



Large goat farm in South India deploys a RFID-based ANIMAL TRACKING AND MANAGEMENT SYSTEM

Instant identification and tracking of individual animals
within a herd

Real-time event-based monitoring and alerts

Timely sales based on optimum weight to cost ratio

Intelligent management of animal life-cycle



TECHNOLOGY

Solution:

EPC Gen2 compliant livestock
tracking solution

Tag Type:

Bovina™ UHF Passive

Reader/Antenna:

Xtenna Proximity™
HandyScanna™

Method:

Single Tracking via hand-held
Reader/Antenna

Integration Platform:

RFID Middleware:

Xtenna™ WebToolkit
Xtenna™ Studio

Application: Essen RFID's

Livestock Management System

Database: SQL Server 2005 Exp. ed.

Tag Manufacturer/Supplier:

Essen RFID, with US based chip inlay

Reader/Antenna Manufacturer:

Essen RFID, with US based module

Systems Integrator:

Essen RFID

For further details contact:

Essen RFID

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Nariman Point
Mumbai 400021 India
www.essenrfid.com

INSIDE:

- Key Requirements
- Solution
- Implementation
- Working
- Benefits
- Links





CASE STUDY

KEY REQUIREMENTS:

Pamps Farm is a business in Southern India dealing in agricultural produce as well as livestock. Its Goat farm procures, raises and sells goats for slaughter. It followed a manual system of record keeping that was difficult and time consuming, had severe limitations in functioning, livestock maintenance, reports and analysis, and lacked accuracy and efficiency. Maintaining livestock data and related information manually is a very difficult task as animals of the same breed look fairly alike, and management of individual details and genetic data for a large number of animals is not feasible in the manual process.

The farm required a tracking system for its goats that also efficiently managed the individual lifecycle of each animal. Since the health of a goat available for slaughter is of utmost importance and adds commercial value to the animal, the farm required a system that kept constant track of individual animal growth and its proper care and treatment.

Main challenges in implementation:

- Identification and tracking of individual goats throughout their life-cycle, enabling accurate need-based action for each animal.
- Keeping track of weight of each animal on a weekly basis.
- Identifying goats that have gained weight after purchase and are suitable for sale at the right time in order to maximize profits.

SOLUTION:

Essen RFID provided a comprehensive solution for tracking and management of livestock through RFID. Using this technology, the Animal Tracking System intelligently identifies each individual goat and manages its health, feeding and weight gain. It also keeps a history of the livestock in its database.

The system uses a HandyScanna™ hand-held RFID device for tracking each goat inside its farm. The device uses a mobile application to identify individual animals, and sends data via Wi-Fi network to the database. SQL Server is used as the back-end database and a Web-based application was developed as the front-end interface.

IMPLEMENTATION:

BOVINA™ RFID tags are utilized for uniquely identifying and tracking individual goats. A tag is attached to the ear of each animal or tied around its neck. The tracking is done through a hand-held HandyScanna™ device that scans the tag on each animal and identifies it within the database. A Xtenna Proximity™ reader is used for registering each tag and assigning it to the individual animal in the database.



CASE STUDY

WORKING:

1. Each BOVINA™ tag is registered into the Animal Tracking application using a Xtenna Proximity™ reader. The tag is assigned to a particular goat in the database along with its details such as breed, age, gender, purchase date, weight at purchase time, purchase price, etc.

The screenshot shows the 'Add Animal' form in the Xtenna PASHUHAstra™ application. The form is divided into several sections: General Details, Birth Details, Description, and Animal ID Details. Each section contains various input fields, dropdown menus, and buttons for data entry.

General Details	
Animal Name *	Select Breed
Registered Name	Registered ID
Select Device	GetTag
Gender *	Notes

Birth Details	
Birth Date	Wearing Date
Neutering Date	Select Purpose *
Birth Height	Birth Weight
Select Sire	Other Sire name
Select Dam	Other Dam name

Description	
Left Tattoo	Right Tattoo
Distinguishing Mark	Color
Select path	Browse...

