



## High-profile corporate event adopts a RFID-enabled DELEGATE TRACKING SYSTEM

Eliminates the need for individual scrutiny of entry passes

Automatic logging of individual delegates at various  
locations enables easy identification of areas of interest

Daily event schedule automatically emailed on entry

Automatic tracking of staff personnel at venue



INSIDE:

Key Requirements  
Solution  
Implementation  
Working  
Benefits  
Links

### TECHNOLOGY

**Solution:**

EPC Gen2 compliant  
personnel tracking solution

**Tag Type:**

Personna™ UHF Passive

**Reader/Antenna:**

Xtenna Proximity™  
Porta™

**Method:**

Multiple Tracking via Integrated  
Reader/Antenna modules

**Integration Platform:**

**RFID Middleware:**

Xtenna™ WebToolkit  
Xtenna™ Studio

**Application:** Essen RFID's  
Delegate Tracking 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**

24-B, Jolly Maker II  
Nariman Point  
Mumbai 400021 India  
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## CASE STUDY

### KEY REQUIREMENTS:

Each year Kotak organizes a corporate event where high-profile clients as well as senior management from various companies participate. Kotak required an automated system that could track the location of delegates as well as message them regarding the event schedule. Since the event consists of many sessions on various topics, Kotak also required intelligent data that would tell them each delegate's interest in a particular topic and in the company that was addressing that session.

Main challenges:

- Automated individual entry passes in order to prevent delays to delegates as well as administrators.
- Schedule of events messaged to each person when he/she enters from the IN gate.
- Find out any delegate's current location, whether it be in the conference room, dining area or foyer.
- Additional tag can be assigned to a person if he has forgotten his original tag.

### SOLUTION:

Essen RFID suggested their Delegate Tracking System as an effective RFID-based solution, that would intelligently track delegates, enabling automated feedback on their specific interests. It involved the issue of RFID ID tags to each delegate, which would be tracked through RFID readers placed in various areas of the venue premises. The system would also be used to track the whereabouts of employee staff personnel throughout the event premises.

### IMPLEMENTATION:

A Porta™ RFID portal reader is positioned at each entrance and exit of every hall or room at the venue, as follows: first floor - 4 Porta™, second floor dining area - 4 Porta™, third floor having 4 sections - 2 Porta™ for each section. Each event ID card having the delegate name and company represented is embedded with a PERSONNA™ RFID tag. Two Xtenna Proximity™ devices are utilized for registering these tags into the database. A label printer is deployed for printing delegate details on the tag ID card.

The system uses SQL Server as the back-end database, with the front-end Delegate Tracking application developed using .NET technology.

### WORKING:

The RFID tracking system is utilized for tracking both, staff personnel as well as delegates.



## CASE STUDY

### Staff Personnel Registration and Tracking:

1. PERSONNA™ ID tags are issued to all members of the staff. Each tag is registered into the database using Xtenna Proximity™. Relevant details pertaining to each staff member are entered into the system database and associated with their tag information.
2. Porta™ RFID readers placed across the premises read the tags and log the current location and time which are saved in the back-end server.
3. On the basis of this tag detection, the location of each staff employee within the premises can be ascertained at any time.

### Delegate Registration and Tracking:

1. Delegates who will be attending the exhibition are registered into the database along with their relevant personal details such as name, email ID, mobile telephone number, etc. A PERSONNA™ ID tag is associated with each delegate's data using Xtenna Proximity™ and is then issued and sent to each delegate.
2. When a preregistered delegate passes through the first RFID portal, his tag ID is read by the Porta™ reader placed there and a first entry log is saved into the database. This immediately results in the day's event schedule being emailed to the delegate.
3. When a delegate passes through a portal his status is marked as IN and when he passes out from a portal his status is marked as OUT.
4. Every time a delegate's tag ID is detected then the tag ID, detection time and location details are logged into the system database. Based on this information, the delegate's current location within the premises can be ascertained at any time.

