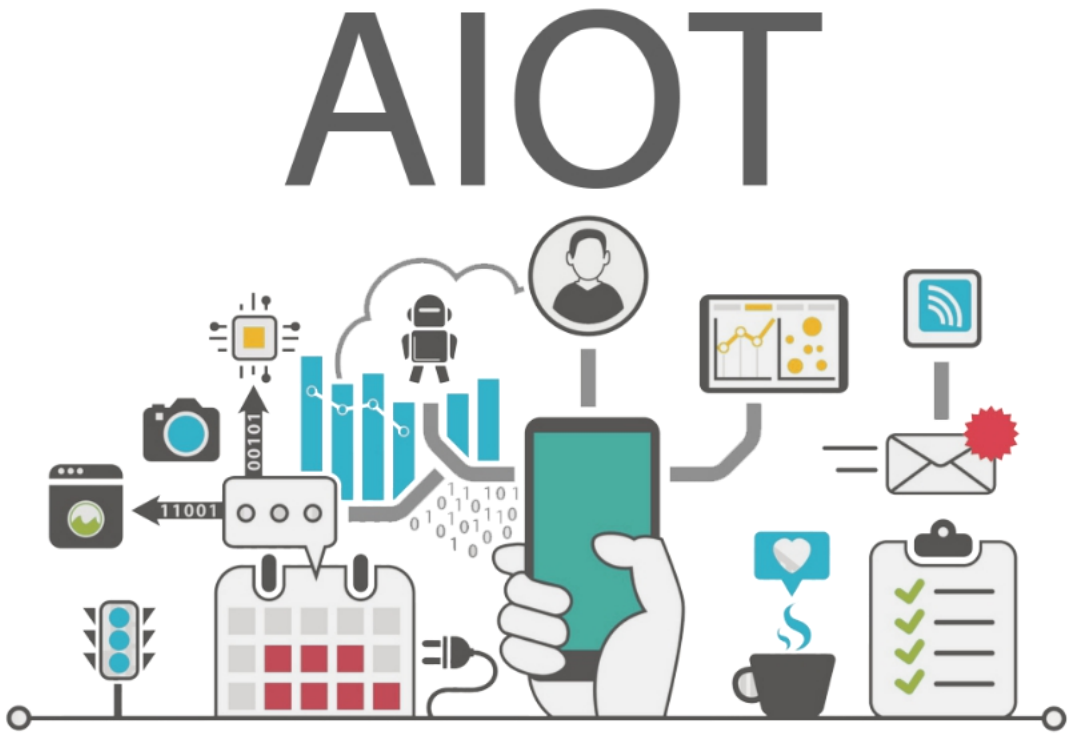
CHINOINT
SENSE CONNECT



Siemens IOT2040 LoRaWan Gateway

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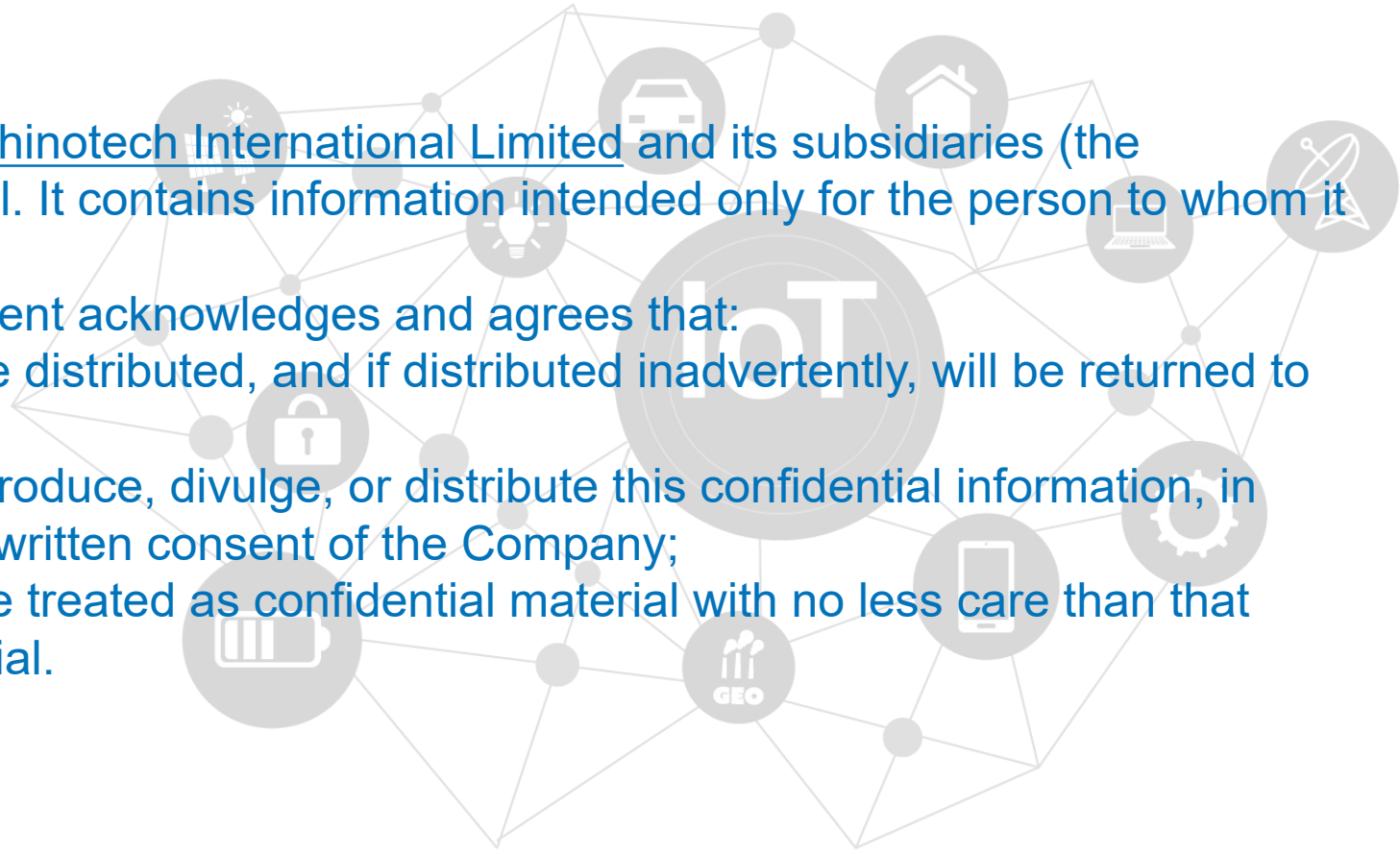

