

# NUEVAS APLICACIONES EN RFID



Ceyon Technology Co. Ltd.



# Contenido

1. Company Overview
2. Market Status
3. Aplicaciones Actuales RFID
4. Nuevas Aplicaciones : RTLS
5. Ubiquitous Sensor Network



# Company Profile

**Name of Company**

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CEYON TECHNOLOGY CO., LTD. ([www.ceyon.co.kr](http://www.ceyon.co.kr))

**Establishment**

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JANUARY 19, 2001

**Location**

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#638-5 Gwacheon-Dong, Gwacheon-city, Kyunggi-do, 427-060, Korea

**CEO/President**

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Young Jeon, Sohn

**Business Area**

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Producing RFID Hardware and Solutions

**Ceyon Family**

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96+



# Company History

2007

- ▶ “U-City” Test Bed Project In IFEZ ( Incheon Free Economic Zone )
- ▶ Project “U-Health Service” from the Ministry of Health and Welfare
- ▶ Development of Mobile RFID dual dongle for KTF
- ▶ SCM & POC project based in GM DAEWOO
- ▶ Export REM900 UHF READERS to Lehman Brothers in USA - Access Control

2006

- ▶ Setup Factory Automation at Hynix-ST Semiconductor Ltd. in CHINA
- ▶ Installation of “WORKER MANAGEMENT SYSTEM” security prevention GS Construction Company.
- ▶ Development of SENSOR TAG with ETRI-KOREA

2005

- ▶ Appointed as the vice-president of RFID/USN Association of Korea - KARUS
- ▶ Achieved “National Traffic Information Project” by Ministry of Construction and Transportation of Korea

2004

- ▶ Installed RFID System in HYNIX Co., Ltd, ChungJU
- ▶ Installed RFID System in HYDIX, CHINA
- ▶ Gov. Project “ Tracking Imported Beef Road by using RFID”

2003

- ▶ Development of 134.2 Khz Reader Module for PDA Integration
- ▶ Development of 134 Khz PDA Reader with TI CHIP
- ▶ Setup RFID System in LCD Factory Automation - LG Phillips

2001  
2002

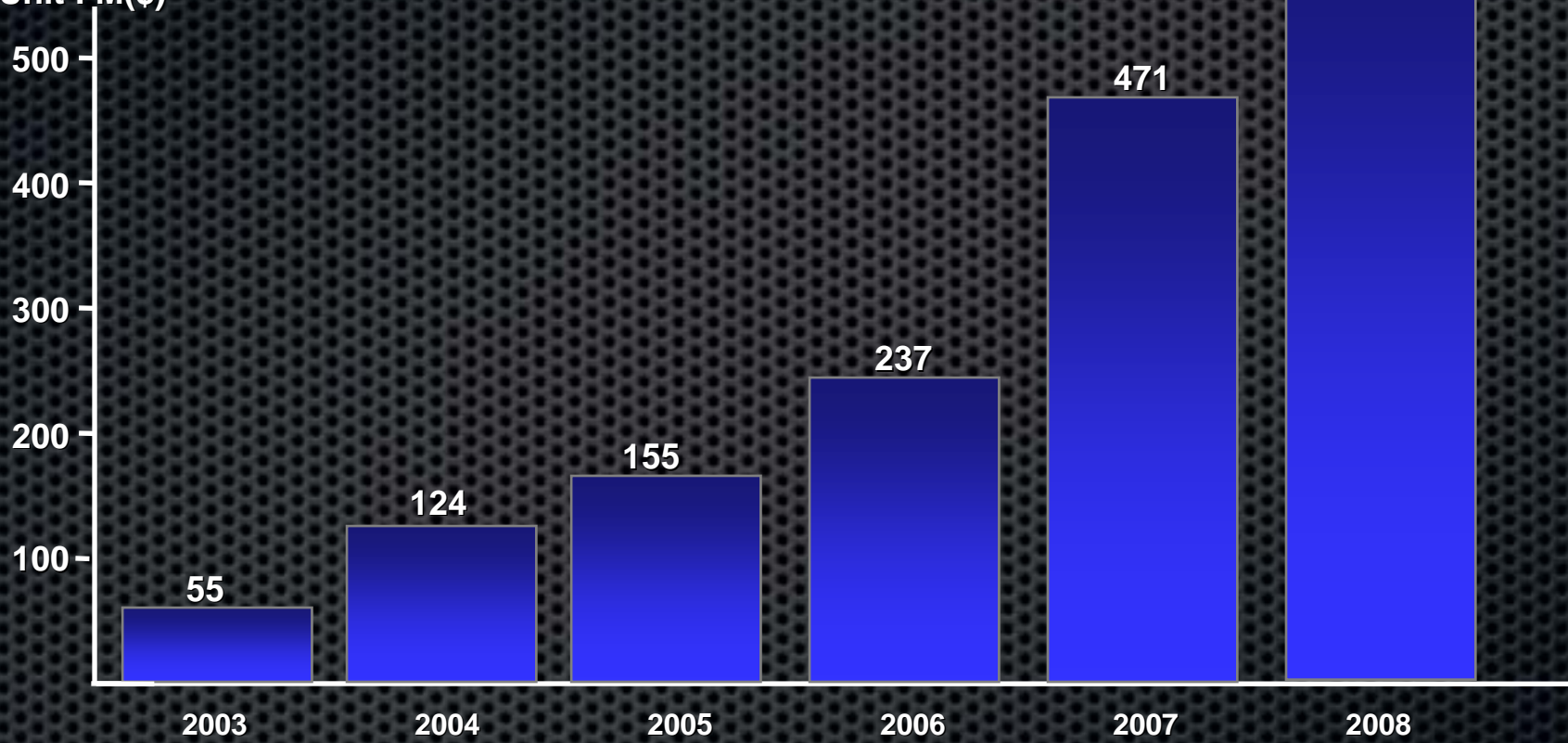
- ▶ Development of 125 Khz RFID Reader with Micro CHIP
- ▶ Development of 13.56 Mhz RFID Reader with Micro CHIP
- ▶ Establishment of CEYON TECHNOLOGY CO., LTD.



# Market Overview

RFID Profits

Unit : M(\$)



from : Korean RFID/USN Association :2007

- RFID business had shown the profits increased around 71% from 2003 to 2007,
- The companies that make real profits has numbered 20 ~30 increasing every year (2003:52, 2004:74, 2005:107, 2006:142)

