Essen RFID your window to the interconnected world

ESSEN

CASE STUDY

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Large-scale cattle ranch in Brazil deploys RFID-based Intelligent ANIMAL TRACKING AND MANAGEMENT SYSTEM

Instant identification and location of individual animals within a herd of thousands of animals

Real-time livestock monitoring and alerts

Feed management and yield optimization

Intelligent management of animal life-cycle

INSIDE:

TECHNOLOGY

Solution:
EPC Gen2 compliant livestock tracking solution

Tag Type:
Bovina™ UHF Passive

Reader/Antenna:
Xtenna™
Xtenna Proximity™
HandyScanna™

Method:
Multiple Tracking via Integrated Reader/Antenna modules

Single Tracking via hand-held

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:

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Xtenna™ Integrated RFID Antenna/Reader

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KEY REQUIREMENTS:

Maintaining cattle data and related information is a very difficult task as animals of the same breed look fairly alike, and management of individual production details and genetic data for thousands of animals is not feasible in the manual process. Since several steps are to be followed in the animal's lifecycle for achieving optimum output, taking extreme care is essential in this business.

Main challenges in implementation:

- Tracking animal location within various areas of the ranch.
- Identifying individual animals throughout their lives and taking accurate need-based action for each one of them.

Efficient animal management requires the ability to identify each individual animal in all locations in order to be able to isolate a particular animal for various purposes such as preventing the spread of disease. It is also required to maintain individual records of fresh breeding, heat expected, confirmed pregnancies, calving expected, dry-off periods, medication, feed management etc. and this type of information retrieval from a manual system is extremely complex, labour intensive and time-consuming. Hence the need for an automated animal management system is obvious.

SOLUTION:

Essen RFID provides a solution for tracking the location of animals through RFID. Using this technology, the Animal Tracking System intelligently identifies each animal and manages health, output and feeding in real-time. It uses Xtenna™ antenna-readers and hand-held HandyScanna™ devices for this purpose.

The system uses SQL Server as the backend database and Web-based application as the frontend interface. The HandyScanna™ device uses a mobile application to identify individual animals, and sends data via Wi-Fi network to the database.

IMPLEMENTATION:

For tracking individual animals the system requires a HandyScanna™ for basic entries, since the operating environment is outdoors in the ranch. Each gate in the various holding and transit areas for animals, as well as every section in the premises requires Xtenna™ antenna-readers for tracking animal location. A BOVINA™ tag is attached to the ear of each animal for unique identification. Xtenna Proximity™ reader is used for assigning the tags to individual animals in the database.

WORKING:

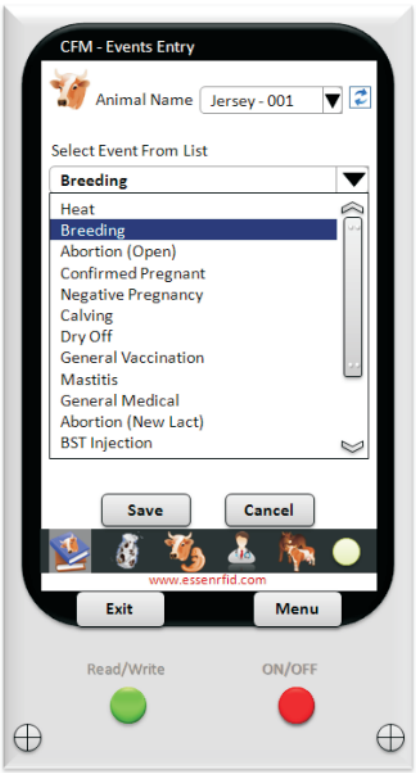
RFID is used for two main purposes:

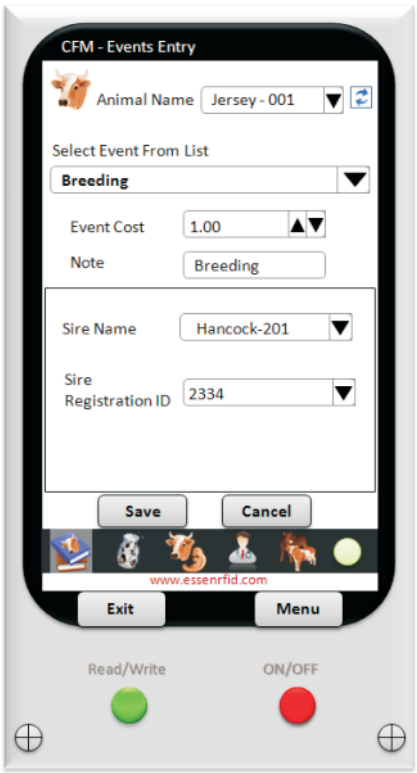
- Location identification
  Information about each location is entered into a database. For this purpose Xtenna™ is mounted at the gates. Animal management uses locations such as treatment location, cleaning location, lactation location etc.
- Animal identification
  A BOVINA™ tag is affixed to each animal. The tag's unique identification number can be used to track individual animals. The HandyScanna™ device is used for tracking animals by scanning their tags.

Process Flow:

When a BOVINA™ tag is assigned to a particular individual animal, all details pertaining to it such as breed, gender, colour, weight, sire details etc. are entered into the database. Efficient animal management requires that each event in the lifecycle of an individual animal is entered in the database. Hence the system allows the operator to add event details such as fresh breeding, heat expected, confirmed pregnancies, offspring expected etc.

When animals move from one location to another in the premises, the Xtenna™ mounted at various locations track these movements and based on the last detection obtain the latest location of each animal.





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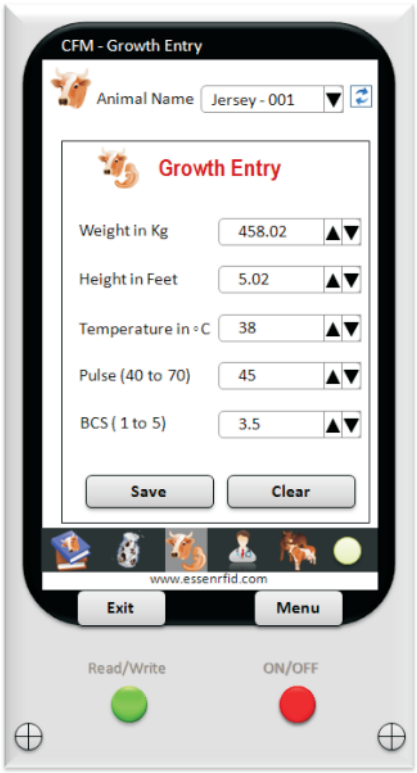
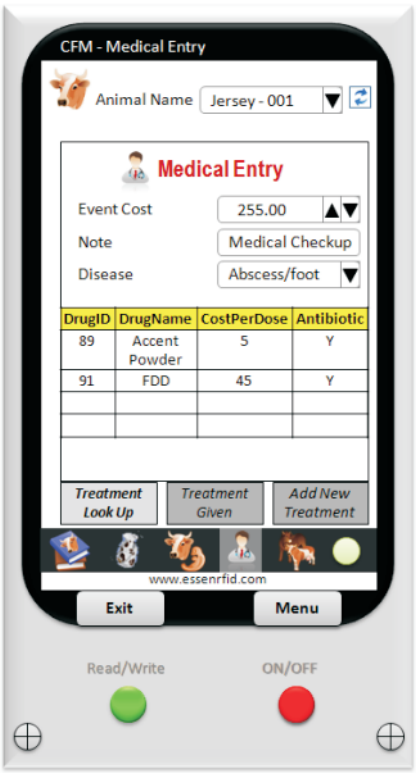
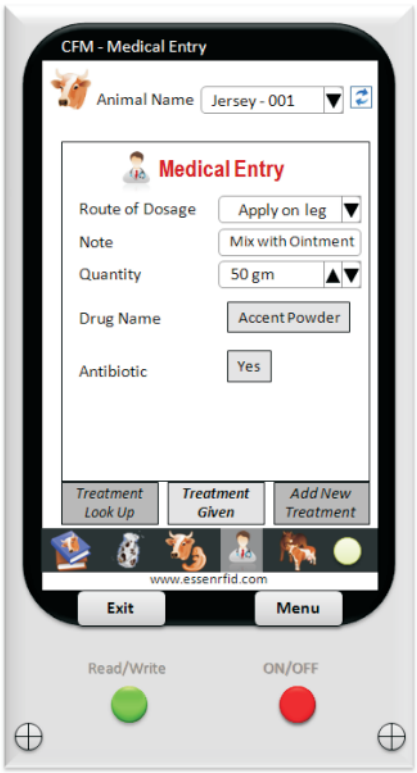
CFM - Milk Entry
Animal Name
Jersey - 021
Milk Entry
Milk Unit
Milk Wt (KG)
Milk Weight
15.50
Instructions:
1. Scan RFID Bovina Tag of Cattle.
2. Enter the Milk quantity.
3. Save the Information
Save
Cancel
www.essenrfid.com
Exit
Menu
Read/Write
ON/OFF