Animal ID Details	
Date Entered *	Way to enter in heard?
Number Of previous Lactations *	Half Owner
Weight Purchase KG *	Price Purchase RS *
Date Left Herd	

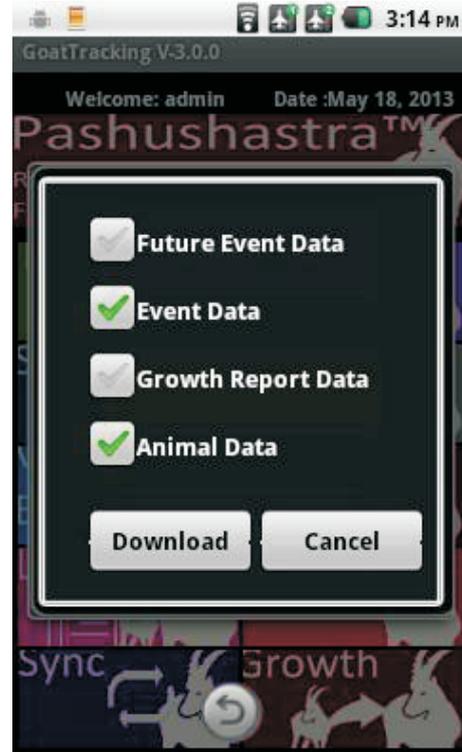
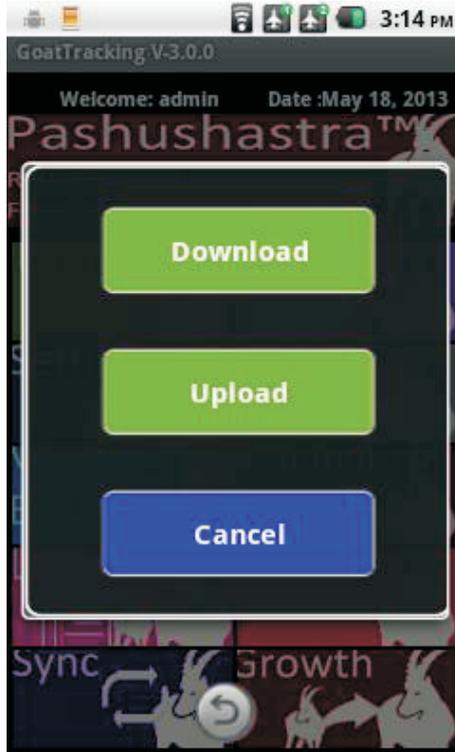


2. The BOVINA™ tag is affixed to the particular goat as soon as the tag has been assigned to it in the database. This process is repeated for all goats that have been purchased or are newly born at the farm.



CASE STUDY

- This data for all the goats is then downloaded via Wi-Fi into the hand-held HandyScanna™ device, using the mobile Animal Tracking application built into the HandyScanna™.