### Walk-In Registration:

1. If a new non-registered delegate has walked-in on the event day, then he is first registered at the entrance and the required personal details are entered into the system database.
2. A label with the delegate's name and company represented is printed and stuck onto the event ID card containing the PERSONNA™ RFID tag.
3. The tag is read using a Xtenna Proximity™ reader and registered and saved into the database.
4. This tag ID is then issued to the delegate before he passes through the first entrance portal.



### Tag ID Forgotten by a Pre-registered Delegate:

1. If a pre-registered delegate has forgotten to carry his tag ID card on the event day, then he is reassigned with a new RFID tag.
2. The delegate's name is searched in the database and if found, its details are displayed on the screen. A new label is printed and a new tag ID is registered through Xtenna Proximity™ and issued to the delegate.
3. The delegate then passes through the portal and his tag ID, time and location are logged into the system.
4. On the next day of the event, a delegate carrying a pre-registered card does not need to register once again. Since both tag IDs are present in the system, it does not matter if the delegate carries the previous tag ID or the new tag ID. However, when any one of these is logged in at the entrance, then the other tag ID is locked out for the day.

### Working Process:

1. **Device Location Master:** This is used to set the Device IP in the Delegate Tracking application. The Device IP of all RFID devices deployed at the venue, such as Porta™ and Xtenna Proximity™, are saved into the Device Location Master.

DelegateTrackingSystem 1.0.0.0

User:admin

# DelegateTrackingSystem

## Actions

- Masters
  - Location Master
  - Delegate Master
  - Employee Master
  - Hotel Location Master
  - Delegate Location Master
  - Employee Location Master
- User Management
  - User Master
  - Role Master
- Mapping Modules
  - Location Mapping
  - DashBoard

### Location Details in grid view.

	LOCATION_ID	LOCATION_CODE	LOCATION_NAME	LOCATION_DEVICE_IP	LOCATION_GROUP_ID
1	L001	CONFERENCE HALL	192.168.123.147	2	
2	L002	DELEGATE ROOM	192.168.123.144	2	
3	L003	ACCOMMODATION	143	1	
4	L004	Room1	192.168.1233.145	2	
5	L005	Room2	192.168.145	2	

### Data Entry Form.

Location Code : L001  
 Location Desc : CONFERENCE HALL  
 Device type : GATE  
 Device IP address : 192.168.123.147  
 System ID : 1

### Location Master

#### Application Log

Log



## CASE STUDY

2. **Delegate Master:** Each RFID tag issued to a delegate is registered with his details such as name, company represented, email ID, mobile number and other related information.

Delegate Tracking System 1.0.0.0

Version:1.0.0.0  
User:admin

### Delegate Tracking System

**Actions**

- Masters
  - Location Master
  - Delegate Master
  - Employee Master
  - Hotel Location Master
  - Delegate Location Search
  - Employee Location Search
- User Management
- User Master
- Role Master
- Mapping Modules
  - Location Mapping
- Dashboard

**Delegate Details in grid view.**

DELEGATE_ID	DELEGATE_CODE	DELEGATE_NAME	MOBILE_NO	DESIGNATION	DESCRIPTION	REMARK
1521	542b8e8e-c79f-471d-83f9-1c768d4d6756	MANISH BHATIA				COMGEST
1520	3404e833-cc1c-4572-b16e-c794c0e0de55	MADHAVI DESHMUKH				MAHINDRA FINANCE
1519	a932ab69-656b-4d29-a1c3-8b32f8b795ed	ANAND JADHAV				MAHINDRA FINANCE
1518	0b676682-afcb-4007-953c-ed244d3d78c9	MAHENDRA KUTHE				BARING PRIVATE EQUITY
1517	71da8a6f-2980-48a9-aa67-2fa742bdca5e	PIYUSH KUMAR				LIC LIFE INSURANCE CORP
1516	a1591984-2946-40ff-946f-5effd3cf33f4	RAVI LOHIYA				LIC INSURANCE CORP