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SMART IOT SOLUTION

Our Partners & Customers

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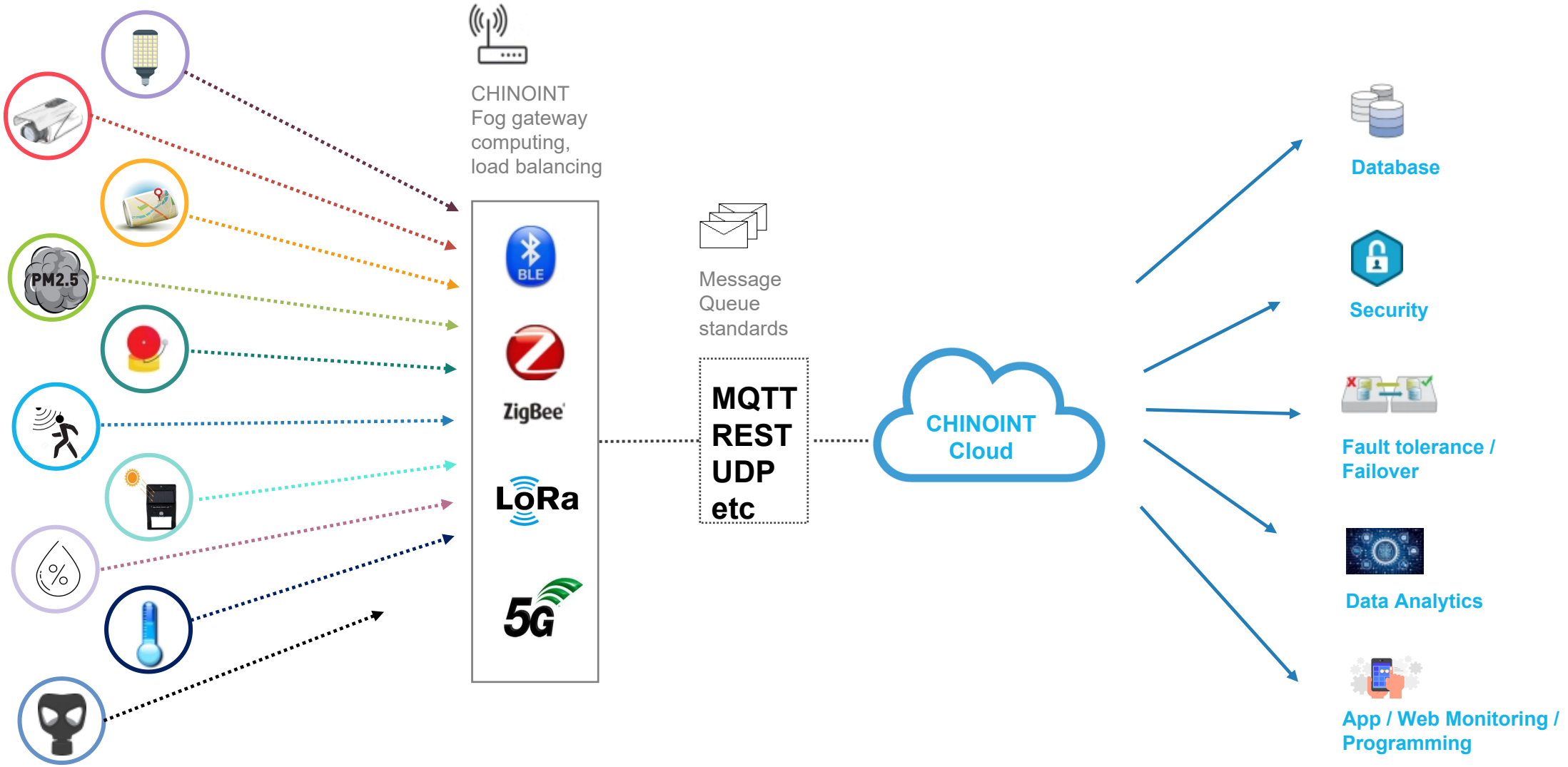
IBM

SIEMENS

ITChannel


CHINO INT
SENSE CONNECT
IoT Platform

CHINOINT : IOT PLATFORM ILLUSTRATION



ZIGBEE + LORAWAN + Bluetooth

LoRa

City & Building Wide Sensor Deployment
- Uni-directional sensor data
- control of sensors not favorable (LoRa constraints)
- in-frequent monitoring (e.g. once per day)

e.g. water meter

zigbee

Smart Home / Office Controllable Sensor Deployment
- Bi-directional sensor data, setting
- Control signal is included in Zigbee spec
- frequent monitoring

e.g. electric meter with on / off feature

Short range low data rate personal area network
- Bi-directional sensor data
- Device remote control
- BLE spec improves power consumption

e.g. headset, personal computer, etc

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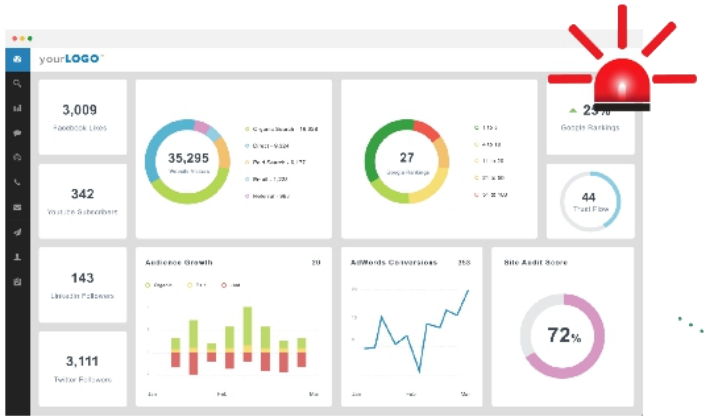
AI / Predictive Maintenance

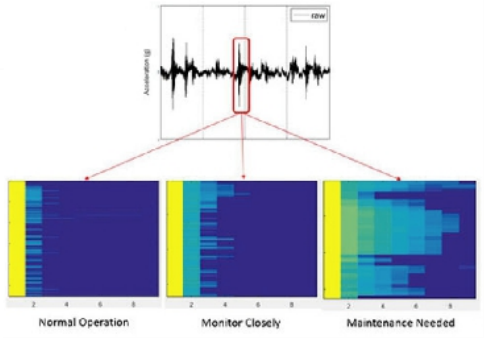
Parts replaced before failure happens!

- Light
- CCTV
- GPS
- PM2.5
- Smoke/Fire
- Motion
- Ordor
- Humidity
- Temperature
- Hazardous gas



From the data analysis, the predictive maintenance platform produces real-time alert

Predictive Maintenance



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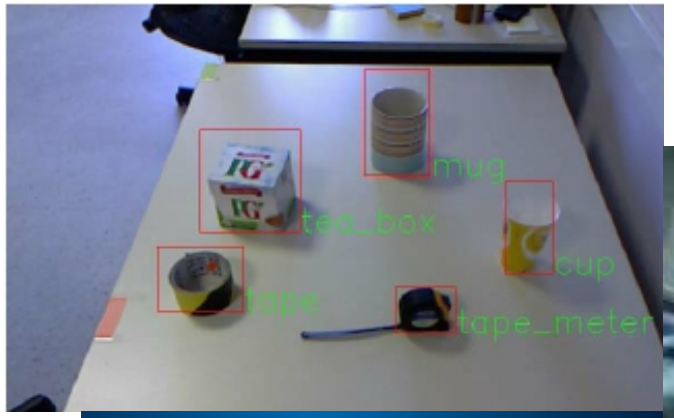
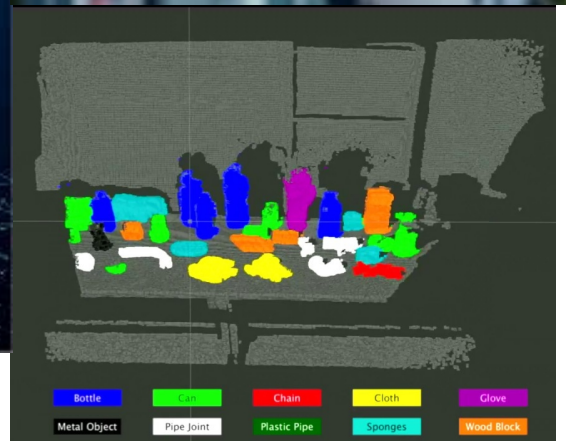
AI / Video Analytic





