associated with that particular implement ECU. Next, in step **1230**, unless all of the messages have been read from the buffer and processed, the system will loop back to step **1205** to begin reading and processing the next message.

[0092] FIG. **13** shows a flowchart illustrating the implement ECU profile creation process in accordance with one embodiment of the present invention. First, in step **1305**, a VT object pool for the implement ECU of interest is retrieved. The object pool could be assembled from messages already stored in memory, or the object pool could be obtained from the ECU manufacturer, or by some other means. In step **1310**, the object pool is uploaded to a VT simulator. For example, the VT simulator could be a PC program that displays the VT objects on a VT display screen. As an additional aid, the VT simulator could display the object ID numbers for easy identification. In steps **1315** and **1320**, a human observer identifies the operating parameters of interest within the terminal objects displayed on the VT display screen, and adds the corresponding VT object ID numbers to an ECU profile template. Other identifying features may also be added to the ECU profile template, including the type of object (number, button, text, etc.). Finally, in step **1325**, the populated implement ECU template is stored in memory as a complete implement ECU profile, ready to be matched with implement ECUs being used to perform farming operations.

[0093] FIG. **14** shows three flow diagrams illustrating by way of example the first three phases of a process for managing and processing farming operation data on a farming data exchange server in accordance with one embodiment of the present invention. As shown in FIG. **14**, the first phase is the passive job data acquisition phase, which comprises the steps of associating a relay device with a business account on the farming data exchange server (step **1405**), capturing vehicle, GPS and implement data on the relay device and transmitting it to the farming data exchange server (step **1410**) and parsing, filtering and time stamping the data before depositing it into the agricultural data repository on the server (step **1410**).

[0094] The second phase is the ECU data extraction phase, which comprises determining whether the message data is VT data or task controller (TC) data (step **1420**), identifying matching VT or TC ECU profiles for the message data (steps **1425** and **1435**), extracting operating parameters from the VT or TC data in accordance with the communication protocols defined in the selected matching VT and TC profiles stored on the farming data exchange server (steps **1430** and **1440**) and storing the extracted operating parameters in the agriculture data repository on the server (step **1445**).

[0095] In the passive field boundary generation phase, the system parses the stored operating parameters and combines this information with time and position data to determine implement operating events occurring during the farming operation (step **1450**), determines the surface area for the operating events (step **1455**), finds the outside and inside edges of the surface area based on GPS coordinates to determine the travel path(s) for the farming operation (steps **1465** and **1470**), and stores a description of the travel path(s) in an electronic farming record for the business account (step **1460**).

[0096] FIG. **15** shows two more flow diagrams illustrating the final two phases, respectively, in a process for collecting and sharing farming operation data in accordance with an embodiment of the present invention. As shown in FIG. **15**, the passive job generation phase comprises determining farming operation types for all farming operations performed within field boundaries based on date, time and equipment used (step **1505**), linking together field boundaries based on relay devices associated with a farming business to define new farming operations for each farming business (step **1510**), and storing the new farming operations in linked lists in the EFR (business entity) database (step **1515**). In the farm data sharing phase, the farming operation exchange receives a logon request from a customer (**1520**), verifies the customer's credentials and permissions (step **1525**) and receives a request from the customer for a customized farm data report for a specified location, date range and budget (step **1530**). The system then determines the population of farming businesses within the specified location and date range (step **1535**), displays a preview report and prompts the customer to specify whether to accept, expand or cancel the results (steps **1540** and **1542**).

[0097] If the customer cancels the results, then the report is canceled and processing stops (step **1545**). However, if the customer accepts the results, the system initiates and completes a customer payment by electronic funds transfer (EFT) prior to generating and transmitting a farming data report and providing credits to the population of farming businesses who supplied data for the report (step **1565**). But if the customer chooses to expand the results, the system is optionally programmed to send opt-in requests to relevant farming businesses disclosing payment terms for participation (step **1550**), accepts opt-ins until a specified time limit or quota is met (step **1555**) and includes the additional opt-ins in the report (step **1560**). Finally, the system initiates and completes a customer payment by electronic funds transfer (EFT) prior to generating and transmitting a farming data report and providing credits to the population of farming businesses who participated in supplying data for the original and expanded results (step **1565**).

[0098] The above-described preferred embodiments are intended to illustrate the principles of the invention, but not to limit its scope. Various other embodiments, modifications and equivalents to these preferred embodiments may occur to those skilled in the art upon reading the present disclosure or practicing the claimed invention. Such variations, modifications and equivalents are intended to come within the scope of the invention and the appended claims.

We claim:

1. A relay device for tracking farming operations for a farming business, comprising:

(a) a microprocessor;

(b) a bus connector for connecting the relay device to a message bus on a farming vehicle or farming implement, wherein the message bus is configured to carry message data generated by the farming vehicle or the farming implement while the farming vehicle and the farming implement are used to perform the farming operation;

(c) a global positioning system receiver that receives position and time signals from space-based satellites while the farming operation is performed;

(d) a memory storage area comprising (i) a buffer for receiving and storing the message data carried on the message bus, (ii) a defined filter set for the message data, (iii) an electronic farm record for the farming business, (iv) descriptive information about a farming