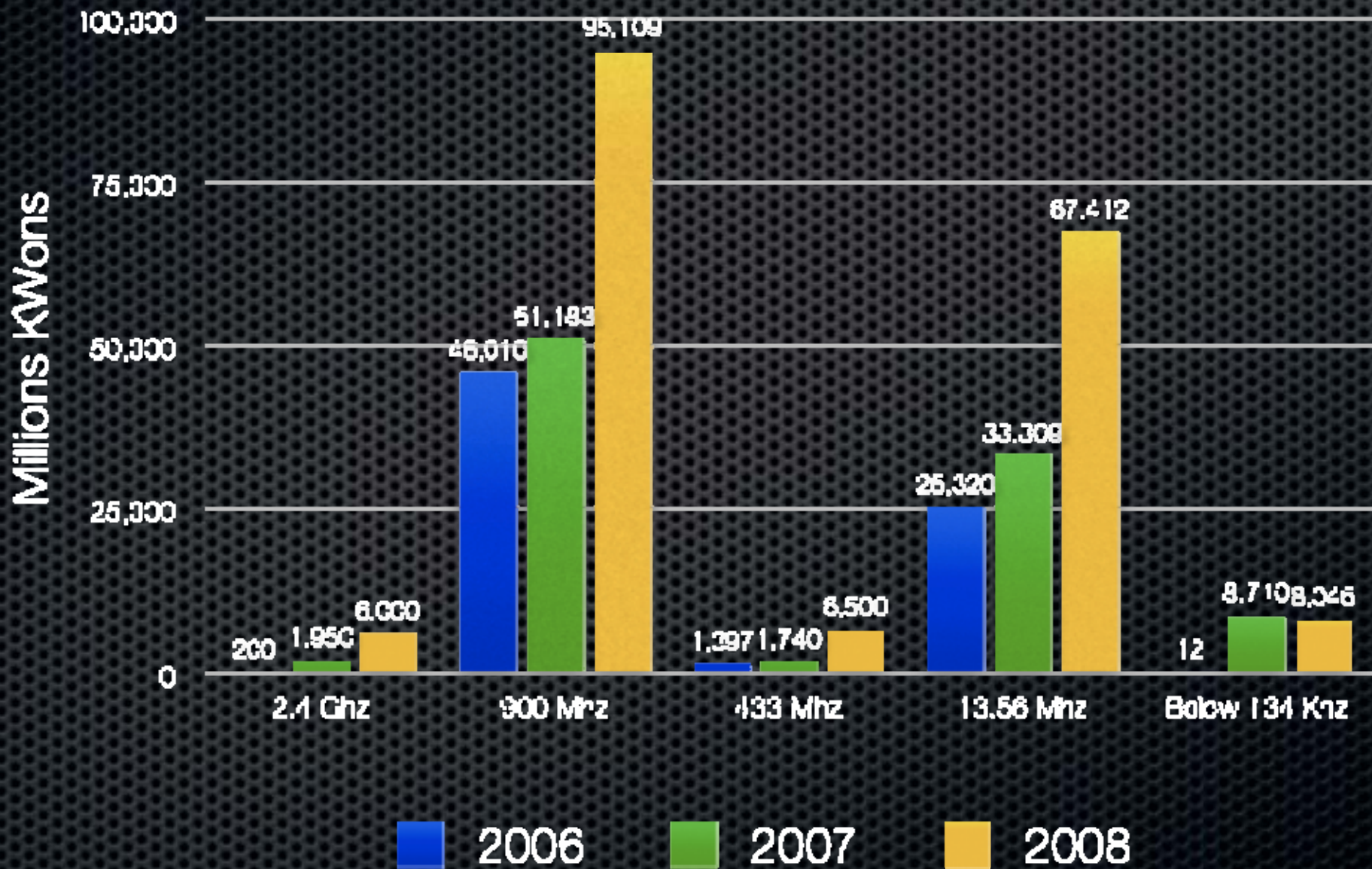


# Market Overview





# Market Overview





# Market Overview





# Aplicaciones Actuales

Anti-theft System for Costly Products

Library Management

Children Safety

Mobile RFID



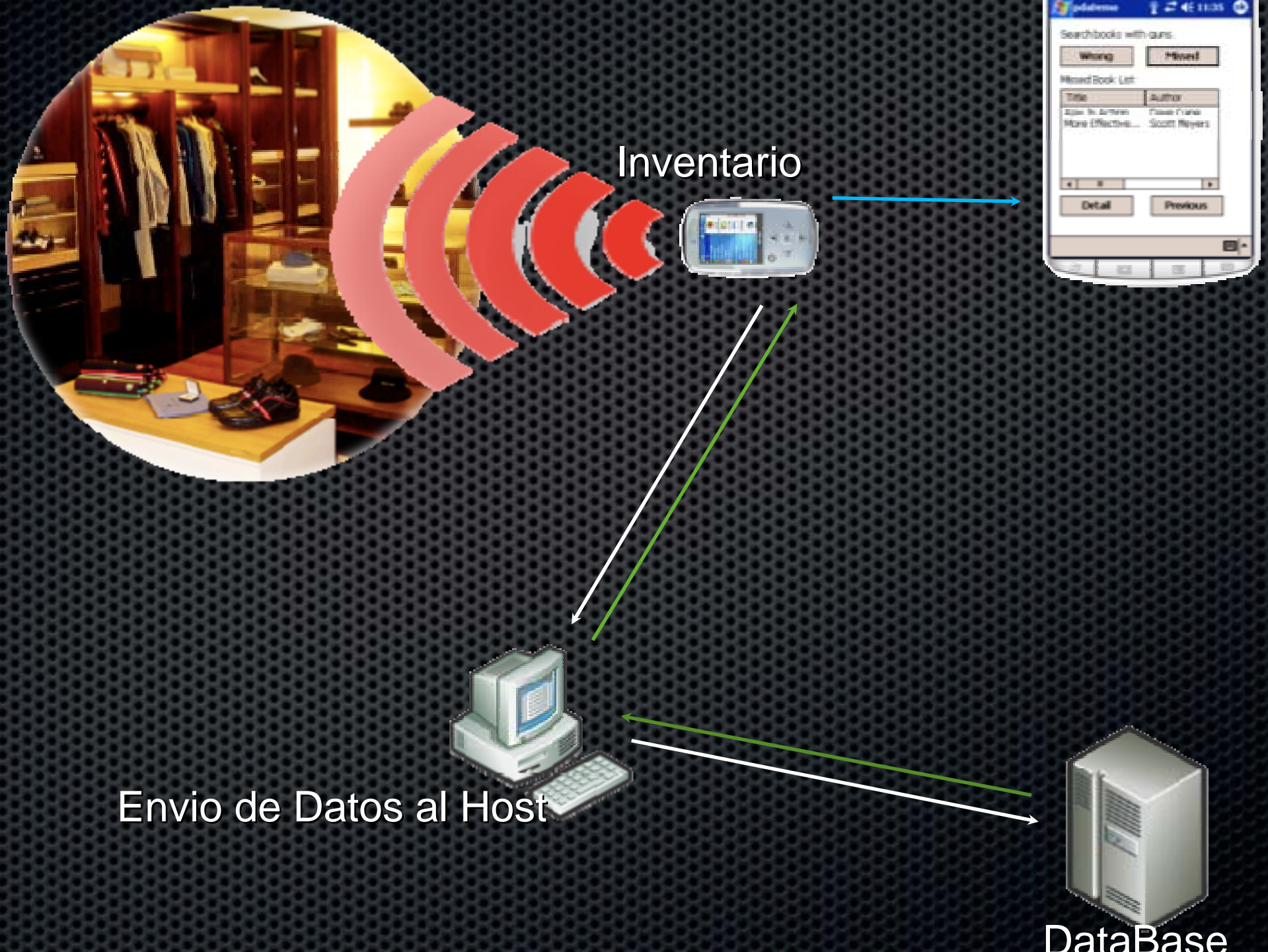
# Background

- ▶ Mantener ubicación relativa de los productos y mejorar el manejo del inventario
- ▶ Controlar el acceso a establecimiento y prevenir el hurto de productos





# Reporte de Inventario





# Background

- ▶ Necesidad de obtener la posición de un libro y un manejo bibliotecario mejorado.
- ▶ Control de Acceso a Biblioteca, Perfiles de Usuario e inventario expedito.

# Función

- ▶ Sistema de Seguridad de respaldo RFID
- ▶ Inventario fácil de usar y expedito.
- ▶ Autopréstamo y Auto devolución , eliminando filas.