Object Recognition

Facial Recognition

Video Security

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Services

OUR SERVICES

Consulting

Design In

Deployment

Maintenance

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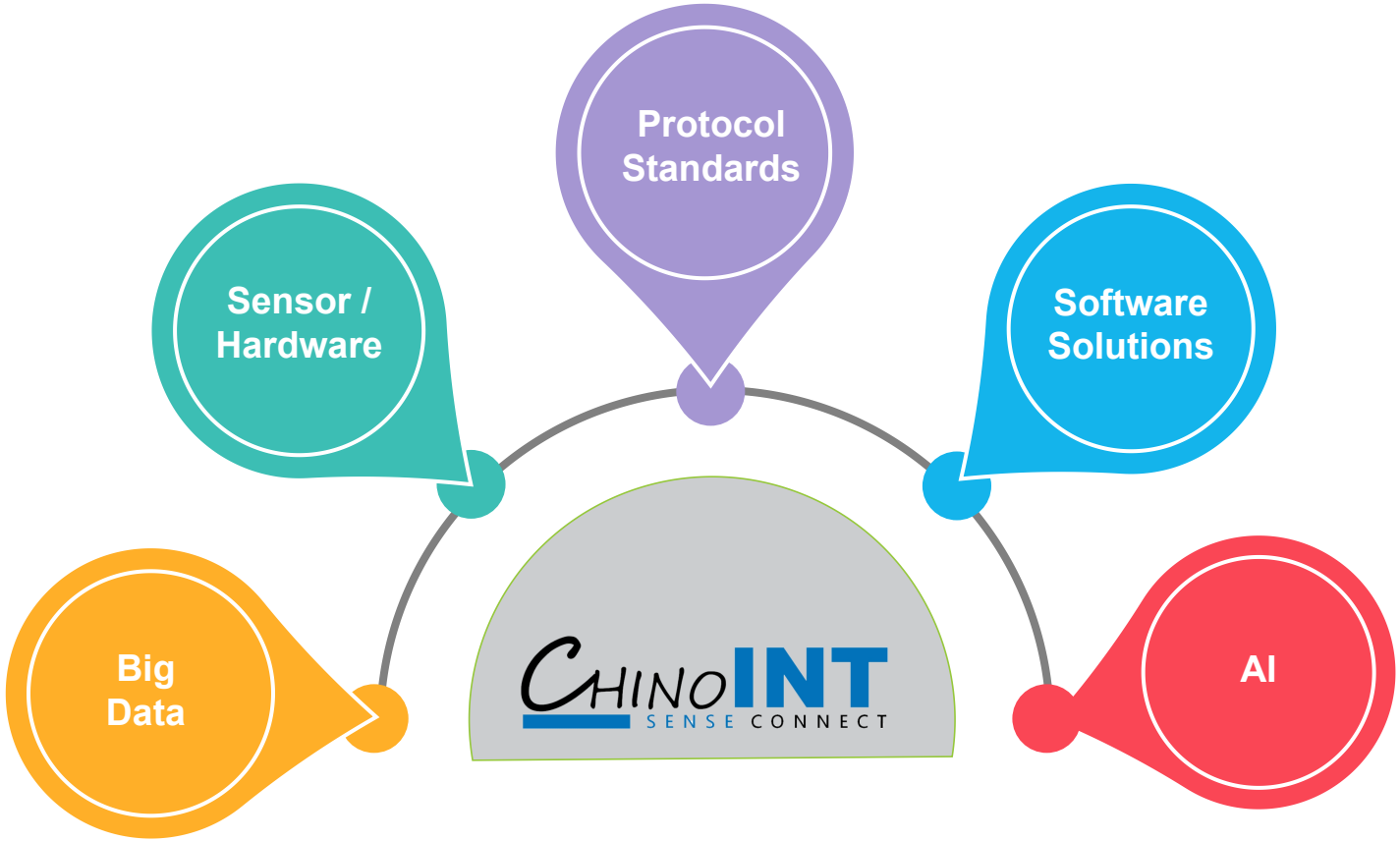
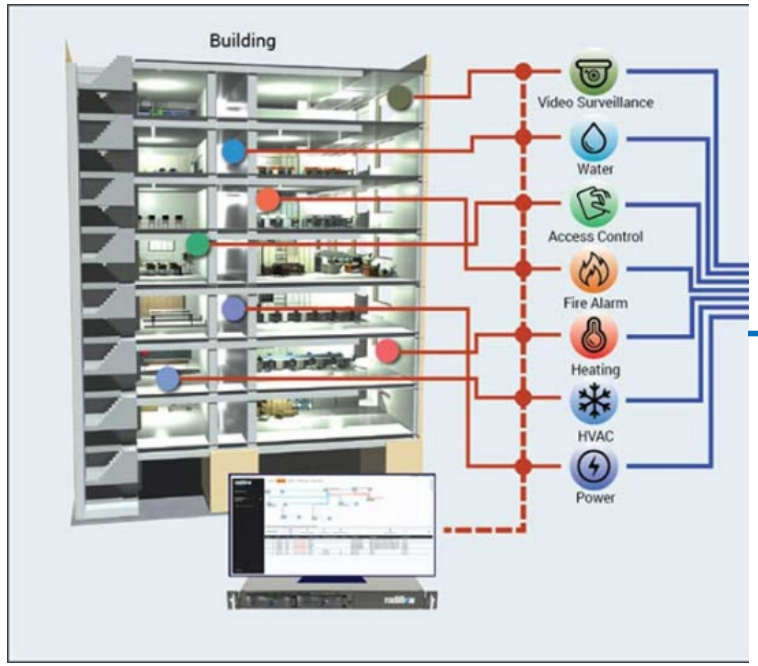
SMART INTEGRATION DONE SMARTLY

ChinoInt is positioned to be a System Integrator for Smart Building and Smart City solutions.
ChinoInt will master the IoT technologies such as Protocol Standards, Hardware, Software solutions, Big Data, AI, etc.
The aim is to integrate them into a single system, in order to offer a total solution to our customers.



Data Integration

Generally speaking, **ChinoINT** is able to gather sensor data and feed them back to the BMS, or provide data transformation and dashboard for easy checking



IoT Gateways

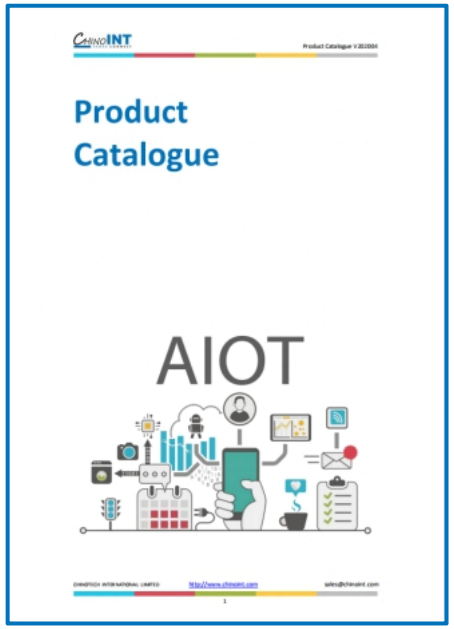
Numerous sensor type to produce reliable data, such as water leakage, occupancy, IAQ, light intensity, etc

ChinoINT SENSE CONNECT

Sensor Selection

ChinoINT offers a rich selection of sensors, in order to provide the best-in-class solution
Feel free to visit our latest product catalogue

People Counting Sensors
IAQ and Gas sensors
Lighting Control
Control
Status Sensors
Nursing System
RFID System
Access Gate
Sensor Integration



Click to Download

https://b820c62d-c647-4adf-b39f-caf90d2cfe27.filesusr.com/ugd/b81849_1665b78cae7343c395c70ebfba9ad4c9.pdf