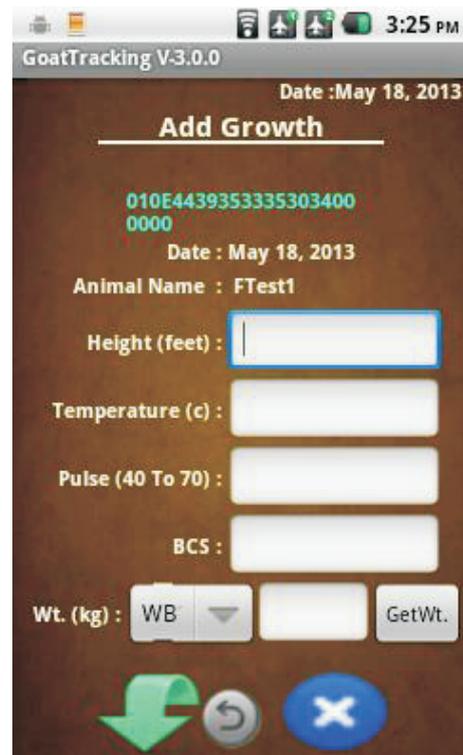
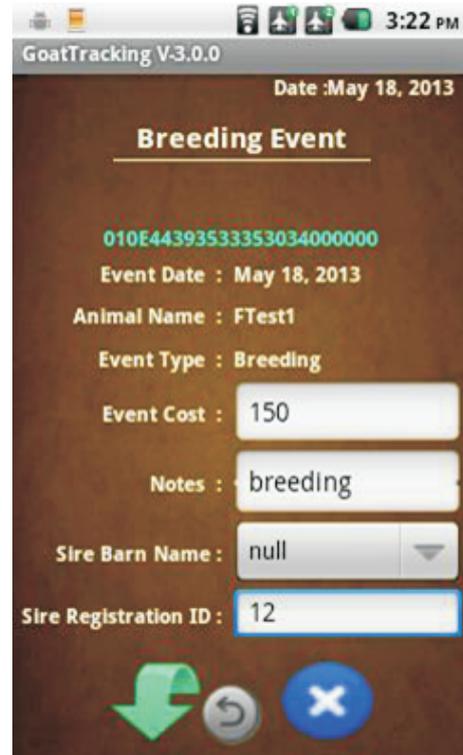
- The HandyScanna™ can now read and identify the tags on each goat. Since the HandyScanna™ is a hand-held portable device, it can be carried to wherever the goats are on the farm premises. The operator can select a particular animal in the database on the device touchscreen and do a search scan for it at any location. The device will pick up the tag ID of that particular goat and display it on the device screen along with its confirmed location. These updated details can then be saved into the database.





CASE STUDY

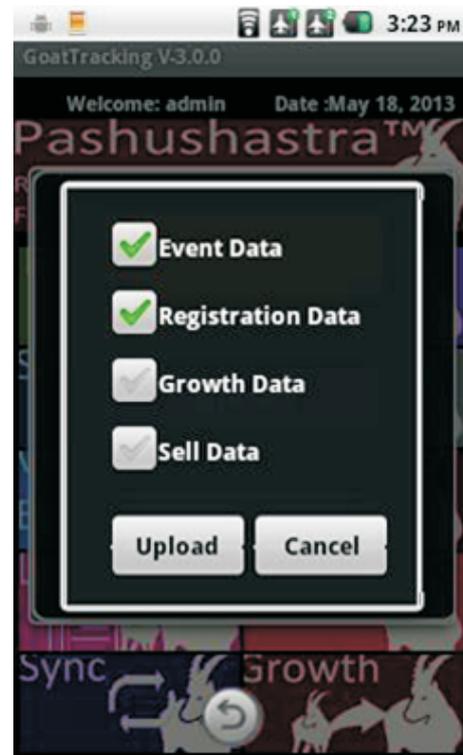
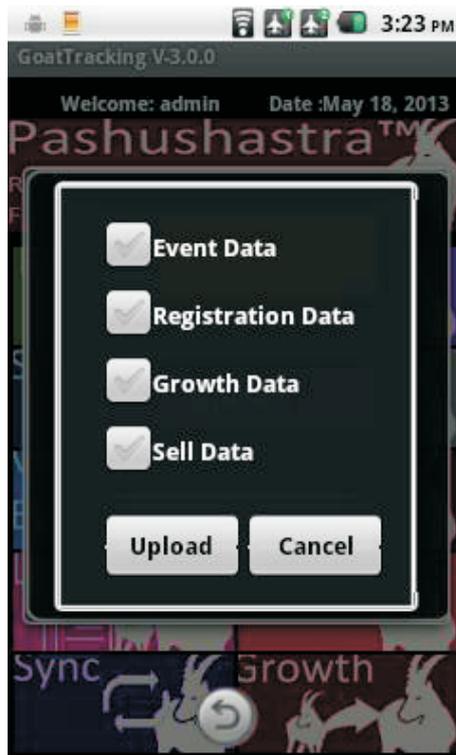
5. Within the HandyScanna™ application, the operator can now add various life-cycle events for each goat and enter the data measured of that event for each goat. Examples of these events include breeding, heat expected, pregnancy confirmation, calving, etc. The operator can apply the same event to multiple goats using the bulk event function.