Inventory Control



Self-Borrow/Return Station



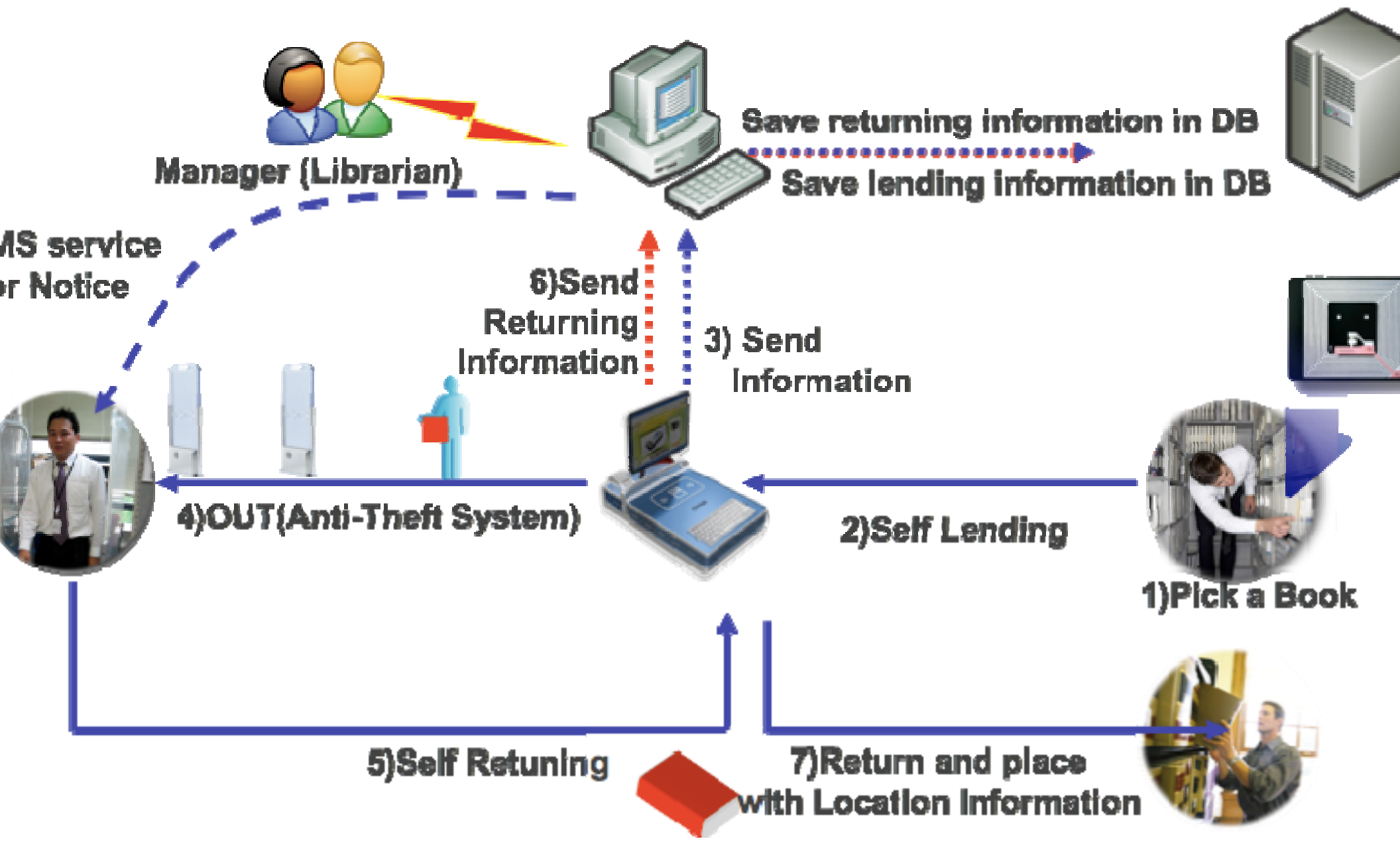
Librarian Desktop



Access Control  
Anti-theft



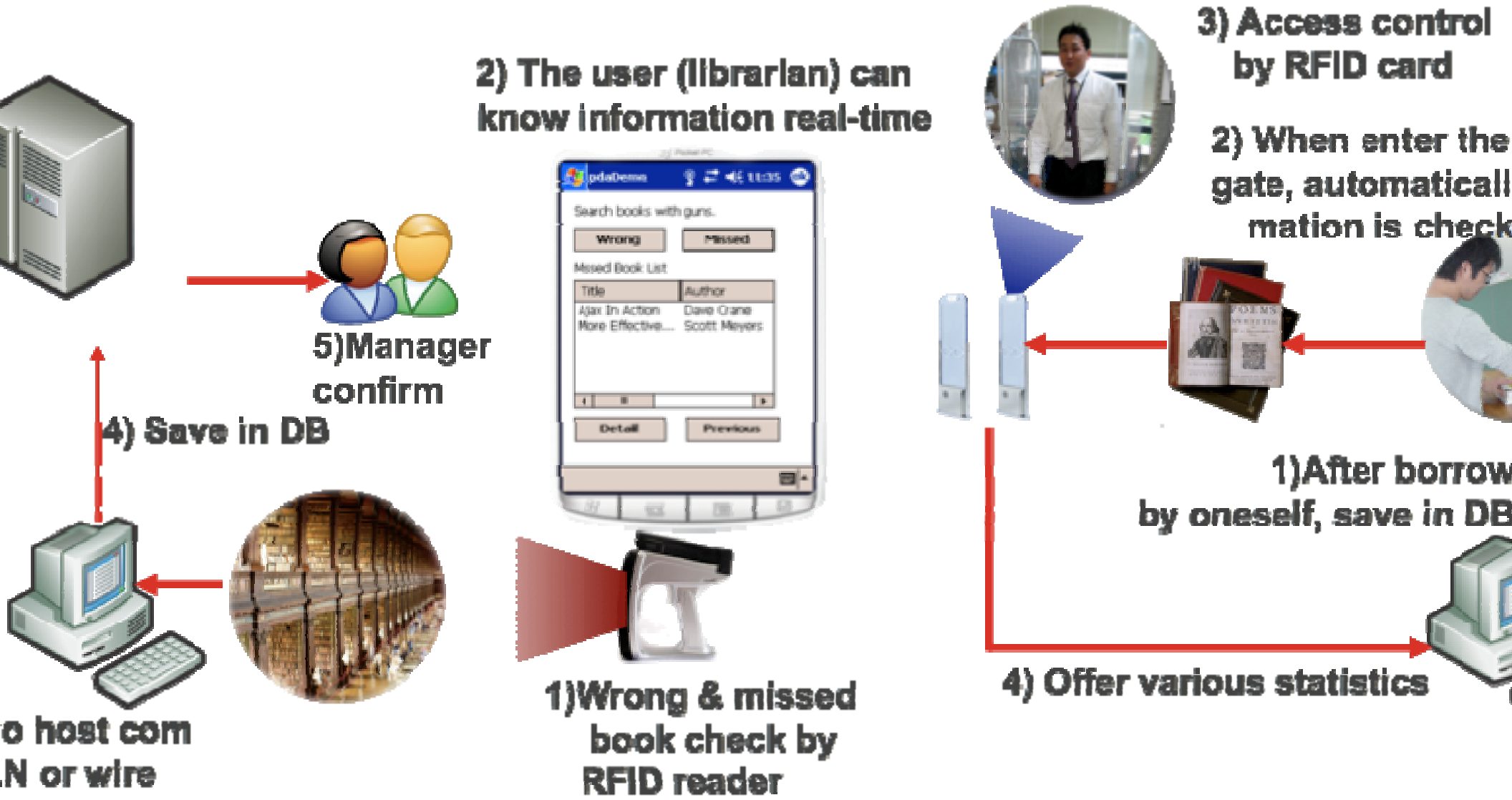
**Self Station (borrow, return)**





# Inventory Mgmt.

# Anti theft, Access mgmt





## Maximize Work Efficiency

- As existing process (borrow, return) is automatic
- The librarian can focus on one's proper business



## Improve Service Quality



- The waiting time is reduced due to automated borrow and returning system
- The librarian can offer high quality service to visitor

## RFID SYSTEM

## User Convenience System



- Differently with the existing library. (Easy search, borrow, return)
- The U-library will be changed to user's convenience so that user can do oneself



# Children Safety Service with SMS





## Background

- ▶ Necesidad de Saber si un niño ha llegado a destino
- ▶ Identificar a los niños y las necesidades de cuidado que puedan necesitar

## Función

- ▶ El niño se identifica a la llegada del KinderGarten y se le envía un SMS a los padres el lugar, hora y fecha de chequeo.







1 ❖ Read RFID Card through the Readers in a schools / Institutes



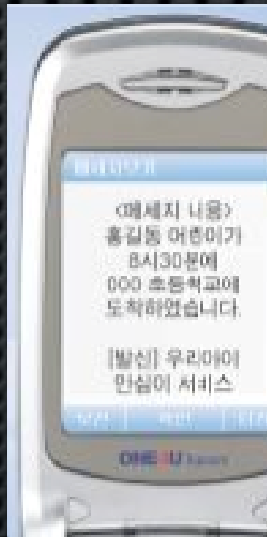
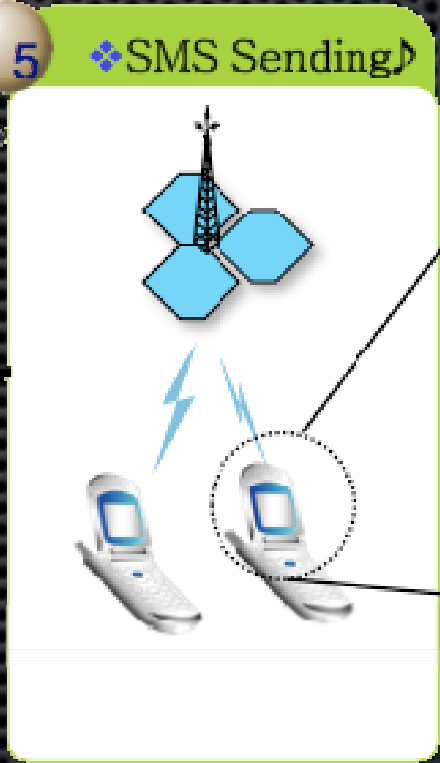
2 ❖ Send the children's arrival time to schools / Institutes

3 ❖ 3 Mobile Telecom. Companies

First in Mobile  
**KTF**

**SK Telecom**

**LG Telecom**



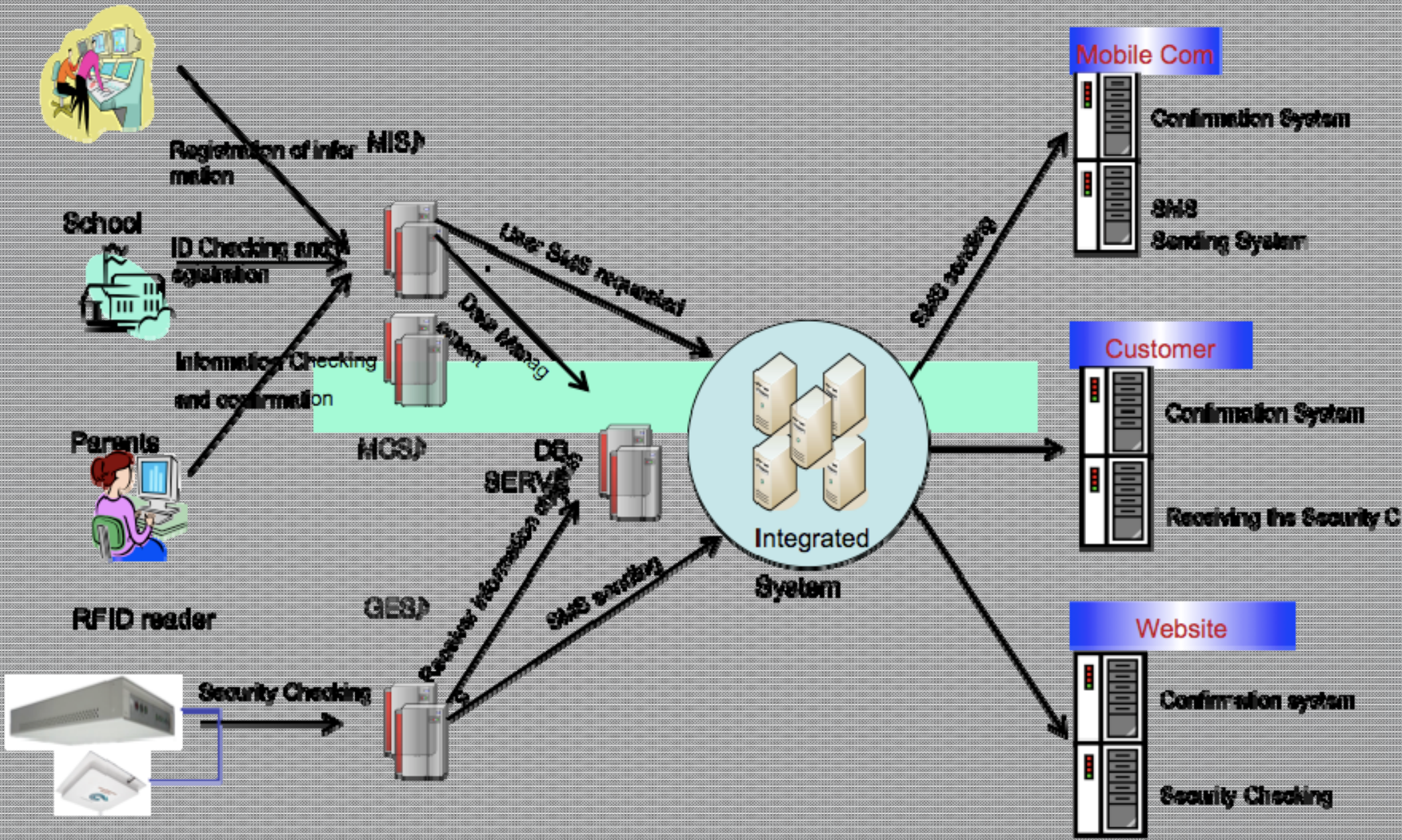
4 ❖ Check if a children arrived in schools through SMS

❖ Management Server



3







# Mobile RFID



ground



Necesidad de utilizar RFID en Aplicaciones Personales  
Módulo pequeño integrable a cualquier tipo de Celular