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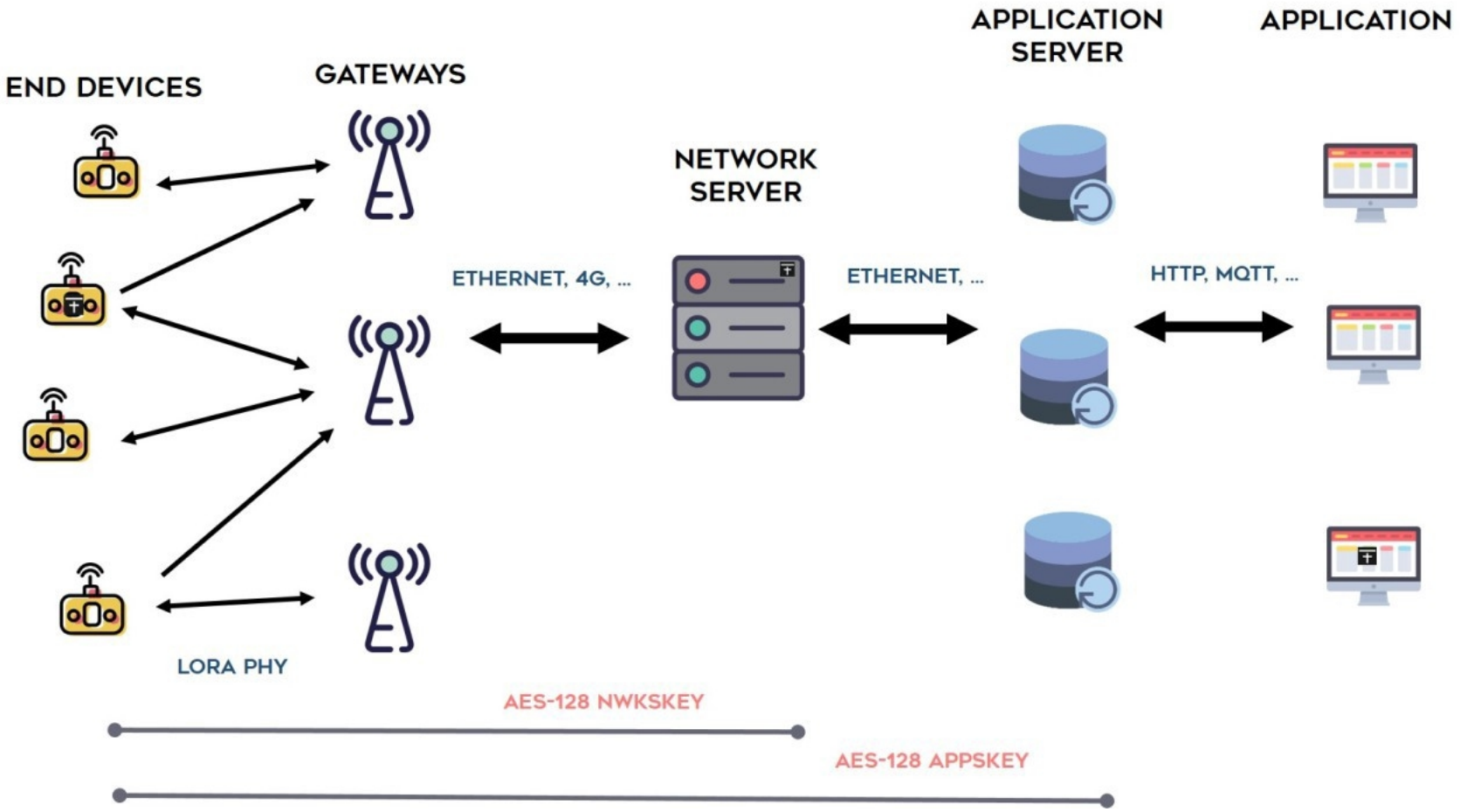
LoRaWan Architecture

LoRaWan Specification



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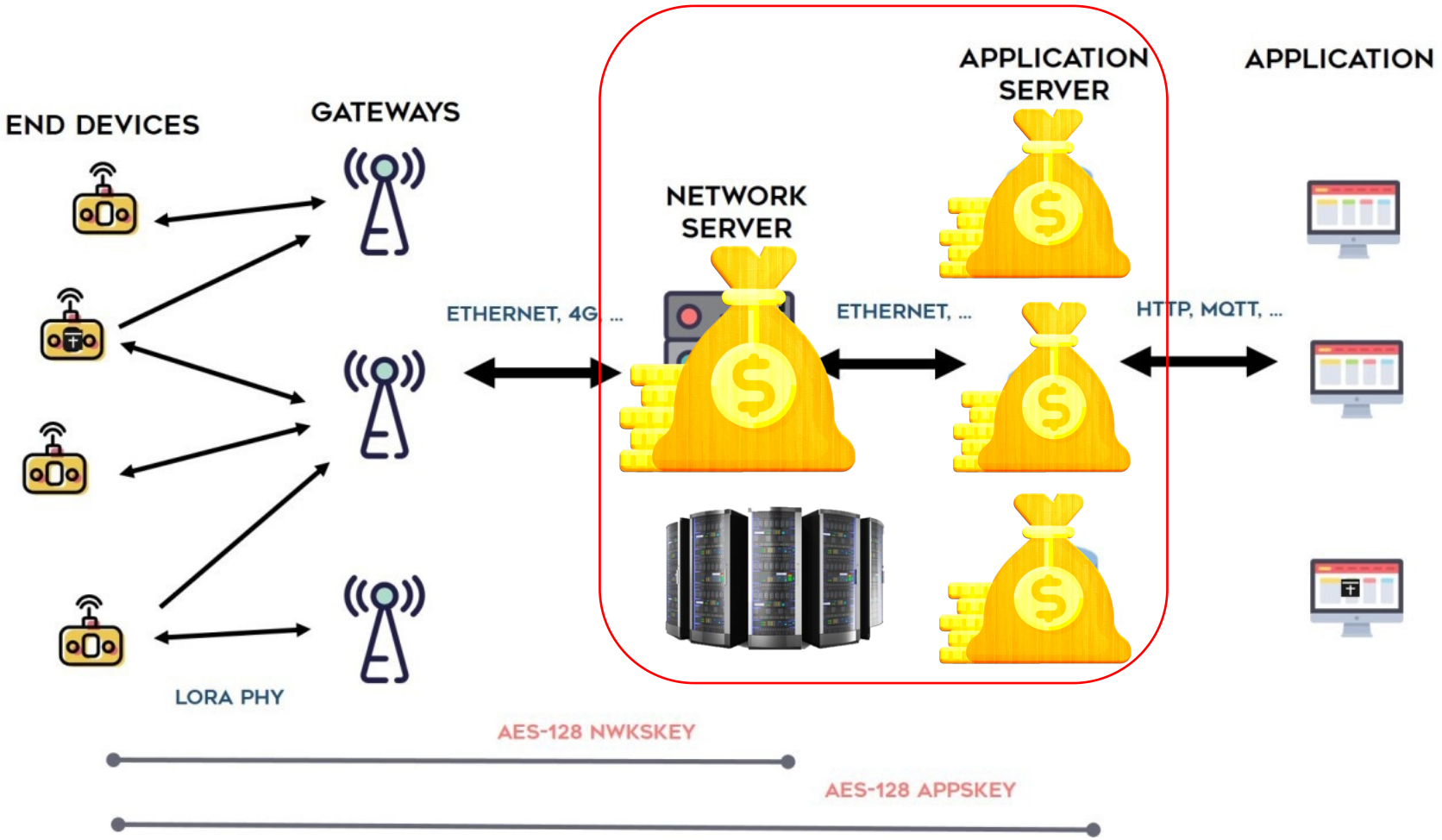
LoRaWan Specification