CASE STUDY

- Using the growth event, the operator can check the weekly growth of the animal. A weighing machine gives the weight data to the HandyScanna™ which is saved along with the growth details.
- The operator can also update medical information for each animal through the HandyScanna™. If any medicine is given to a goat by the veterinarian, that information is entered into the device. The data is sent to the server and updated in the central database. This helps in keeping track of medical treatment of individual goats, facilitates similar treatment to other affected goats and also enables isolation and prevents the spread of disease within the farm.
- This fresh data is uploaded from the HandyScanna™ device to the central server database through Wi-Fi. Whenever Wi-Fi connectivity is available within the premises, the data gets uploaded from the hand-held device and is synchronized with the server.



- When an order is received, customer details are entered in the Animal Tracking web application in order to generate an invoice. Once the 'Create Invoice' button is clicked, a report list for the goats is displayed on the screen, showing a list of goats with their purchased weight, cost price, current weight and other current details. Based on this data, the Sales Officer can now take a decision on which goats are ready for sale and select the appropriate goats from the report list.



CASE STUDY

10. Once the goats are selected from the report list, an invoice is generated with the goat details and weight. The Sales Officer can then enter the invoice number and the appropriate price that is to be charged.

T A X I N V O I C E

Kisan Farm Industries 

Invoice No	
Invoice Date	27-05-2013
W.O. NO.	
W.O. Date	
VAT TIN NO	27780018628V wef 01.04.2006
C.S.T. TIN NO	27780018628C wef 01.04.2006

* Indicate Animal found in heard Search ID 1

SR. No.	Name	Breed	UnitCost KG	Weight:KG	Price	Remove
1	Goat01	Usmanabadi	45.0	58.0	2610.0	REMOVE
Subtotal					RS:2610.0	
Vat 5%					RS: 130.5	
Gross Total					RS:2741	

In Word RS: two thousand seven hundred forty one

We hereby certify that our Regd. Cert. under the ES Act 1959 is in force on the date on which the sale of goods specified in this bill/cash memo is made by us, and that the transaction of the sale covered in this bill / cash memo has been effected by us in the regular course of our business.

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Authorized Signatory

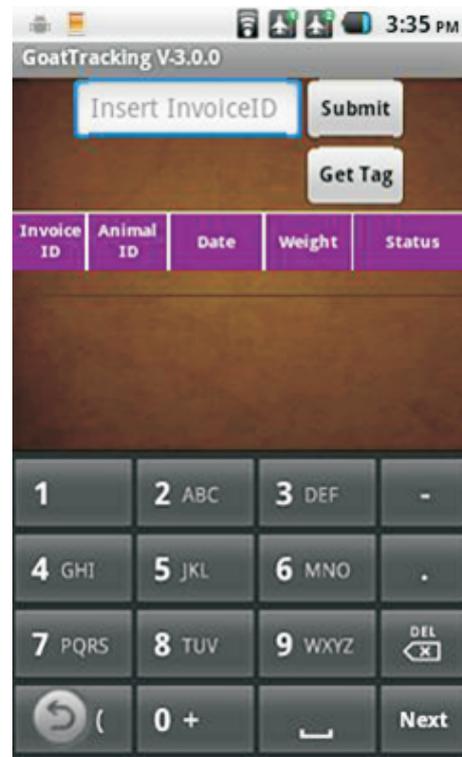
TERMS

1>Payment by cross order cheque only. 2> Interest at 20% will be charged if the payment is not paid within 15 days of this bill. 3> All disputes subject to Mumbai jurisdiction, E & O.E.