CFM - Growth Entry
Animal Name
Jersey - 001
Growth Entry
Weight in Kg
458.02
Height in Feet
5.02
Temperature in ◦C
38
Pulse (40 to 70)
45
BCS (1 to 5)
3.5
Save
Clear
www.essenrfid.com
Exit
Menu
Read/Write
ON/OFF


CFM - Medical Entry
Animal Name
Jersey - 001
Medical Entry
Event Cost
255.00
Note
Medical Checkup
Disease
Abscess/foot
DrugID
DrugName
CostPerDose
Antibiotic
89
Accent Powder
5
Y
91
FDD
45
Y
Treatment Look Up
Treatment Given
Add New Treatment
www.essenrfid.com
Exit
Menu
Read/Write
ON/OFF


CFM - Medical Entry
Animal Name
Jersey - 001
Medical Entry
Route of Dosage
Apply on leg
Note
Mix with Ointment
Quantity
50 gm
Drug Name
Accent Powder
Antibiotic
Yes
Treatment Look Up
Treatment Given
Add New Treatment
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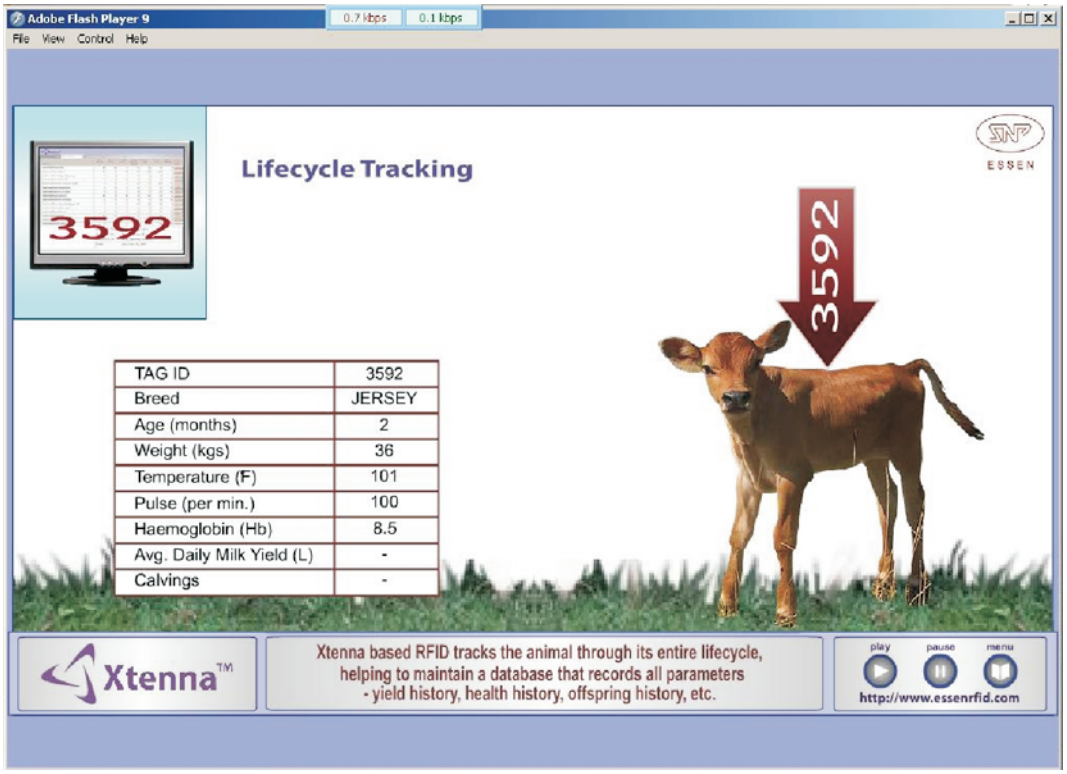
Exit
Menu
Read/Write
ON/OFF