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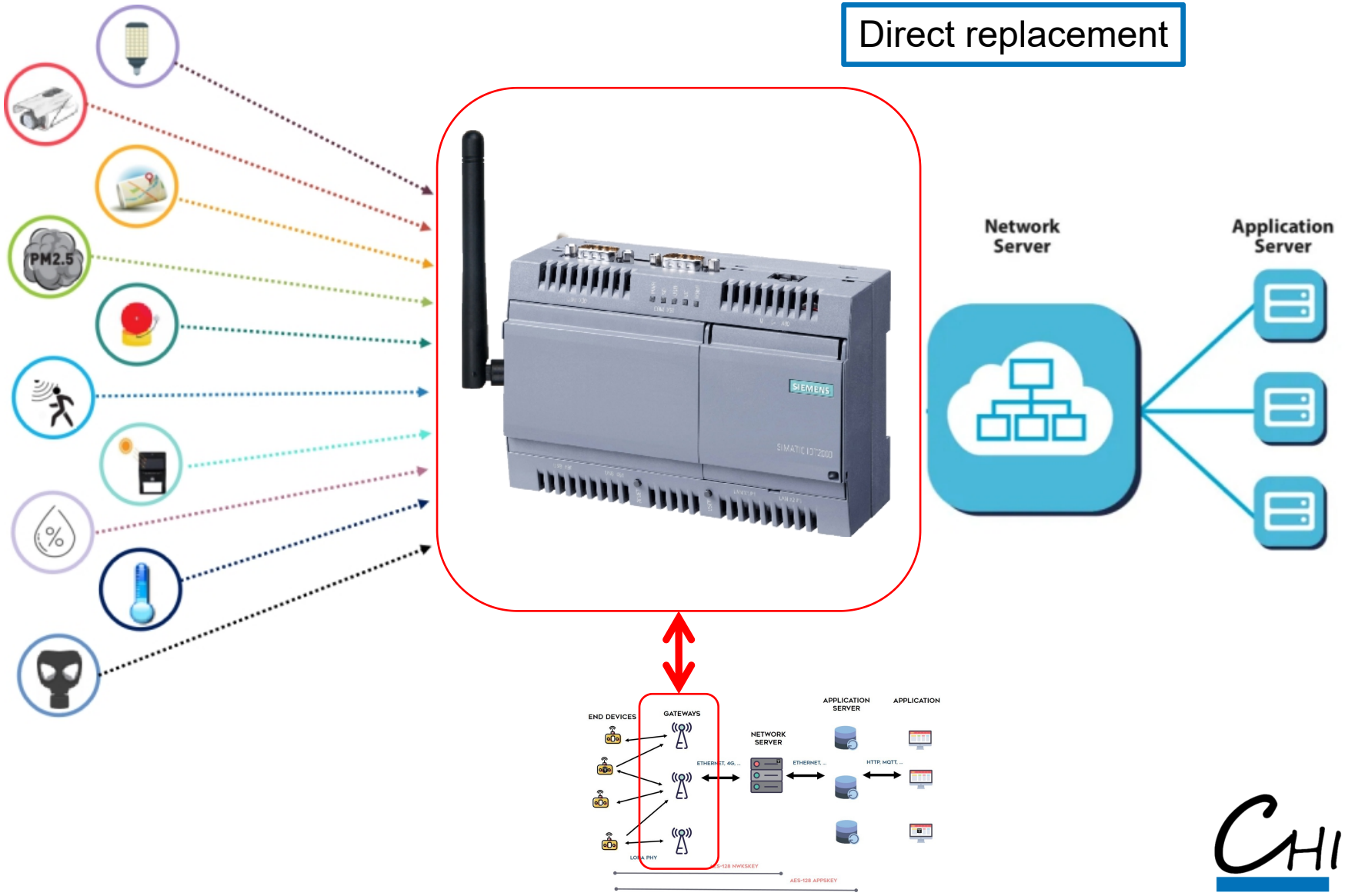
Siemens LoRaWan Aritecture

Siemens IOT2040 + Common Architecture

Direct replacement



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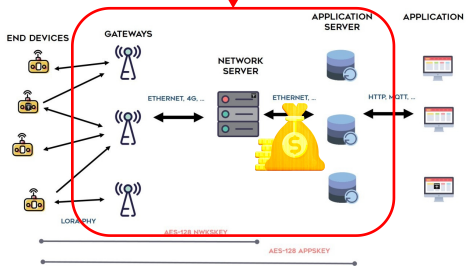
Advantages of IOT2040 LoRaWan Architecture

Proprietary technology to reduce Network Server to simplify arichitecture



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Siemens IOT2040 LoRaWan Gateway

Siemens IOT2040 LoRaWan Gateway

- LoRaWan indoor gateway
- Based on Semtech LoRa chipset
- Proprietary technology to reduce network server
- LoRa / LoRaWan Support
- Work with LoRaWan compatible sensors
- Edge computing server
- BACnet / Modbus protocol converter
- IOT Hub with common protocol connectivity, MQTT, REST, etc
- Supports up to 4000+ sensors (SF7, 1 hr interval)

Parameter	Spec
Frequency Band	433 / 470 / 868 / 915 / 923MHz
Transmission Power	26dBm Max
Receiver Sensitivity	-143dBm @ SF12
Encryption	AES128
Protocol	LoRaWan 1.0.2
Channel	8
Class	A / C
Transmission range	> 10km, open area
Power	DC 9...36 V
Network Backhaul	10M/100M RJ45 Ports

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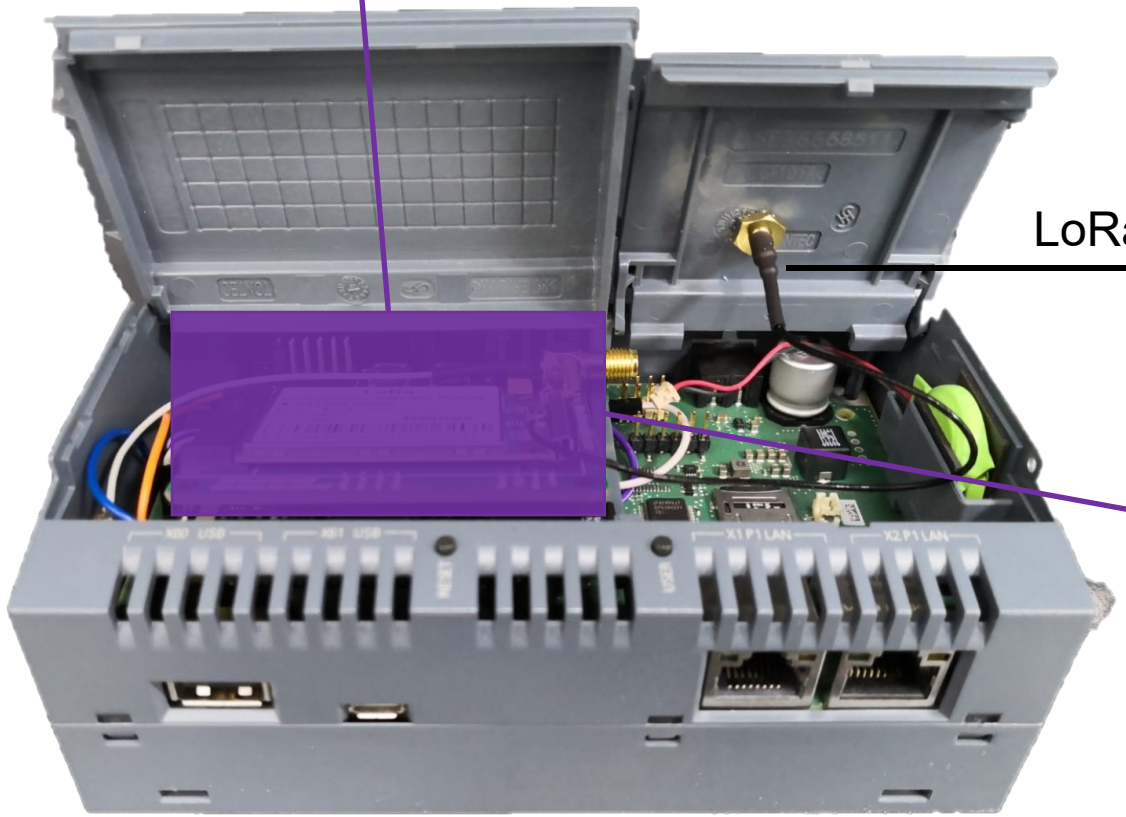
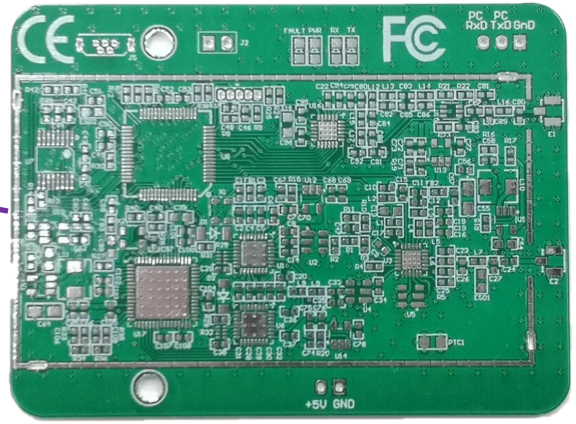
Hardware Add-on