CASE STUDY

11. After the invoice has been prepared, it is sent to the farm for collecting the selected goats. The HandyScanna™ operator enters the Invoice ID in the Sales menu of his device application and the selected goats are displayed on his screen along with their tag IDs.
12. The operator then scans the tags of the goats. If the selected goat is found, it shows up on the device in a second list. This data is synchronized with the server, tallied with the invoice data and the goat is taken away for sales delivery. If the required goat is not found for any reason, then the system allows the removal of that goat from the invoice and the selection of another suitable goat.
13. The Animal Tracking web application provides detailed reporting functions that allow the operator to obtain up-to-date information regarding all events and reminders, as well as total lists and summaries. These reports enable day-to-day analysis regarding various parameters, e.g. Weight Analysis report compares purchased weight with current weight and enables both suitable action and projected expectations on the basis of data generated.



BarnName	TagID	Sex	BirthDay	BreedName
FOG-0001	E2008364641101450610D3F9	Male	01-03-2009	Jannapari
FOG-0002	E2008364641100720450E219	Female	01-03-2009	THALASSERY
FOG-0003	E200941111190184246018AE	Female	01-03-2009	THALASSERY
FOG-0004	E200941111190121276005C0	Female	01-03-2009	THALASSERY
FOG-0005	E2008364641101420290EEDD	Female	01-03-2009	THALASSERY
FOG-0006	E2008364641101290180F18E	Female	01-03-2009	THALASSERY
FOG-0007	E2008364641101250730CSB9	Female	01-03-2009	THALASSERY
FOG-0008	E2008364641100710380E7DE	Female	01-03-2009	THALASSERY
FOG-0009	E2008364641100851050A841	Female	01-03-2009	THALASSERY
FOG-0010	E2008364641101161150A04F	Female	01-03-2009	THALASSERY
FOG-0011	E2008364641101581030A04B	Female	01-03-2009	THALASSERY
FOG-0012	E20094111119022026400C48	Female	01-03-2009	THALASSERY
FOG-0013	E200941111190105247019EB	Female	01-03-2009	THALASSERY
FOG-0014	E20094111119009227300549	Female	01-03-2009	THALASSERY
FOG-0015	E2009411111900682530144D	Female	01-03-2009	THALASSERY
FOG-0016	E2008364640E02250370E575	Female	01-03-2012	THALASSERY
FOG-0017	E2008364641101520520D0E0	Female	01-03-2009	THALASSERY
FOG-0018	E2008364641101171060A8C2	Female	01-03-2009	THALASSERY
FOG-0019	E20094111119018524201D0E	Female	01-03-2009	THALASSERY
FOG-0020	E2009411111901682760067C	Female	01-03-2009	THALASSERY



CASE STUDY

Display Growth

From Date: To Date:

351 items found, displaying 1 to 20 [First|Prev] 1, 2, 3, 4, 5, 6, 7, 8 [Next|Last]