CASE STUDY

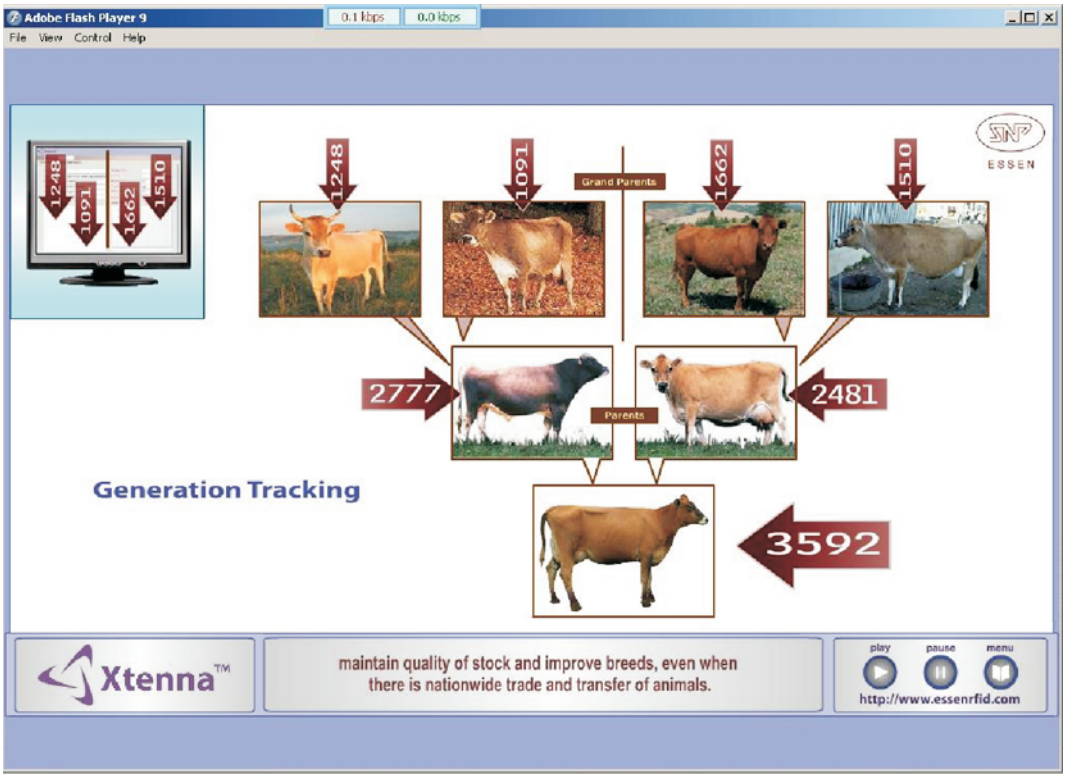
The operator or caretaker then uses HandyScanna™ to detect individual animal from close range. The device scans the unique ID of the animal's tag to find out its individual details. Based on the tag's ID, it fetches data from the server through Wi-Fi connectivity. HandyScanna™ is also used to add an event to the animal's database and also get a list of event reminders. This allows the operator to take particular action based on the reminders for each animal, such as period in heat, breeding time etc. The HandyScanna™ can also perform updation of medical information provided by the Vet for that individual animal. The device sends this new data to the server via Wi-Fi network. The operator can also make basic entries such as daily yield which is useful in determining the performance output of individual animals.