# MOBILE RFID

## Seguridad en Taxis : Proyecto Gobierno Korea

### Taxi Safety Service



### RFID Tag



### 3. SMS Servi



### 2. Central Server



# Mobile RFID

Información de Productos

Consumer check product's ID



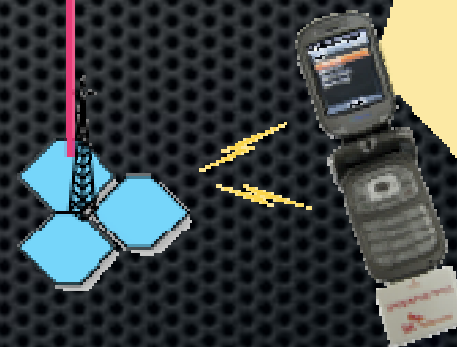
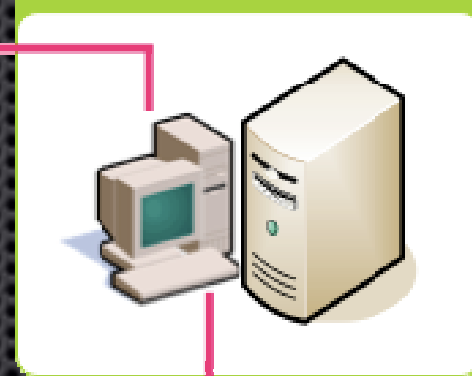
Salmon Box

Send SMS



Salmon Company

Server



P/N: Salmo  
C.O: Chile  
Exported da  
10<sup>th</sup> of Jan  
The limit da  
30<sup>th</sup> of Jan



# Mobile RFID

Corridos de Buses y Paradas Establecidas





# Introducing RTLS

RTLS : Real Time Location System



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Identificación

Triangularización



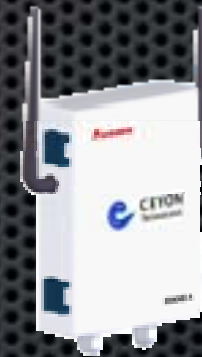
# 5 : Real Time Location System



Active RFID Tag  
Data Rate: 1 Mbps  
Reading Range: 75m - 100m  
RF Power: <10Mw  
Memory: 128Kbytes  
Durability: 1 -2 Years

UID

Potencia



Portable RFID Reader  
RS-232 Interface w/ PDA  
CDMA/Wireless LAN support



# Triangularización

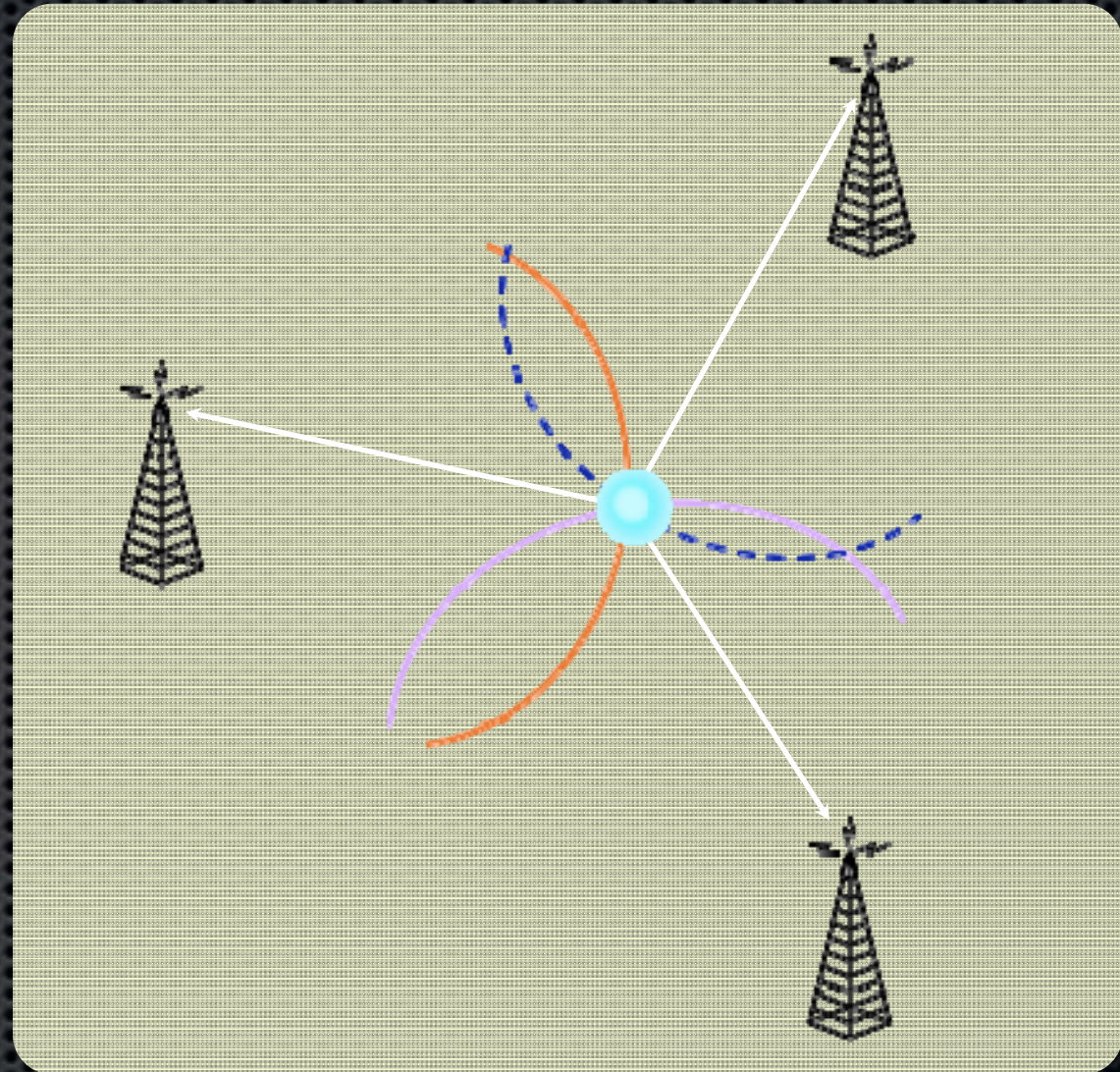
n

Antenas ubicadas en lugares  
distintos para detectar información del

Cada antena registra el tiempo de lectura y  
la distancia que envía el Tag.

Se define una hipérbola de acuerdo a los  
datos comunes de 2 antenas

La intersección de las curvas podrá definir  
la posición relativa del Tag.



