

occupation "other category" variables such as military rank of the subject. The diagnosis field may be used to record a subject's diagnosis category.

**[0077]** The edit subject screen **50** of the preferred embodiment also provides access to a comment entry screen using a "Comment" button **58**. Values are entered into the fields utilizing Graffiti, or the mini-keyboard that can be displayed by tapping a keyboard icon at the lower left corner of the graffiti screen **24**, as illustrated in FIG. 2. A done button **56** or a cancel button **60** are provided to exit the edit subject screen **50**.

**[0078]** Administering an ARES test battery. A subject utilizes ARES by tapping the ARES Executive program icon displayed on the ARES screen of FIG. 1. The subject then taps the Log In button **30** to proceed to the subject database screen **36** which lists the registered subjects. The subject enters his or her PIN **52**, and if the correct PIN is entered, a start screen appears (not shown). Tapping a start button (not shown) on the start screen begins battery administration.

**[0079]** The ARES tests of the preferred embodiment are designed to use only the keys **16, 18** at the bottom of the PDA **10** for user/subject input. However, in other embodiments of the invention, the touch-sensitive screen may be used during the tests. The PDA **10** may be held with both hands using the thumbs to manipulate the keys **16, 18** for taking ARES tests. Each test begins with a screen showing a brief explanation of how the test operates. FIG. 7 illustrates a view screen **14** for a mathematical processing test **70**. All of the tests provide a graphic representation **74** of the keyboard at the bottom of the screen **14** with the active keys and their meanings shown. In general, the top center key "3" is used to start a test, and the keys "2" and "5" to either side of the center are used to enter responses to the test items.

**[0080]** With the exception of Sleep Scale and Mood Scale, the tests can be programmed to begin with a brief "warm-up" The "warm-up" ensures that the instructions are understood. For two of the tests, Mathematical Processing and Running Memory, a mastery criterion can be specified and required to be met by the subject before allowing administration of the test proper. If the criterion is not met, the warm-up can be retried twice. If it is failed a third time, the user is given the option of quitting the test or proceeding anyway. At the completion of a battery, ARES may be programmed to provide feedback regarding how performance on the just-completed battery of tests compares with past performance by the same subject, or with appropriate normative data.

**[0081]** For demonstration purposes, ARES tests may be taken individually, i.e., not as part of a battery, through the "Single Test" button on the Admin Functions screen that is available through the options pull down menu **34**, as shown in FIG. 4. FIG. 11 illustrates a demo single test screen **94** of a preferred embodiment. In this mode, the results are saved in a database, as shown in Table 9, but the tests are not configurable. A test is selected on the list, and is launched by tapping the "Launch the Test" button. Although the single test option is available, most subjects will use a pre-specified test battery.

**[0082]** ARES test batteries may consist of up to nine tests. For convenience, several standard test batteries are available as shown in Table 2. These batteries are designed to meet common needs in settings ranging from a relatively complete neuropsychological screen (NeuroCog) to repeated assessment of the cognitive status of military personnel in operational settings (Commander and Warrior). In addition, two demonstration batteries are designed to provide brief samples of the ARES tests and test data. Each test has a small number

of trials. The Commander and the two demonstration batteries are automatically installed the first time the ARES program is launched. Custom built batteries can be installed using a data manager program installed on a host computer **116**, or by Hot Syncing a customized version of the battery database (ARBatDB.PDB) onto the PDA as explained further below.

**[0083]** The NeuroCognitive (NeuroCog) test battery is designed for use by a neuropsychologist who is trained in the use and interpretation of ANAM data. This battery is designed primarily for diagnostic use and medical monitoring of recovery following an insult to the central nervous system. The ARES Commander is designed to provide a brief on-line assessment of the ability to sustain levels of concentration, working memory, and mental efficiency. It is intended for use as a self-monitoring system and is intended for operational commanders in command and control centers as well in field settings. ARES Commander also may be used for similar purposes in other military missions such as sustained flight operations to assess flight crew alertness and readiness. A post-session Performance Index compares performance on the just-completed battery with the subject's prior performance. The ARES Warrior is constructed to provide a neurocognitive screening instrument for use by medics and other medical support personnel who must be able to rapidly assess the mental status of military personnel in field operational medical and combat settings.

**[0084]** Table 8 shows the specifications for the "Commander" test battery Cognitive Status Report of a preferred embodiment of the present invention. Ten scores will be used to derive a performance index (PI) for the test battery, ranging from 0 to 10. Items marked with an asterisk are derived by comparing the current score with scores from three prior sessions. The first session for which a PI will be calculated is session five, and the first four sessions are considered "familiarization" sessions. Data from the first session is not used in calculating the initial baseline set of scores. Sessions two, three, and four are considered "anchor" sessions. These three sessions that are used in deriving the scores, designated the "baseline" sessions, will be the three immediately preceding the current session, with restrictions.

**[0085]** A first restriction for deriving scores is that no session with a performance index less than "7" will be used, and a preceding session is substituted. For example, if the current session is session 10, and the Pi on session 8 was 5, the baseline sessions are 9, 7, and 6. A second restriction is that if the average values of the variable in the immediately preceding three sessions is worse than the average of the three anchor sessions, the anchor sessions will be used for that variable. Scores of "9" or greater are considered passing scores, scores of "7" and "8" are marginal, and scores of less than "7" are failure. Other back end specifications of alternate embodiments of the invention may be utilized depending upon the test battery and a pre-determined passing criterion.

**[0086]** PDA operating systems, unlike most computers that use file systems to store programs and data, store all information in "databases" **122**. Table 9 lists the databases used by ARES. All ARES tests, with the exception of the Sleep Scale and Mood Scale, use the same format for collecting the data. Data are stored as "records" in the ARDataDB database on the PDA. Each record contains the data from a single test, subject, and administration (session). Data elements (fields) stored for each test are listed in Table 10. Each record consists of four sections. The first section contains housekeeping data for the