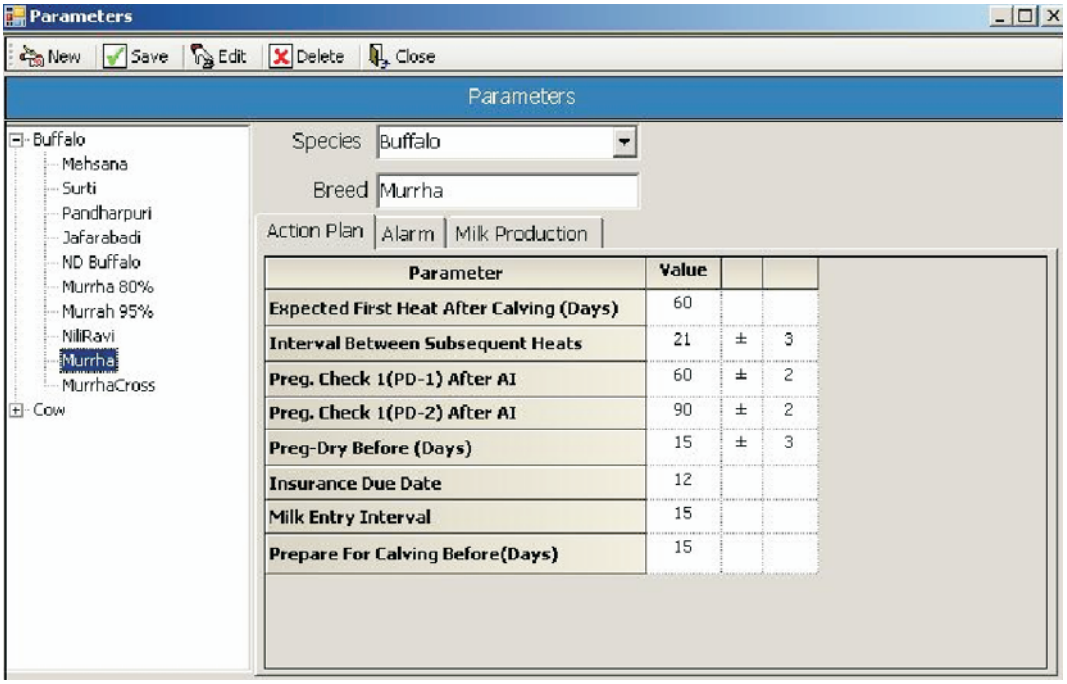
The animal management system keeps a daily track record of feeding provided to each animal. If a particular animal is ill and not feeding well, the system can then identify such animals based on the record available and provide individual treatment.

The system has report facilities which provide necessary in-depth information about the herd and individual animals to enable monitoring their health, movement, yield etc. The reports also provide reminders and checklists for individualized events needing to be performed at particular dates.



CASE STUDY


Adobe Flash Player 9
File View Control Help
0.1 kbps
0.0 kbps
1248
1091
1662
1510
Grand Parents
2777
2481
Parents
3592
Generation Tracking
Xtenna™
maintain quality of stock and improve breeds, even when there is nationwide trade and transfer of animals.
play
pause
menu
http://www.essenrfid.com


Parameters
New
Save
Edit
Delete
Close
Parameters
Buffalo
Mehsana
Surti
Pandharpuri
Jafarabadi
ND Buffalo
Murrha 80%
Murrah 95%
NiliRavi
Murrha
MurrhaCross
Cow
Species Buffalo
Breed Murrha
Action Plan
Alarm
Milk Production
Parameter
Value
Expected First Heat After Calving (Days) 60
Interval Between Subsequent Heats 21 ± 3
Preg. Check 1(PD-1) After AI 60 ± 2
Preg. Check 1(PD-2) After AI 90 ± 2
Preg-Dry Before (Days) 15 ± 3
Insurance Due Date 12
Milk Entry Interval 15
Prepare For Calving Before(Days) 15