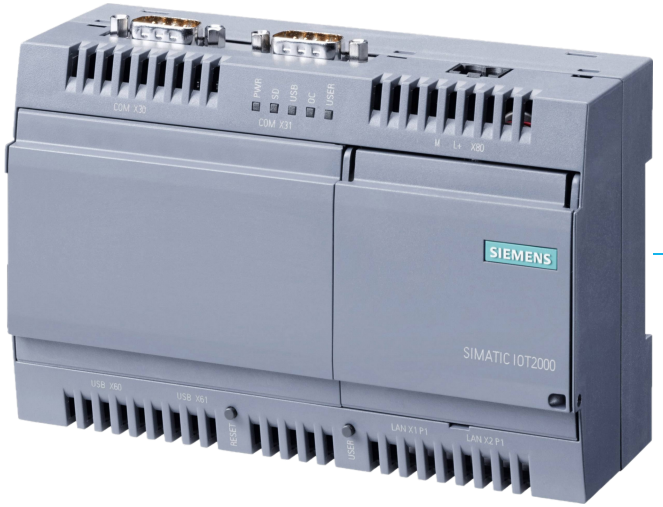
LoRaWan Gateway board

LoRaWan Antenna

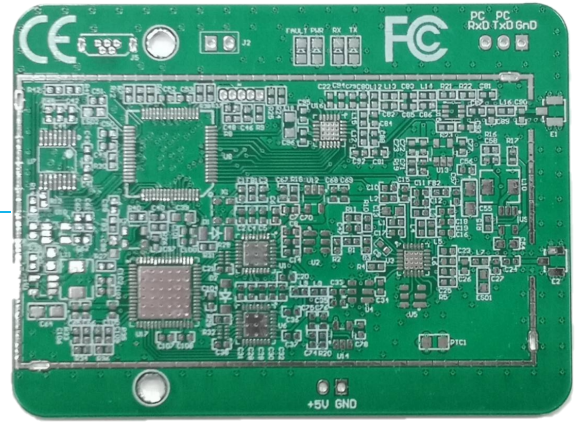




Software Add-on



UART



- Device driver
- LoRaWan Software Stack
- Send and Receive data to and fro the Gateway module
- Simple configuration methodology

- RF & baseband communication

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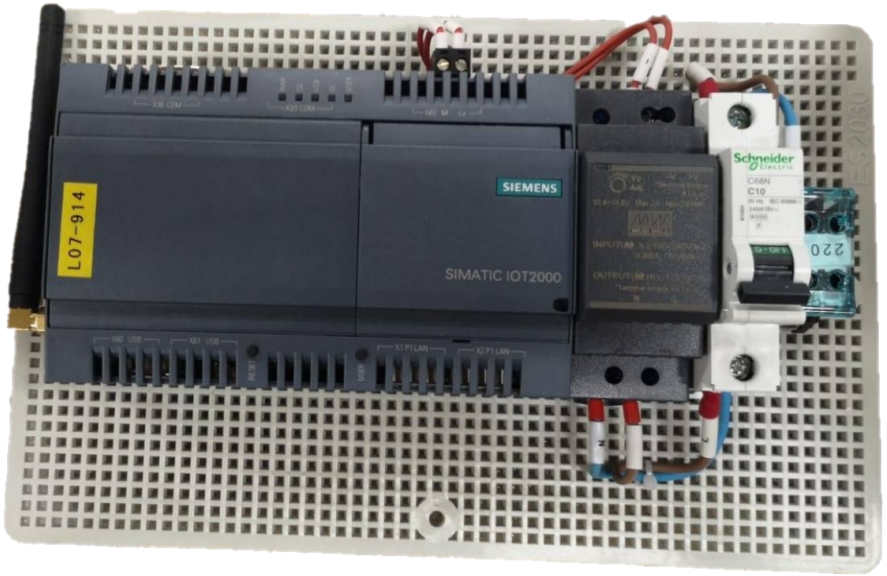
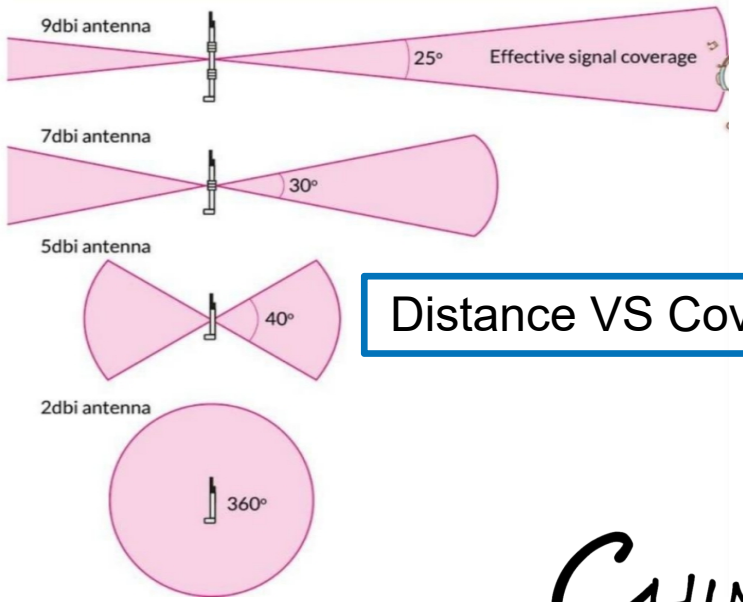
Antenna Placement (Vertical Better)





Distance VS Coverage

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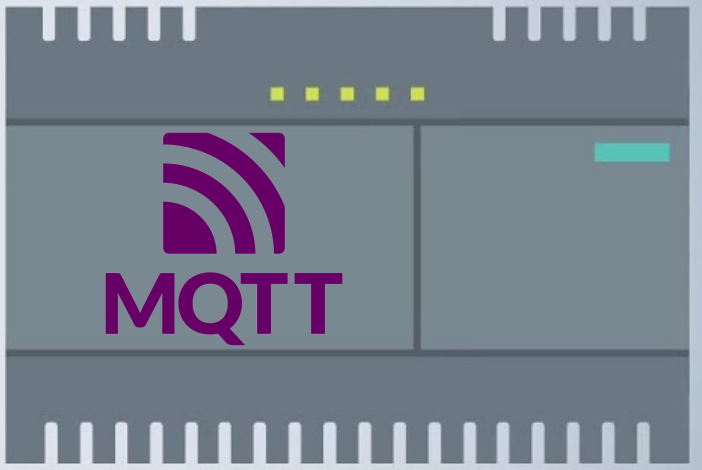
Siemens IOT2040 MQTT Broker

Software Solution base on IOT2040

SIMATIC

IOT2040



ChinoINT implements MQTT message broker in IOT2040

ChinoINT SENSE CONNECT

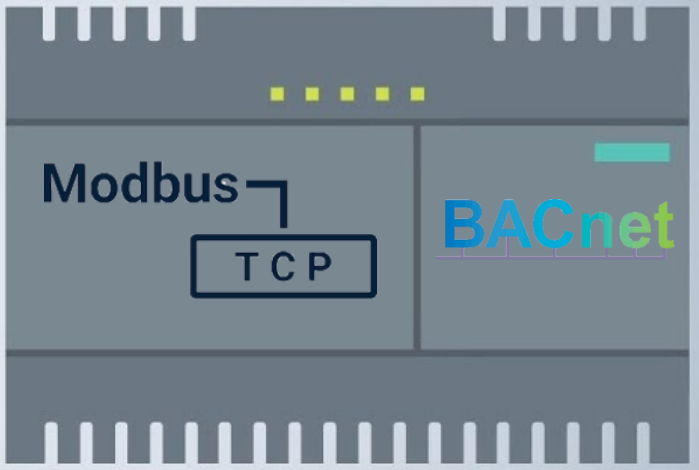
CHINO INT
SENSE CONNECT

Siemens IOT2040 Protocol Converter

Software Solution base on IOT2040

SIMATIC

IOT2040



ChinoINT implements Modbus TCP/IP, Modbus RTU over TCP/IP and BACnet IP in IOT2040