**Data Entry Form.**

Delegate Code: 71da8a6f-2980-48a9-aa67-2fa742bdca5e

Search By Name:

Delegate Name\*: PIYUSH KUMAR

Company Name\*: LIC LIFE INSURANCE CORPORATION

Designation:

Mobile No:

Email Id: piyush.kumar@gmail.com

Description:

Select Device: 192 168 123 145

Tag Id: E2002062600A0113196049B8

System ID: 1517

**Xtenna™**

Delegate Master

3. **Employee Master:** This is used to register staff personnel into the database and issue RFID tag IDs to them.

Delegate Tracking System 1.0.0.0

Version:1.0.0.0  
User:admin

### Delegate Tracking System

**Actions**

- Masters
  - Location Master
  - Delegate Master
  - Employee Master
  - Hotel Location Master
  - Delegate Location Search
  - Employee Location Search
- User Management
- User Master
- Role Master
- Mapping Modules
  - Location Mapping
- Dashboard

**Employee Details in grid view.**

EMP_ID	EMP_CODE	EMP_NAME	REMARK	TAG_ID	CREATED_BY	CREATED_ON	MODIFIED_BY	MODIFIED
1078	E0012	Tarun Singh	Kotak Institutional Equities	E200915050160050153077EB	admin	17-10-2013 11:41 AM	admin	17-10-2013
1079	E0013	Vinayak Gawde	Kotak Institutional Equities	E200915050160050183054E9	admin	17-10-2013 11:41 AM	admin	17-10-2013
1080	E0014	Vishal Mehta	Kotak Institutional Equities	E20091505016005017905939	admin	17-10-2013 11:38 AM	admin	17-10-2013
1081	E0015	Ravi Kumar	Kotak Institutional Equities	E20091505016004824501A33	admin	17-10-2013 11:38 AM	admin	17-10-2013
1082	E0016	Sanjeev Shatri	Kotak Institutional Equities	E200915050160051218033DC	admin	17-10-2013 11:39 AM	admin	17-10-2013
1083	E0017	Sandeep Swant	Kotak Institutional Equities	E20091505016005624701705	admin	17-10-2013 11:39 AM	admin	17-10-2013

**Data Entry Form.**

Employee Code: E0012

Employee Name: Tarun Singh

Remark: Kotak Institutional Equities

Select Device: 192 168 20 11

Tag Id: E200915050160050153077EB

System ID: 1078

**Xtenna™**

Employee Master



## CASE STUDY

4. **Venue Location Master:** This is used to create venue location areas in the database. These can be further divided into sub-areas in a parent-child relationship. Main locations such as first floor, second floor, etc. are parent locations, whereas sections within each floor are child locations. Each parent location can have multiple sub-divisions as per requirement.

DelegateTrackingSystem 1.0.0.0

Version: 1.0.0.0  
User: admin

DelegateTrackingSystem

**Actions**

- Masters
  - Location Master
  - Delegate Master
  - Employee Master
  - Hotel Location Master
  - Delegate Location Master
  - Employee Location Master
- User Management
  - User Master
  - Role Master
  - Mapping Modules
  - Location Mapping
  - Dashboard

**Hotel Location Details in grid view:**

LOC_ID	LOC_CODE	LOC_NAME	LOC_DESC	HOTEL_LOCATION_PARENT	CREATED_BY	CREATED_ON	MODIFIED_BY	MODIFIED_ON
2	D00002	2nd Floor	DINING ROOM	0	admin	18-01-2013 3:00	admin	18-01-2013 3:00
3	D00003	3rd Floor	ACCOMMODATION	0	admin	16-01-2013 2:43	admin	16-01-2013 2:43
4	D00004	2nd Floor Section A	Section A	2	admin	18-01-2013 11:27	admin	18-01-2013 11:27
5	D00005	2nd Floor Section B	Section B	2	admin	18-01-2013 11:27	admin	18-01-2013 11:27
6	D00006	3rd Floor Section A	Section A	3	admin	18-01-2013 11:27	admin	18-01-2013 11:27
7	D00007	3rd Floor Section B	Section B	3	admin	18-01-2013 11:27	admin	18-01-2013 11:27

