 150,000 household surveys in 30 languages across 12 countries. The system allows in-country staff to design and implement country-specific questionnaires, port the software to a handheld device, aggregate all field data into a single file, and integrate data with the sample file to create an analysis file.

The National Survey on Drug Use and Health (NSDUH). Since 2001, the NSDUH project has used PDAs in all 50 US states for in-person collection of household demographic data. The easy-to-use system of Internet-based interfaces allows questionnaires collecting sensitive behavioral data to be completed in a mobile setting or in large group settings. Field interviewers transmit data nightly and receive updated assignments and contact information. The system aids management on all levels, provides for real-time progress monitoring, and supports extensive workflow automation.



Platforms for Integrated Longitudinal Exposure Surveys (PFILES). This EPA-funded project developed methods for collecting longitudinal data on human exposure-related activities. Personal activity, physical location, and dietary behavior diaries; personal care, household cleaning, and pesticide product use; and environmental conditions and exposures were collected all day for 7 days. Heart rate, GPS location, and other data were collected via Bluetooth devices. Voice diaries, passive microenvironment identification, wireless interfaces, intelligent prompting, and automated daily review were employed to collect ecological momentary data accurately with low participant burden.

More Information

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