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Gateway Location

Procedure: Signal Measurement with Software Tool

Signal measurement aims at understanding of the wireless link quality between the sensor and the gateway
The prarmeter in concern is RSSI - Received Signal Strength Indicator

Step 1
- Power on sensor
- Power on gateway

Step 2
- connect laptop to IOT2040 using RJ45 cable

Step 3
- use Putty to login to IOT2040
- refer to IOT2040 manual for details

Step 4
- run the following command “onsitemeasure”
- press button on sensor
- RSSI show on screen

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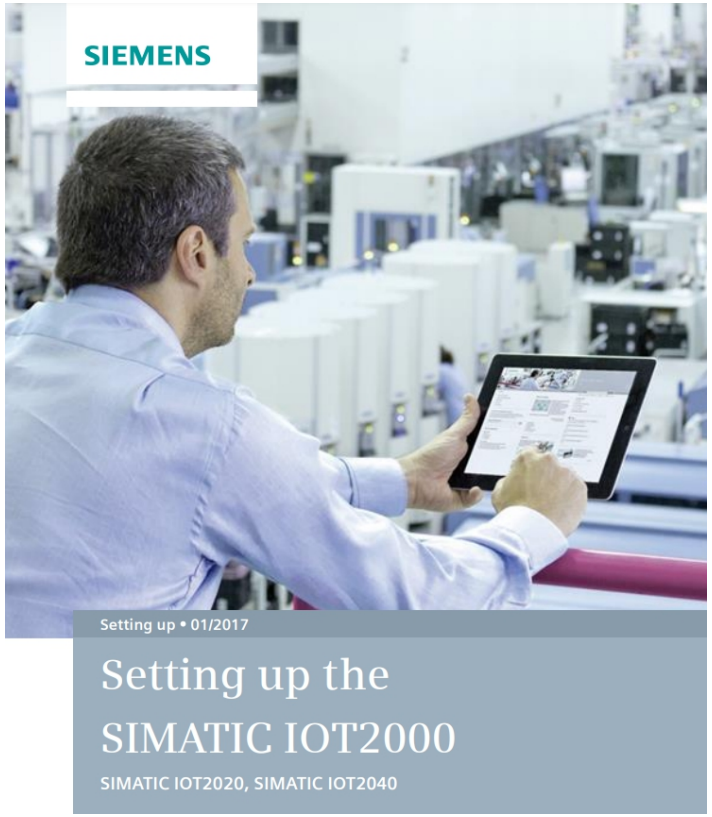
Putty Usage

For Putty, please follow IOT2040 Manual



Link to IOT2040 Manual:
https://support.industry.siemens.com/tf/ww/en/postattachments/download/?attachmentId=104293

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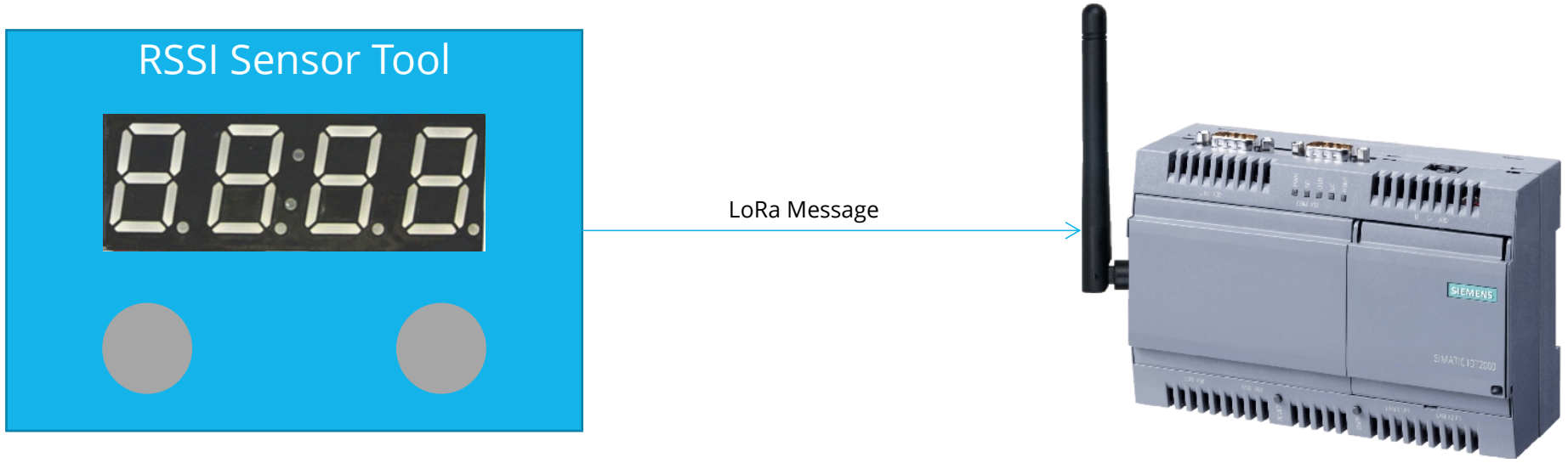
Upcoming Procedure: Signal Measurement using Sensor Tool

Advantages of the Hardware Tool

- No need laptop
- only 1 personnel needed
- LoRaWan sensor tool
- Trigger button and RSSI display on the same handheld device



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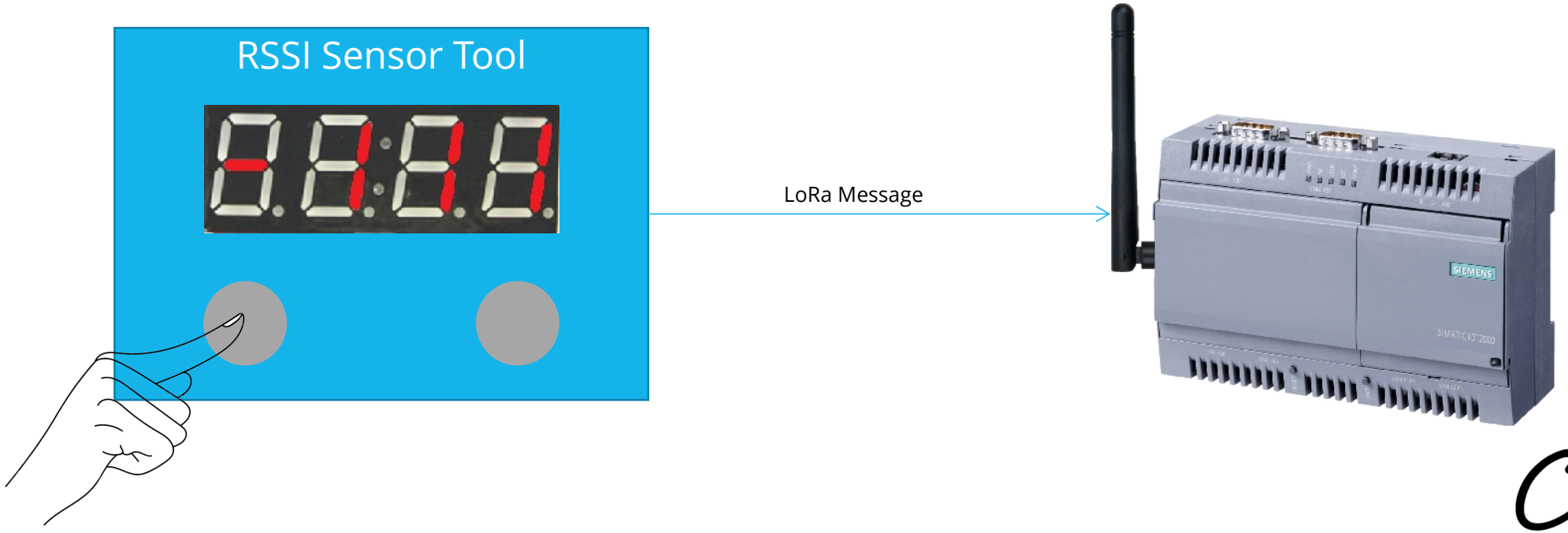
Upcoming Procedure: Signal Measurement using Sensor Tool