**Data Entry Form:**

Location Code: D00002  
Location Name: 2nd Floor  
Description: DINING ROOM  
☒ IS HOTEL LOCATION HAVE PARENT?  
Parent Location: 2nd Floor  
System ID: 2

**HotelLocationMaster**

**Application Log**

Log

Xtenna™

5. **Location Mapping:** This assigns a Device IP to a particular location.

DelegateTrackingSystem 1.0.0.0

Version: 1.0.0.0  
User: admin

DelegateTrackingSystem

**Actions**

- Masters
  - Location Master
  - Delegate Master
  - Employee Master
  - Hotel Location Master
  - Delegate Location Master
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  - User Master
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**Location and Process Mapping Details in grid view:**

ID	Location Device IP	LOC_NAME
1	192.168.123.144	2nd Floor Section B
2	192.168.123.147	2nd Floor Section A

**Data Entry Form:**

Device IP: 192.168.123.144  
Location Name: 2nd Floor Section B  
System ID: 1

**LOCATION\_HOTELMAP**

**Application Log**

Log

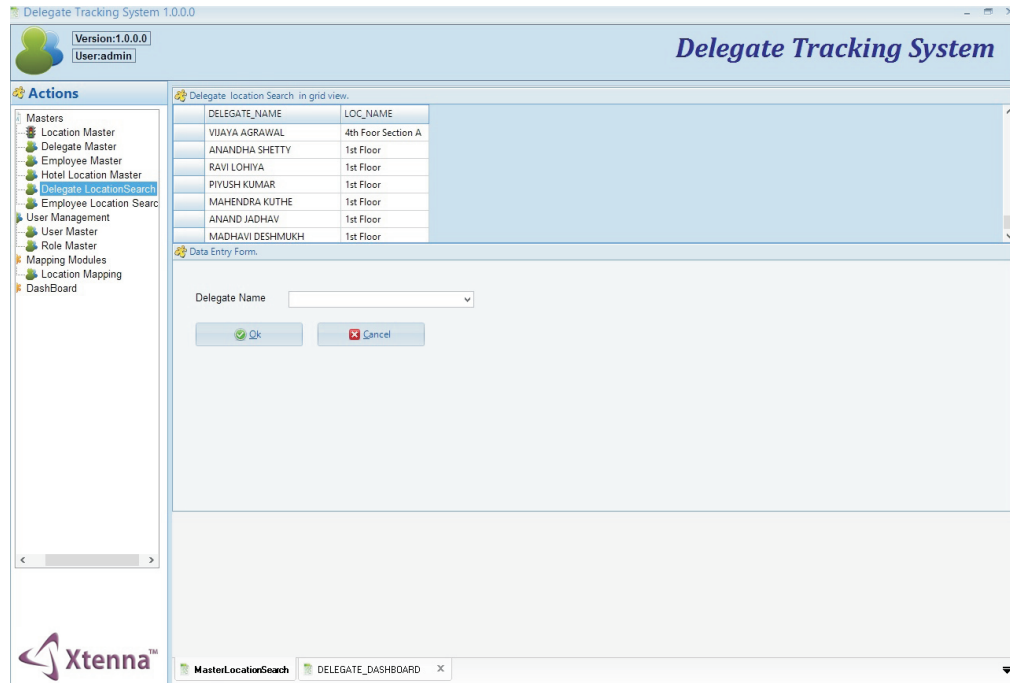
Xtenna™





## CASE STUDY

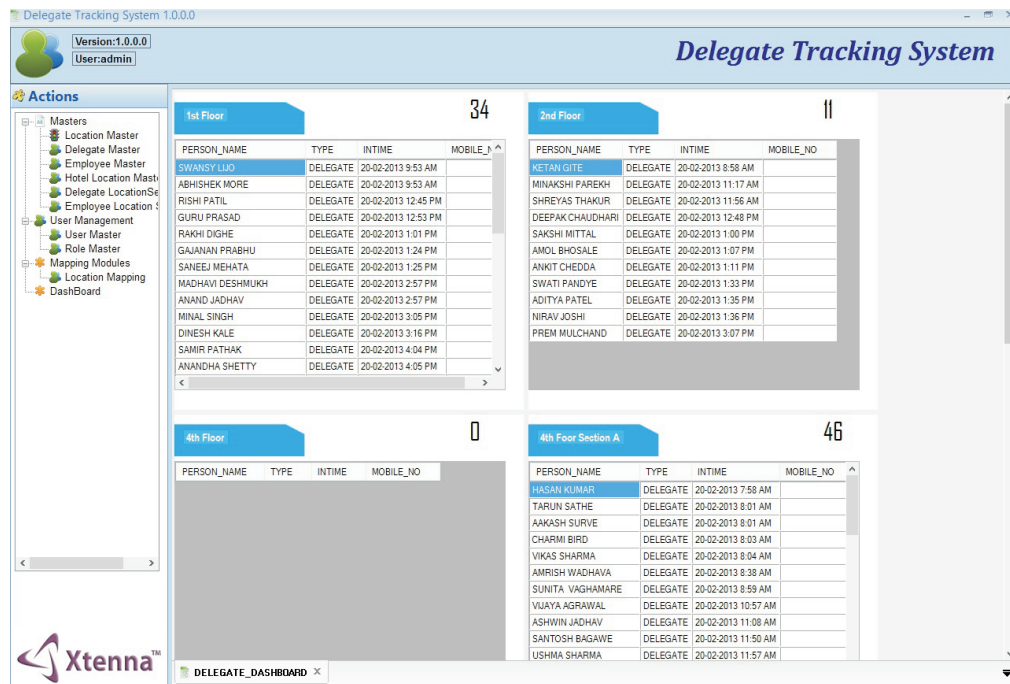
6. Delegate Location: This searches and displays the current location of a particular delegate.