Name	Breed	Par-Date	Sex	Par-Price	Weight-Par	Avg-Weight	Price-Meat	Week	Weight-Date	Actual-Weight	Actual-Price	Exp-Weight	Exp-Cost	Status
FOG-0001	Jamnapari	26/11/2012	Male	13932.0	51.6	55.0	270.0	17	29/03/2013	50.0	13500.0	60.1	16227.0	LOWER
FOG-0001	Jamnapari	26/11/2012	Male	13932.0	51.6	55.0	270.0	18	06/04/2013	51.3	13051.0	60.6	16362.0	LOWER
FOG-0001	Jamnapari	26/11/2012	Male	13932.0	51.6	55.0	270.0	20	19/04/2013	51.1	13787.0	61.6	16632.0	LOWER
FOG-0001	Jamnapari	26/11/2012	Male	13932.0	51.6	55.0	270.0	22	02/05/2013	49.8	13446.0	62.6	16902.0	LOWER
FOG-0001	Jamnapari	26/11/2012	Male	13932.0	51.6	55.0	270.0	23	06/05/2013	48.0	12960.0	63.1	17037.0	LOWER
FOG-0001	Jamnapari	26/11/2012	Male	13932.0	51.6	55.0	270.0	24	13/05/2013	50.0	13500.0	63.6	17172.0	LOWER
FOG-0002	THALASSERY	26/11/2012	Female	10395.0	38.5	35.0	270.0	17	29/03/2013	42.2	11394.0	47.0	12690.0	UPPER
FOG-0002	THALASSERY	26/11/2012	Female	10395.0	38.5	35.0	270.0	18	06/04/2013	41.2	11124.0	47.5	12825.0	UPPER
FOG-0002	THALASSERY	26/11/2012	Female	10395.0	38.5	35.0	270.0	20	19/04/2013	41.5	11205.0	48.5	13095.0	UPPER
FOG-0002	THALASSERY	26/11/2012	Female	10395.0	38.5	35.0	270.0	22	02/05/2013	44.3	11961.0	49.5	13365.0	UPPER
FOG-0002	THALASSERY	26/11/2012	Female	10395.0	38.5	35.0	270.0	23	06/05/2013	39.5	10665.0	50.0	13500.0	UPPER
FOG-0002	THALASSERY	26/11/2012	Female	10395.0	38.5	35.0	270.0	24	13/05/2013	43.1	11637.0	50.5	13635.0	UPPER
FOG-0002	THALASSERY	26/11/2012	Female	10395.0	38.5	35.0	270.0	24	13/05/2013	43.1	11637.0	50.5	13635.0	UPPER
FOG-0003	THALASSERY	26/11/2012	Female	10287.0	38.1	35.0	270.0	17	29/03/2013	33.3	8991.0	46.6	12582.0	LOWER
FOG-0003	THALASSERY	26/11/2012	Female	10287.0	38.1	35.0	270.0	17	29/03/2013	33.3	8991.0	46.6	12582.0	LOWER
FOG-0003	THALASSERY	26/11/2012	Female	10287.0	38.1	35.0	270.0	18	06/04/2013	33.0	8910.0	47.1	12717.0	LOWER
FOG-0003	THALASSERY	26/11/2012	Female	10287.0	38.1	35.0	270.0	20	19/04/2013	32.6	8802.0	48.1	12987.0	LOWER
FOG-0003	THALASSERY	26/11/2012	Female	10287.0	38.1	35.0	270.0	22	02/05/2013	32.8	8856.0	49.1	13257.0	LOWER
FOG-0003	THALASSERY	26/11/2012	Female	10287.0	38.1	35.0	270.0	23	06/05/2013	30.0	8100.0	49.6	13392.0	LOWER
FOG-0003	THALASSERY	26/11/2012	Female	10287.0	38.1	35.0	270.0	24	13/05/2013	30.4	8208.0	50.1	13527.0	LOWER

Export options: [CSV](#) | [Excel](#) | [XML](#) | [PDF](#)

[Home](#) [Back](#)

BENEFITS:

- The convenience, speed and accuracy of the RFID based Animal Tracking System is highly beneficial to livestock farmers, veterinary officers and health authorities.
- Tracking of individual goats becomes easy and completely accurate.
- Event based monitoring of individual goats across various parameters.
- Need based action and intervention for each individual animal.
- Instantly available reports enable both prompt action and better planning.
- Enables accurate history data for each goat.
- Accurate monitoring of weight gain for each goat.
- Up-to-date weight report and analysis of each goat enables timely sales decisions for individual goats and maximizes profits.
- Efficient invoicing method based on accurate data.
- Easily traceable records of all buyers and sellers.
- Enables efficient management and optimized utilization of farm resources.
- Comprehensive and easily available data leads to clarity in all processes of purchase, sales, health and growth.
- Enables efficient life-cycle management of livestock.



CASE STUDY

LINKS:

Hardware:



Tags:



Software:



Reference Example:

<http://www.essenrfid.com/Mailer/livestock-flash-demo.pdf>