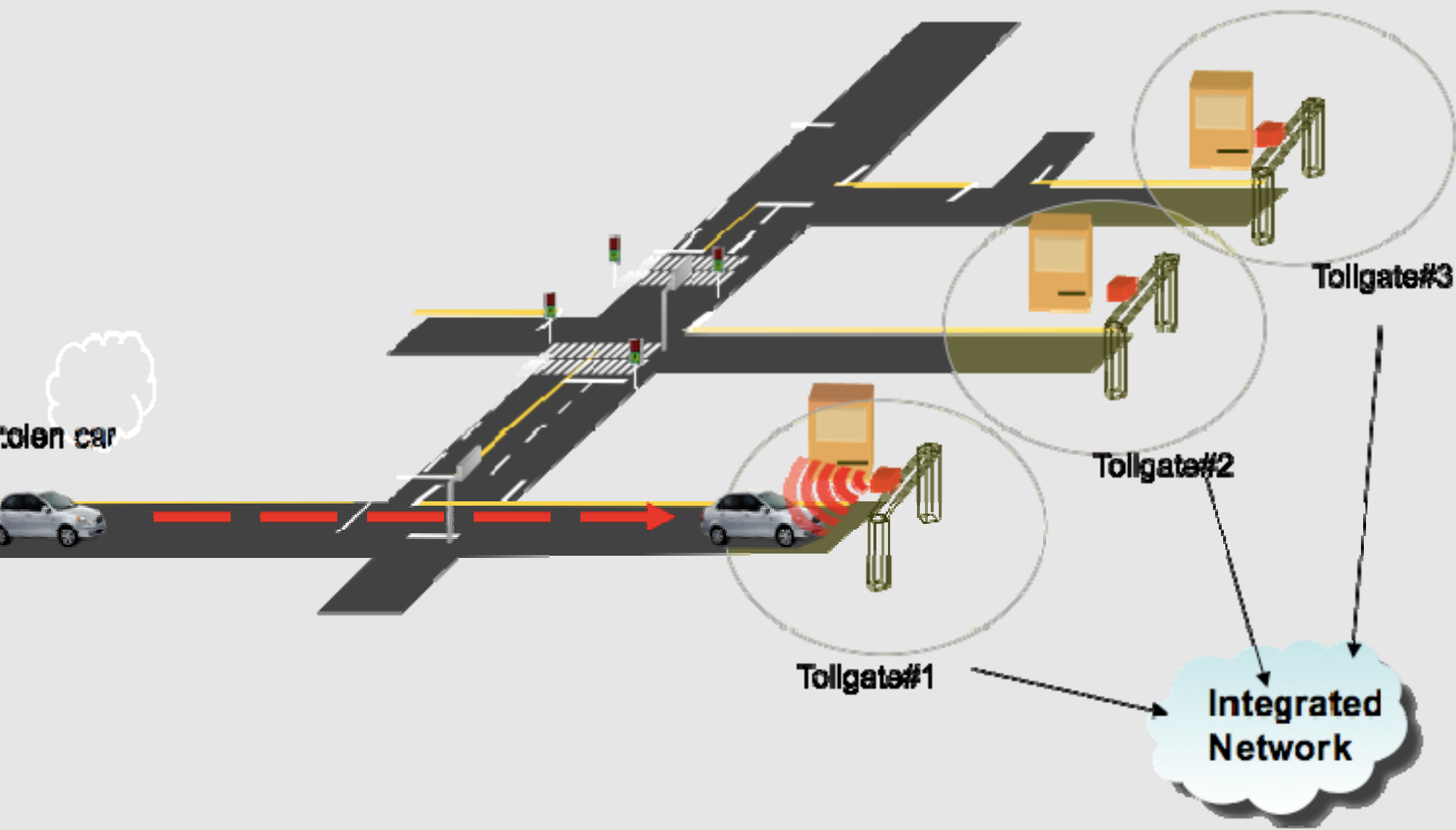
Precisión  $O(\sim 3m)$



# NYC Logistic Inc.



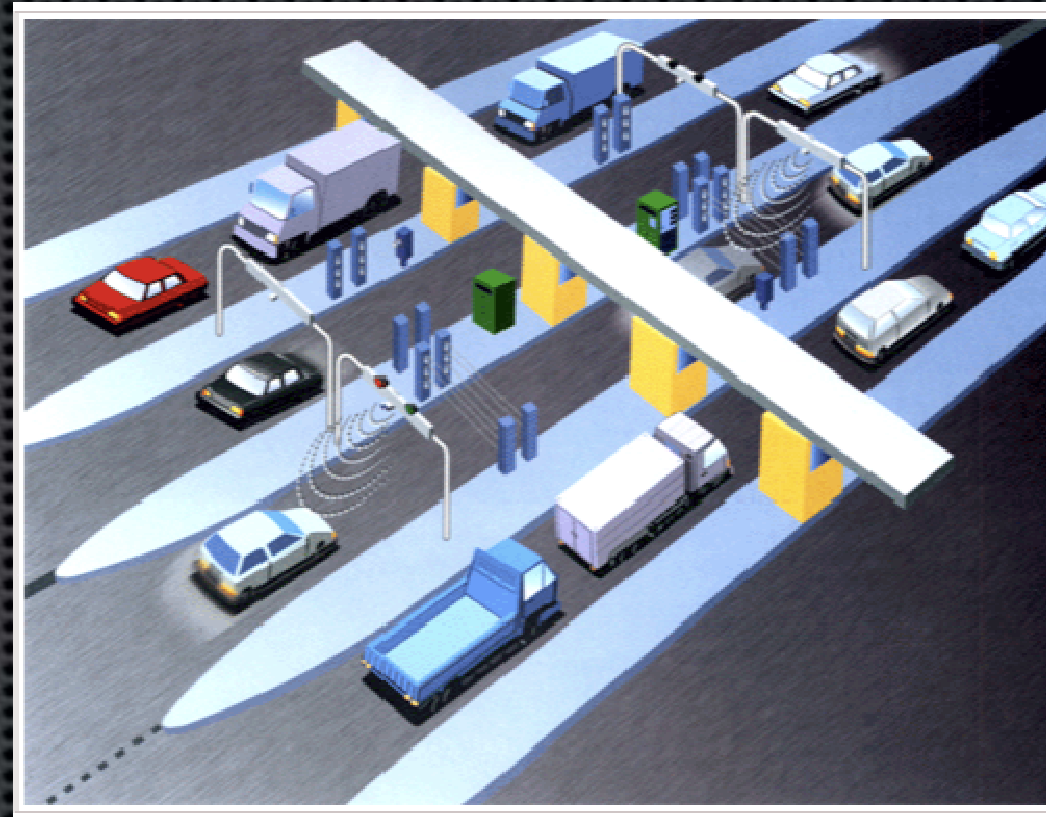






# TLS effect

- ✓ Eliminate manual Yard Search
- ✓ Fast & Unmanned Gate Control
- ✓ Automatic Data Collection
- ✓ 50% Saving Lot Spot
- ✓ Increased Logistics Volume
- ✓ 90% Utilization
- ✓ 50% Reduce Time
- ✓ Maximum throughput



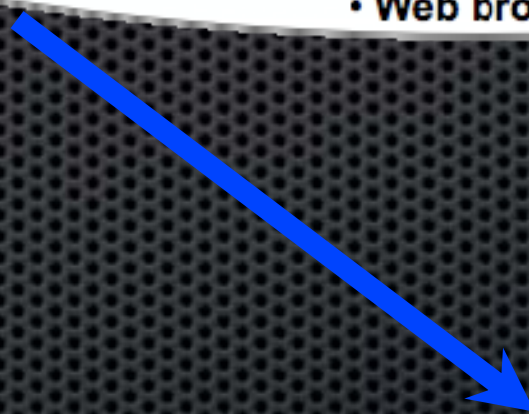
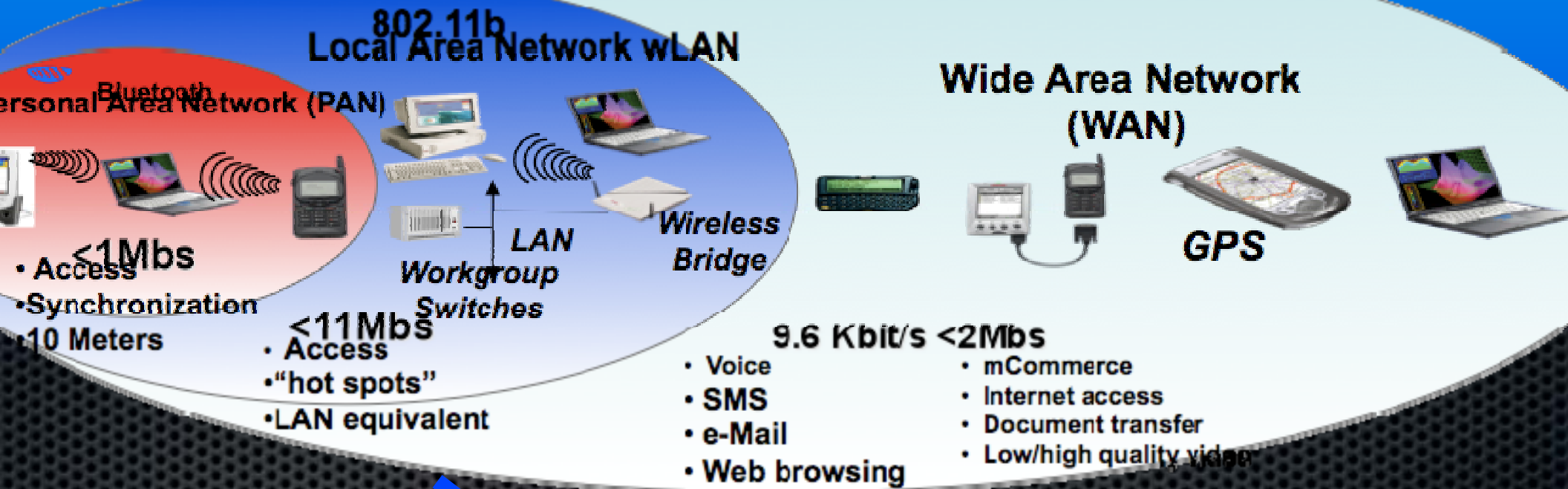


# Introducing USN

## Ubiquitous Sensor Network



# Core Network





# La idea de USN

## Sensor Network

Gran cantidad de Sensores de tamaño pequeño  
Diversos tipos de Sensores  
Bajo consumo de energía

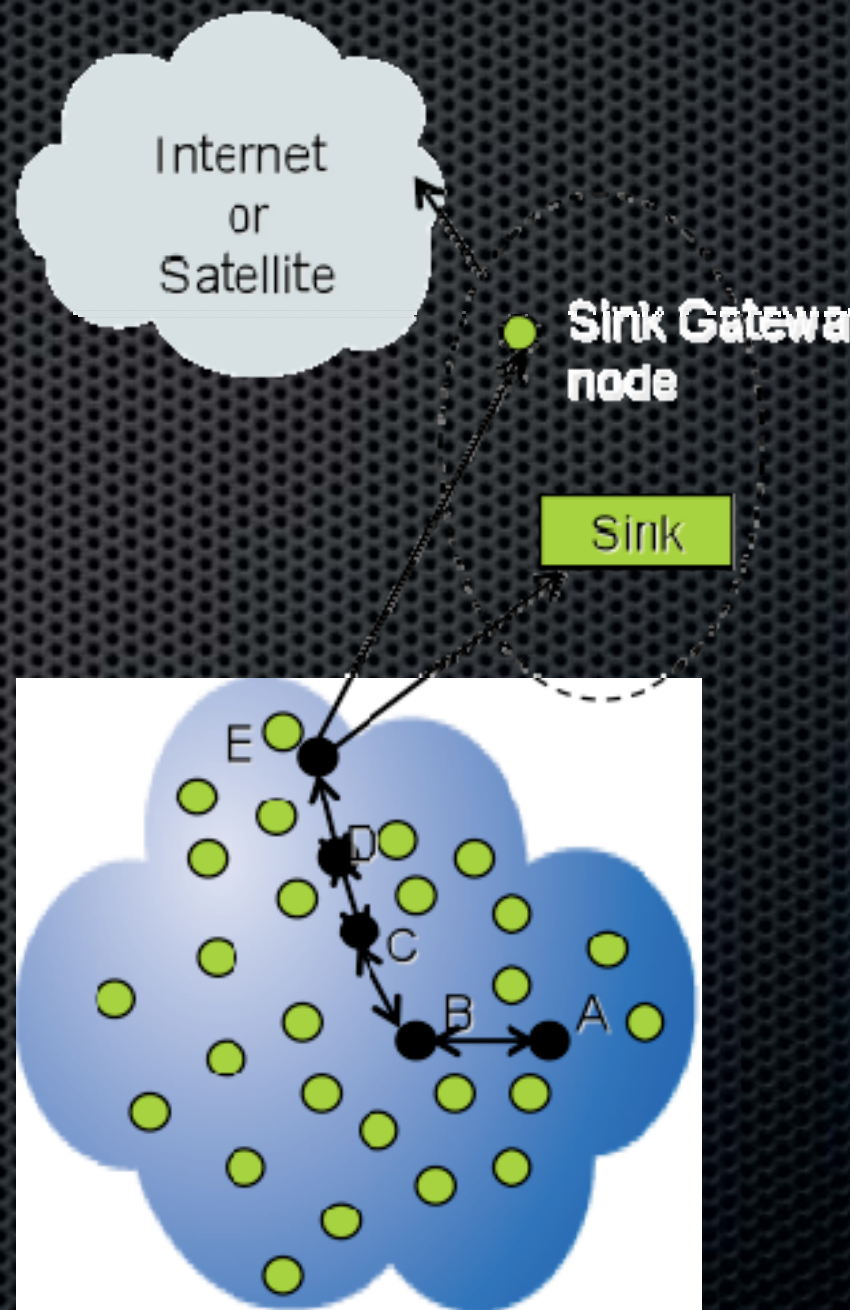
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## Equity

Integración de los diferentes tipos de nodos a  
partir de un Nodo único.