The screenshot shows the 'Delegate Tracking System' interface. On the left is a sidebar with a tree view under 'Actions' containing: Masters, Location Master, Delegate Master, Employee Master, Hotel Location Master, Delegate Location Search (highlighted), Employee Location Search, User Management, User Master, Role Master, Mapping Modules, Location Mapping, and DashBoard. The main area is titled 'Delegate location Search in grid view.' and contains a table with columns 'DELEGATE\_NAME' and 'LOC\_NAME'. The table lists several delegates and their locations. Below the table is a 'Data Entry Form' with a 'Delegate Name' dropdown menu and 'Ok' and 'Cancel' buttons. The Xtenna logo is visible in the bottom left corner.

DELEGATE_NAME	LOC_NAME
VIJAYA AGRAWAL	4th Floor Section A
ANANDHA SHETTY	1st Floor
RAVI LOHYA	1st Floor
PIYUSH KUMAR	1st Floor
MAHENDRA KUTHE	1st Floor
ANAND JADHAV	1st Floor
MADHAVI DESHMUKH	1st Floor

7. Dashboard: This displays the current location of all delegates at the venue.



The screenshot shows the 'Delegate Tracking System' interface with the 'Dashboard' selected. The dashboard displays four tables representing the current location of delegates on different floors: 1st Floor (34 delegates), 2nd Floor (11 delegates), 4th Floor (0 delegates), and 4th Floor Section A (46 delegates). Each table has columns for 'PERSON\_NAME', 'TYPE', 'INTIME', and 'MOBILE\_NO'. The Xtenna logo is visible in the bottom left corner.