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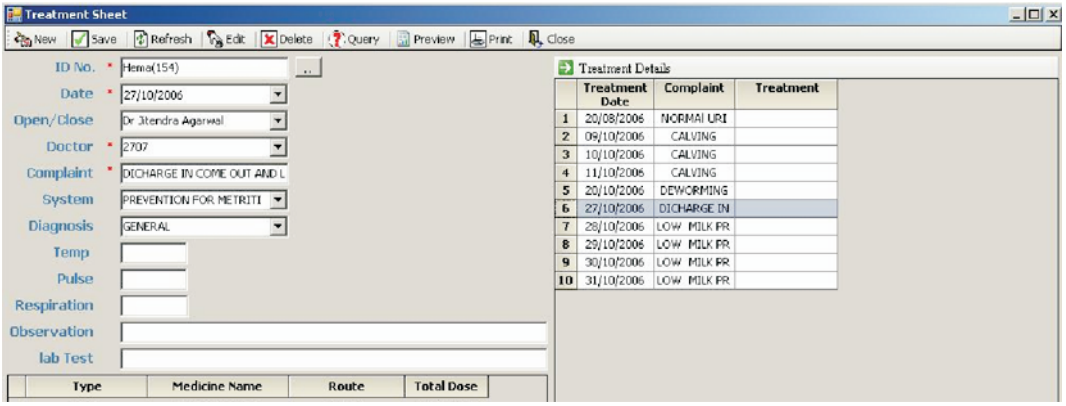
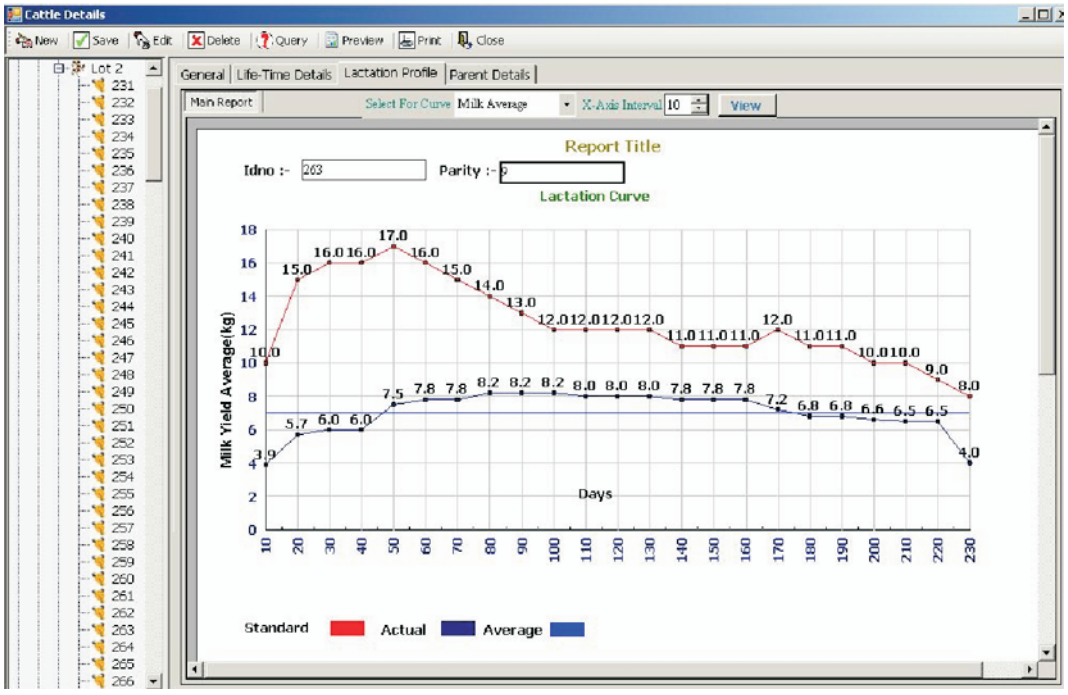
BENEFITS:

- The convenience, speed and accuracy of the Animal Tracking System have brought many benefits to livestock farmers, veterinary officers and health authorities.
- Used to locate lost or stolen animals.
- Proper care and monitoring of animals through the Animal Tracking System enables increase in yield.
- Efficient management of animal reproduction and genealogy.
- Feed management keeps track of which rations are to be fed to each animal throughout the day.





LINKS:

Hardware:

Handy™ Scanna

Xtenna™

Xtenna Proximity™

Tags:

BOVINA™

Software:

Xtenna WebToolkit™

Xtenna Studio™

Reference Example:

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