Flexibilidad y autonomía del Nodo Sensor

Una organización de la red que sea automática y  
capaz de reorganizarse cada vez que aumente la  
cantidad de Nodos.

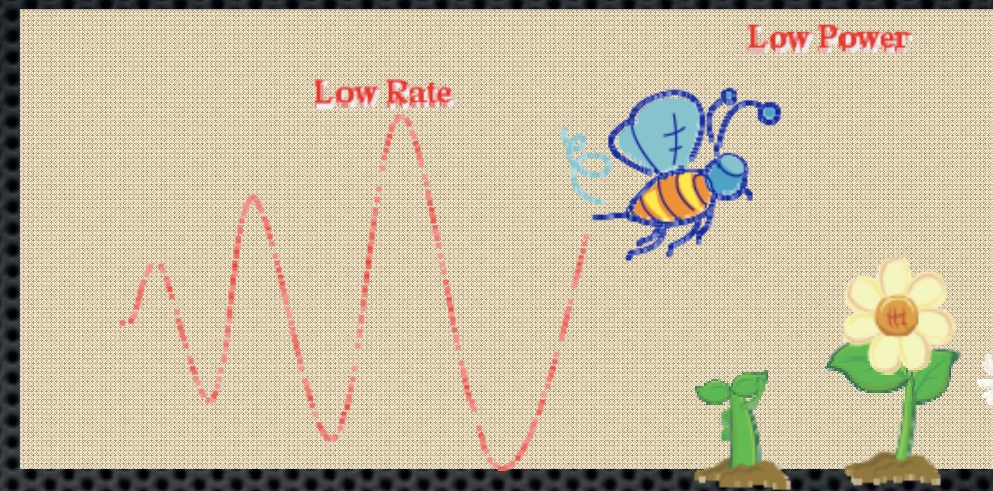


Sensor Field



# ¿Qué se utiliza?

Zigbee



Evolución Low Rate de RFHOME que nace en 1998 -> Firefly -> RF-lite -> Zigbee

802.15.4 MAC/PHY

Rate : 20 ~250kps

Power Consumption : ~60mW

Price : USD 2

tecnología de Red Atractiva



Short < Range < Long

TEXT	GRAPHICS	INTERNET	HI-FI AUDIO	STREAMING VIDEO	DIGITAL VIDEO	MULTI-CHANNEL VIDEO

LAN

PAN

802.11 b

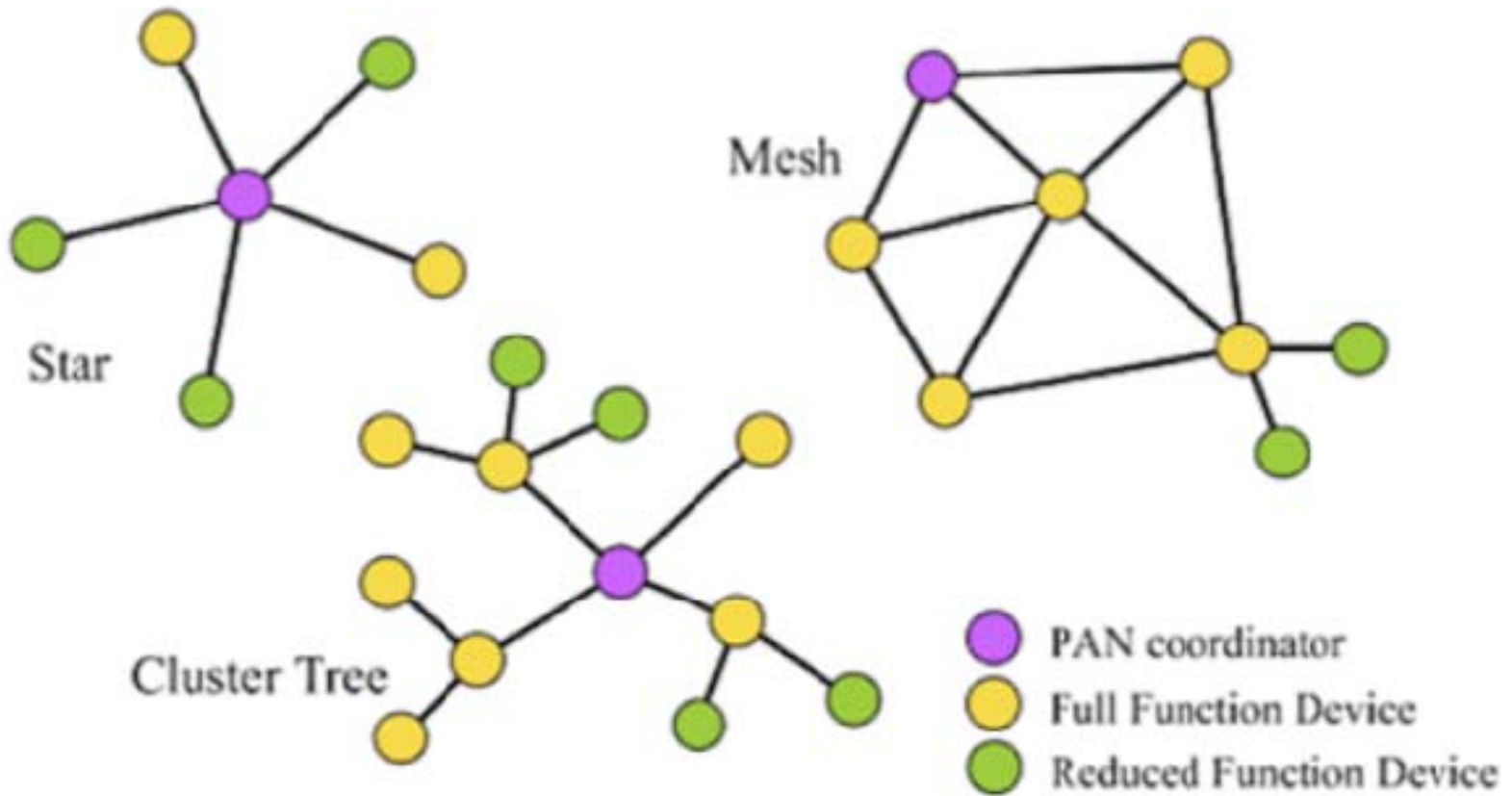
802.11 a/HL2 & 802.11 g

ZigBee

Bluetooth1

Low < Date Rate < High

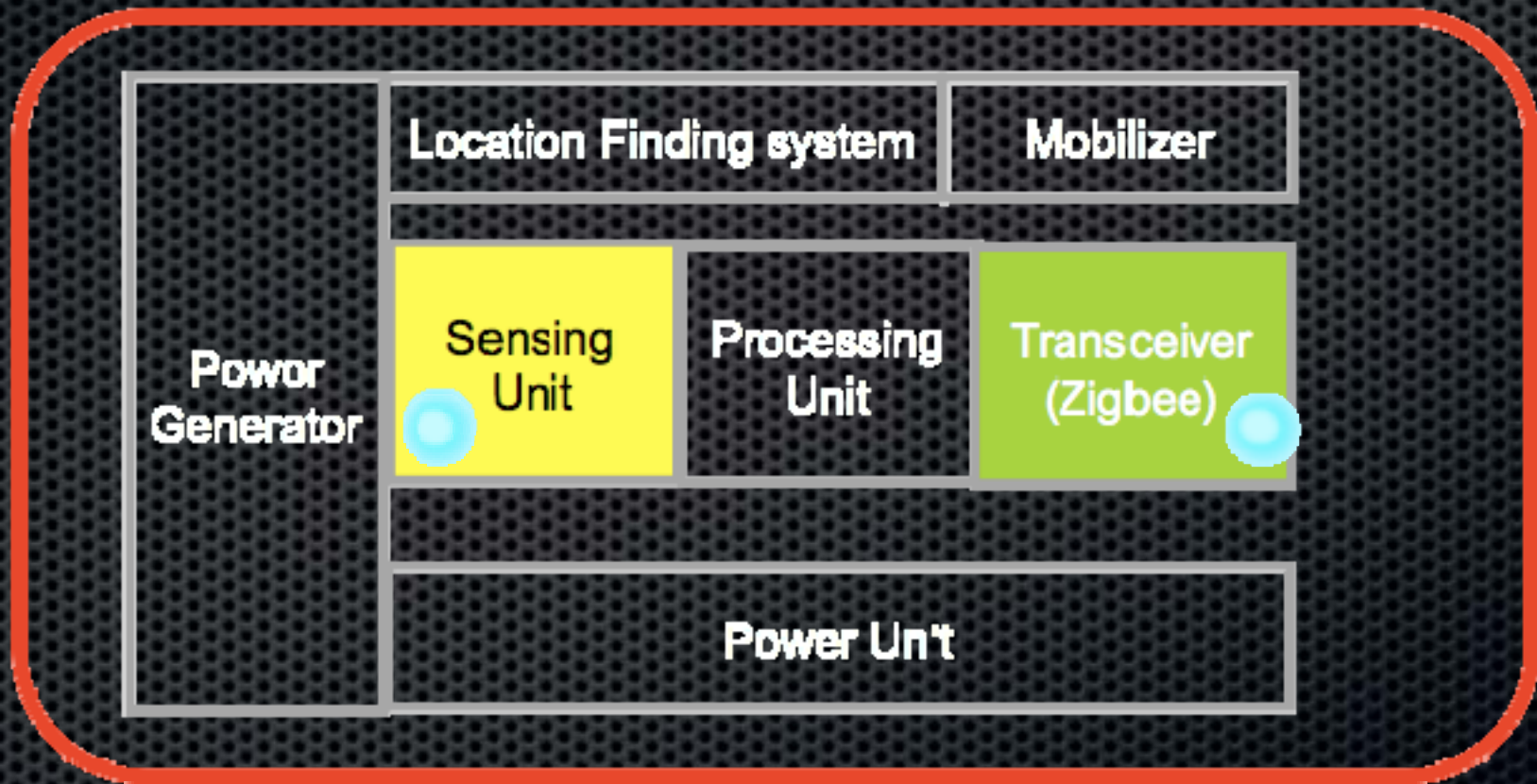




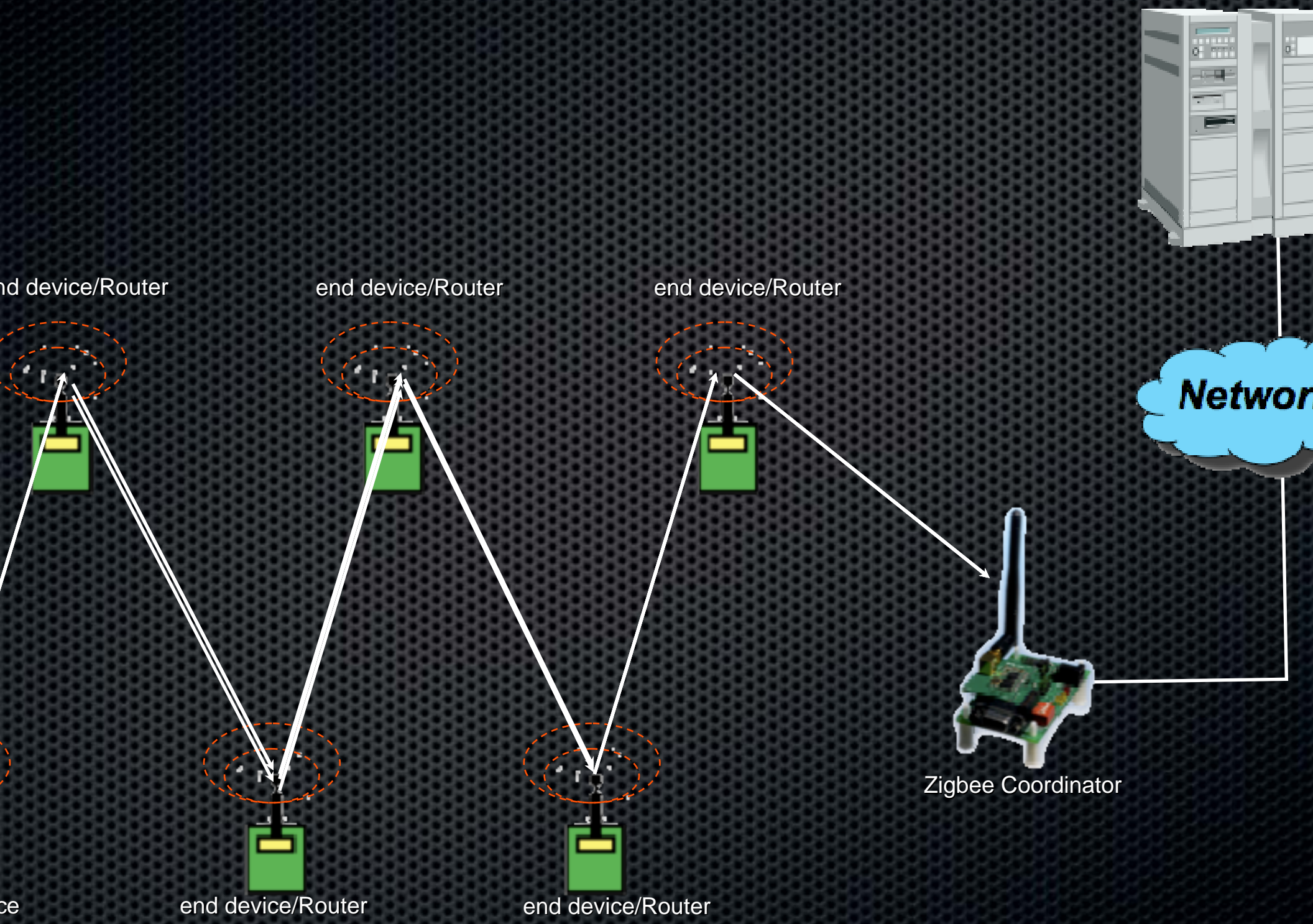


# odo Sensor

Esquemático

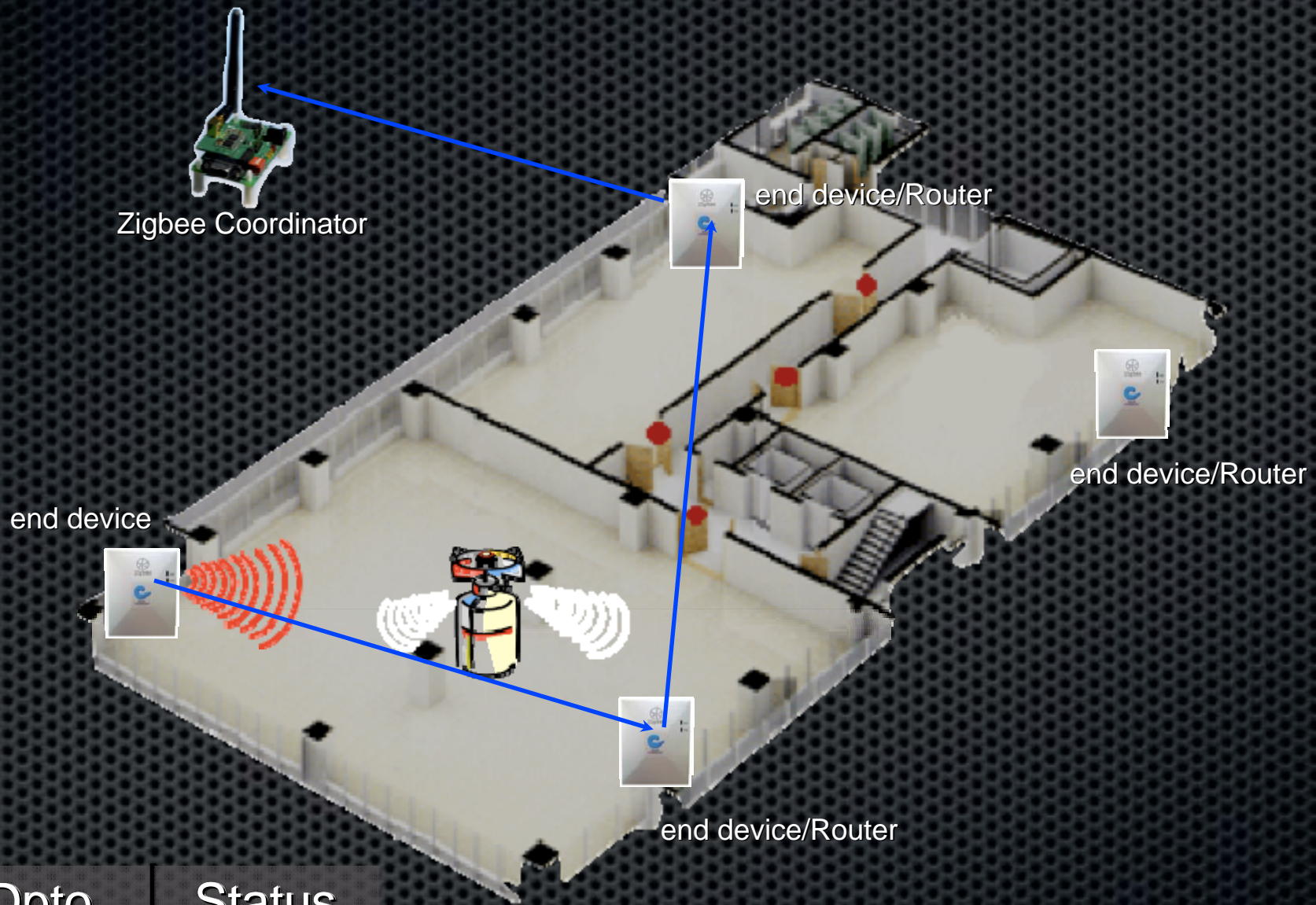








# Sensor de Gas en Nodos



so	Dpto	Status
1	101	OK
2	202	Gas
3	304	OK

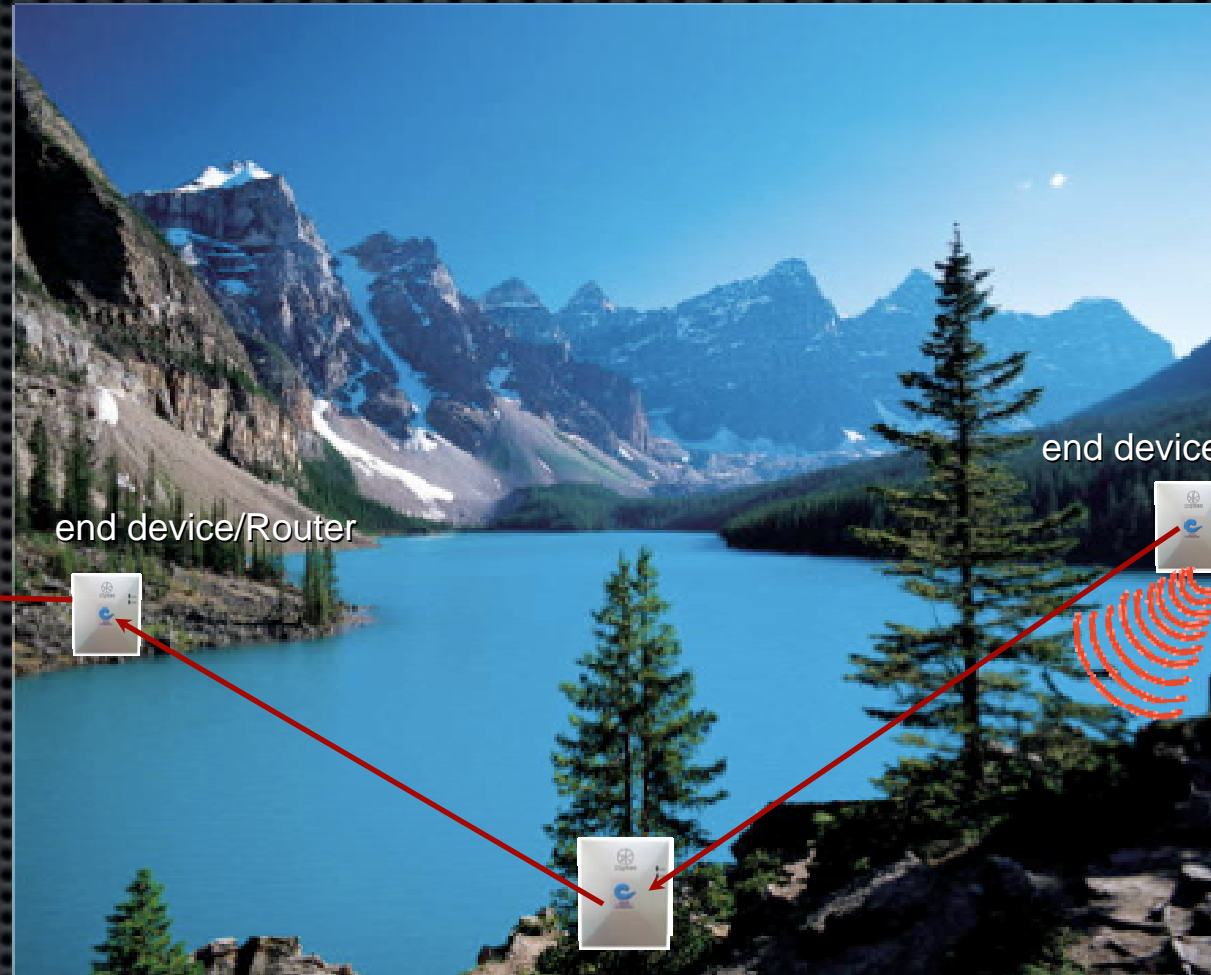


# Sensor de Temperatura en Nodos

Ido	Sector	Status
	A	22°C
	B	60°C
	C	13°C



Zigbee Coordinator