PERSON_NAME	TYPE	INTIME	MOBILE_NO
SWANSY LUO	DELEGATE	20-02-2013 9:53 AM	
ABHISHEK MORE	DELEGATE	20-02-2013 9:53 AM	
RISHI PATIL	DELEGATE	20-02-2013 12:45 PM	
GURU PRASAD	DELEGATE	20-02-2013 12:53 PM	
RAKHU DIGHE	DELEGATE	20-02-2013 1:01 PM	
GAJANAN PRABHU	DELEGATE	20-02-2013 1:24 PM	
SANDEEP MEHATA	DELEGATE	20-02-2013 1:25 PM	
MADHAVI DESHMUKH	DELEGATE	20-02-2013 2:57 PM	
ANAND JADHAV	DELEGATE	20-02-2013 2:57 PM	
MINAL SINGH	DELEGATE	20-02-2013 3:05 PM	
DINESH KALE	DELEGATE	20-02-2013 3:16 PM	
SAMIR PATHAK	DELEGATE	20-02-2013 4:04 PM	
ANANDHA SHETTY	DELEGATE	20-02-2013 4:05 PM	

PERSON_NAME	TYPE	INTIME	MOBILE_NO
KETAN GITE	DELEGATE	20-02-2013 8:58 AM	
MINAKSHI PAREKH	DELEGATE	20-02-2013 11:17 AM	
SHREYAS THAKUR	DELEGATE	20-02-2013 11:56 AM	
DEEPAK CHAUDHARI	DELEGATE	20-02-2013 12:48 PM	
SAKSHI MITTAL	DELEGATE	20-02-2013 1:00 PM	
AMOL BHOSALE	DELEGATE	20-02-2013 1:07 PM	
ANKIT CHEDDA	DELEGATE	20-02-2013 1:11 PM	
SWATI PANDYE	DELEGATE	20-02-2013 1:33 PM	
ADITYA PATEL	DELEGATE	20-02-2013 1:35 PM	
NIRAV JOSHI	DELEGATE	20-02-2013 1:36 PM	
PREM MULCHAND	DELEGATE	20-02-2013 3:07 PM	

PERSON_NAME	TYPE	INTIME	MOBILE_NO
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PERSON_NAME	TYPE	INTIME	MOBILE_NO
HASAN KUMAR	DELEGATE	20-02-2013 7:58 AM	
TARUN SATHE	DELEGATE	20-02-2013 8:01 AM	
AKASH SURVE	DELEGATE	20-02-2013 8:01 AM	
CHARMI BIRD	DELEGATE	20-02-2013 8:03 AM	
VIKAS SHARMA	DELEGATE	20-02-2013 8:04 AM	
ANRISH WADHAWA	DELEGATE	20-02-2013 8:38 AM	
SUNITA VAGHAMARE	DELEGATE	20-02-2013 8:59 AM	
VIJAYA AGRAWAL	DELEGATE	20-02-2013 10:57 AM	
ASHWIN JADHAV	DELEGATE	20-02-2013 11:08 AM	
SANTOSH BAGAWE	DELEGATE	20-02-2013 11:50 AM	
USHMA SHARMA	DELEGATE	20-02-2013 11:57 AM	



## CASE STUDY

### BENEFITS:

- When using RFID tags as ID passes, the delegates do not need to show their tagged ID cards individually to security. The Porta™ RFID portal device reads the tags of multiple delegates simultaneously.
- Automatically tracks movement of delegates from one hall to another. This enables easy identification of current location of any delegate.
- Logged information enables automatic identification of areas of interest of individual delegates. Organizers can easily find out which delegate attended any particular session. This eliminates any requirement for manual entry at each section of each floor within the venue.
- Daily event schedule is automatically emailed to each delegate attending the event as soon as he enters the venue premises.
- Automatically tracks the presence of staff personnel at the venue.

### LINKS:

#### Hardware:



#### Tags:



#### Software:



#### Reference Example:

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