end device/Router

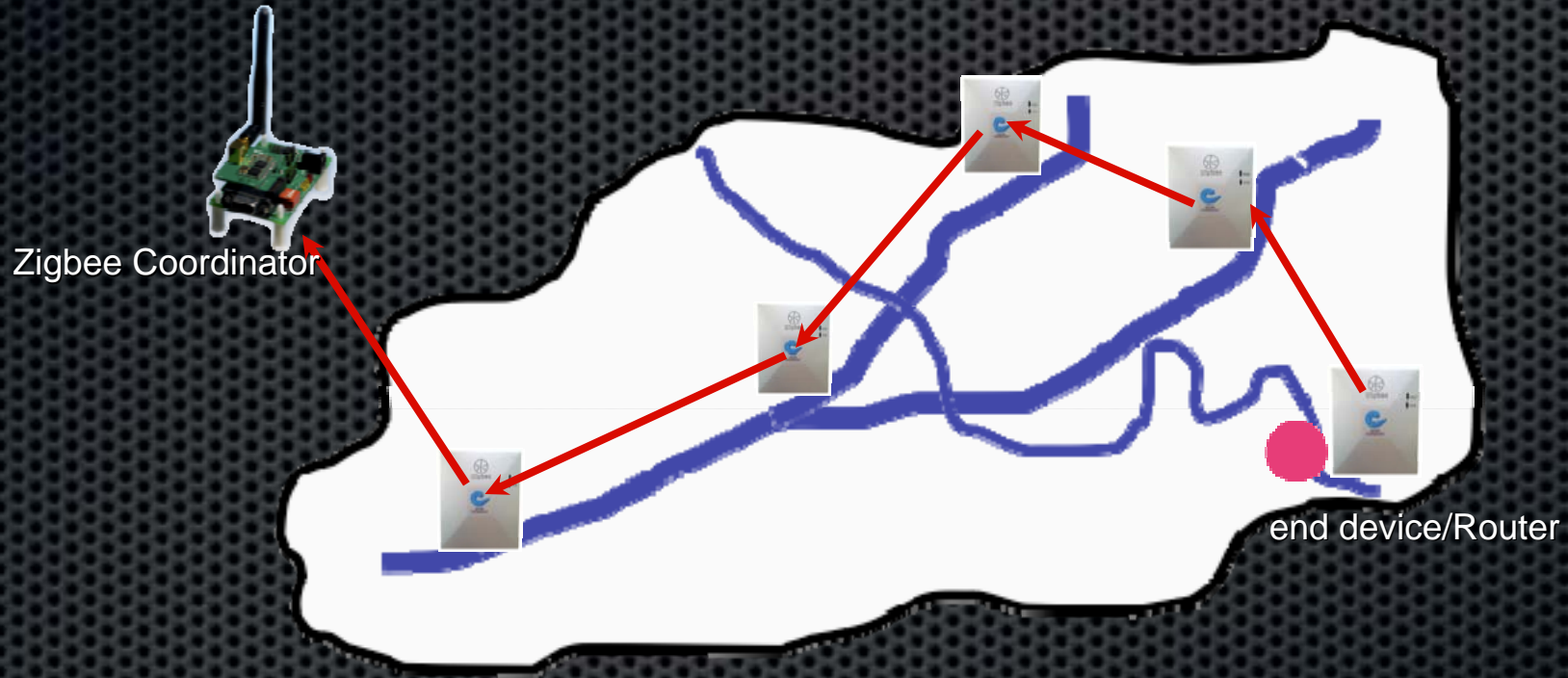
end device

end device/Router



# Sensor de Ioxinas en Nodos

Nodo	Caudal	Status
1	J23	regular
2	C34	sucio
3	E10	regular





er información en tiempo real de las características del flujo y calidad del a  
uministros de agua potable y alcantarillados.

Cables y unificando el control de sensores.

## Áreas de Aplicación

Alcantarillas

Agua Potable

Redes Eléctricas

Redes Gas Natural

## Objetivos

Calidad del Agua Potable

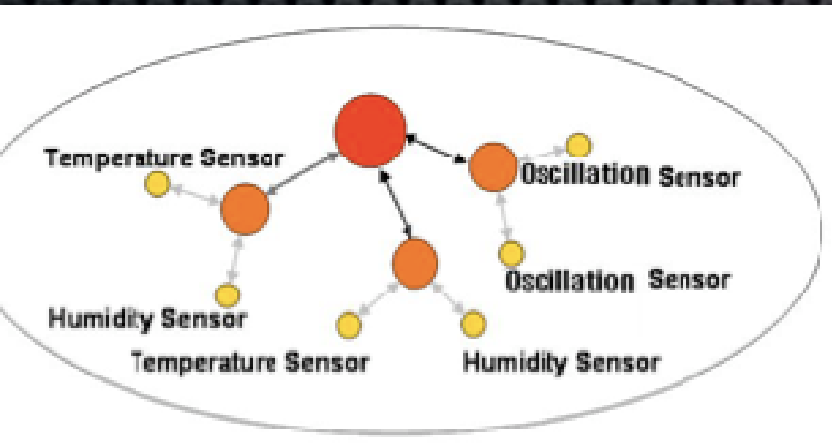
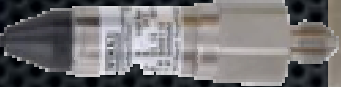
Nivel de Alcantarillados

Ubicar Problemas

Diagramar Sub-Urbe



# Captura de datos USN



Usuario Final

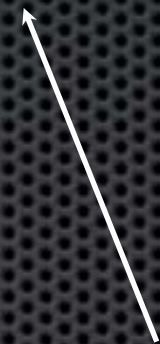
Organizaci  
Pública

Central



Empresas  
Subcontratistas

Empr  
Exte





Sensor Presión



Módulo Zig

Energía  
Autónoma







Sensor Nivel Agua Alcantarillas



Sensor Toxinas del Agua



Coordinador Zigbee y Nodos



Instalación de Sensores en Alcantarillado



# Obstáculos de la industria RFID

## ***Lack of Understanding***

- Lack of understanding about RFID
- Lack of successful RFID/USN projects in big business

## ***Lack of trust***

- Limited RFID Application  
(Tagging the unit of Box or Pallet)
- Continuous technical development in the real Field

## ***Heavy Investment costs***

- The risk of pre investment
- The time and resource investment on various field tests

## ***High Tag Price***

- Expensive Tag Price (10 cents)
- Lack of large demand ↴



# Ceyon en Chile

Alianzas



[www.navigogroup.cl](http://www.navigogroup.cl)

Universidad de Chile  
Departamento Ciencias de la Computación  
Facultad de Ciencias Físicas y Matemáticas

Proyecto Biblioteca RFID - FCFM UCHILE  
Inventario 900Mhz del DCC - FCFM

Active RFID 2.4Ghz  
Passive RFID Inventario 900Mhz  
Dispositivos Móviles - PDA Type  
Fixed RFID readers - 13.56Mhz / 900 Mhz

Soluciones RFID / USN en Minería  
Prevención de Riesgo RFID  
Retail y Plataformas de Servicios RFID  
Mobile RFID

Test Bed 900Mhz RFID  
Test Bed Active RFID 2.45 Ghz





Ceyon Technology Co. Ltd.

Muchas Gracias