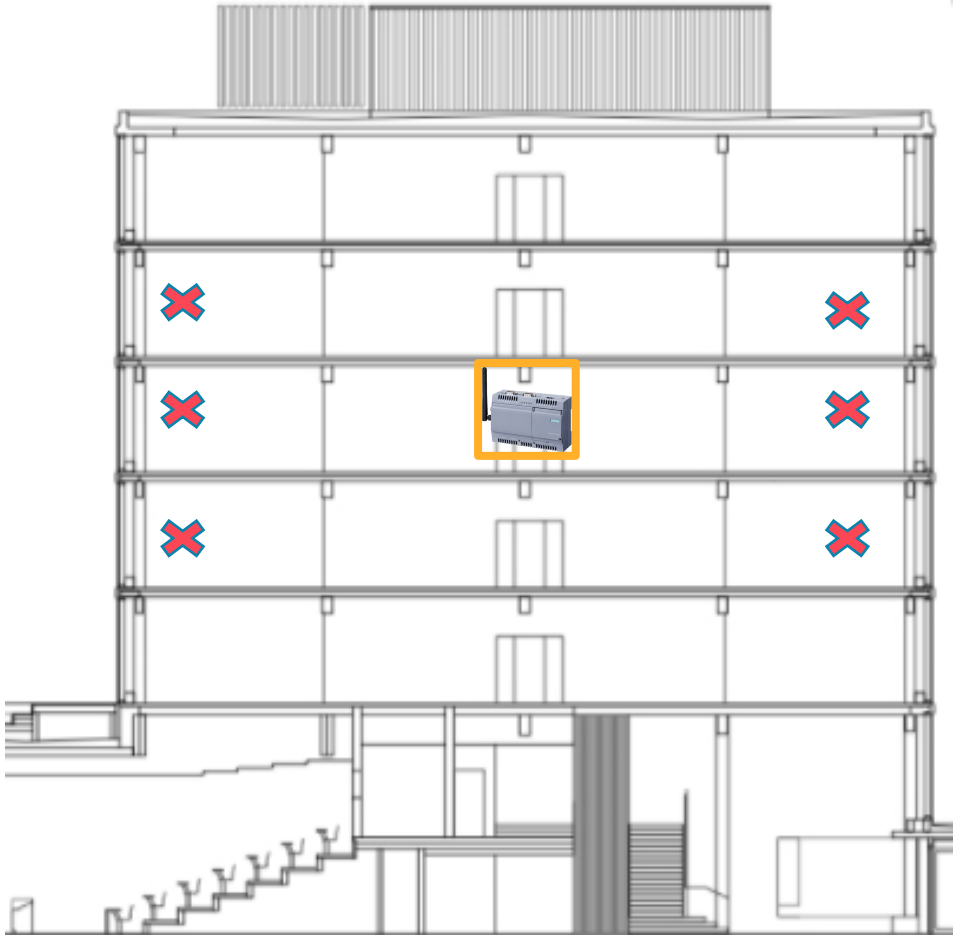
Advantages of the Hardware Tool

- No need laptop **(less hardware needed)**
- only 1 personnel needed **(less human resource needed for measurement)**
- LoRaWan sensor tool **(mobility)**
- Trigger button and RSSI display on the same handheld device **(ease to use)**



ChinoINT SENSE CONNECT

RSSI Measruement for Small Floor Area



Floor area < 1000m^2

Procedure

1. Gateway locates at the center of 3/F.
2. Further to test RSSI level on 2/F and 4/f
3. If the RSSI level is above the threshold on 2/F and 4/F. Gateway can be located on 1/F and 4/F.
4. Go one floor above and one floor below if RSSI still strong
5. Otherwise, gateway should be place on each floor.

Threshold for IOT2040 gateway board = **-100dBm**

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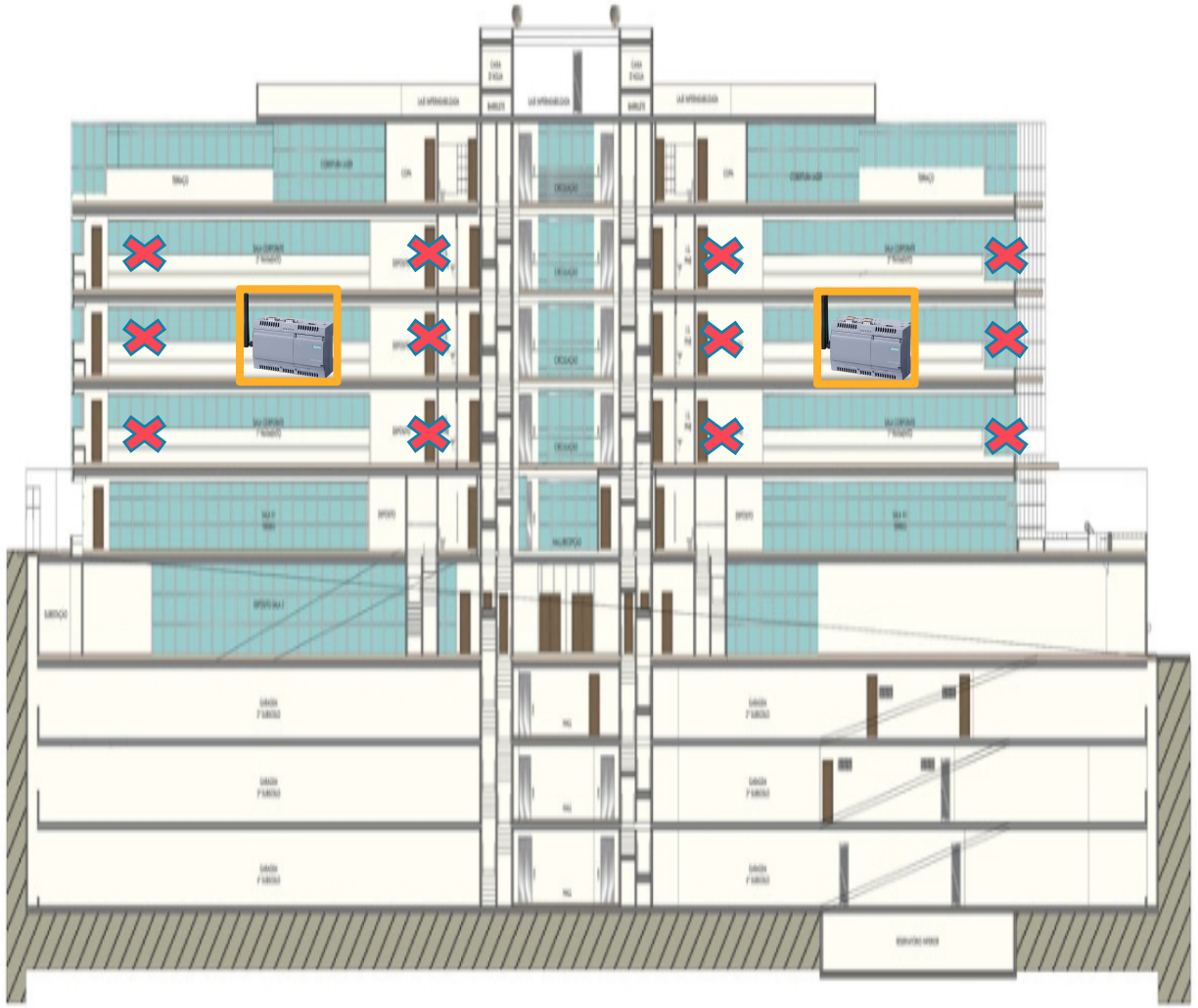
RSSI Measruement for Large Floor Area



Floor area > 1000m^2

Similar procedure as in the last page.

The main difference is to repeat measurement on the same floor as indicated in the left diagram.

Threshold for IOT2040 gateway board = **-100dBm**

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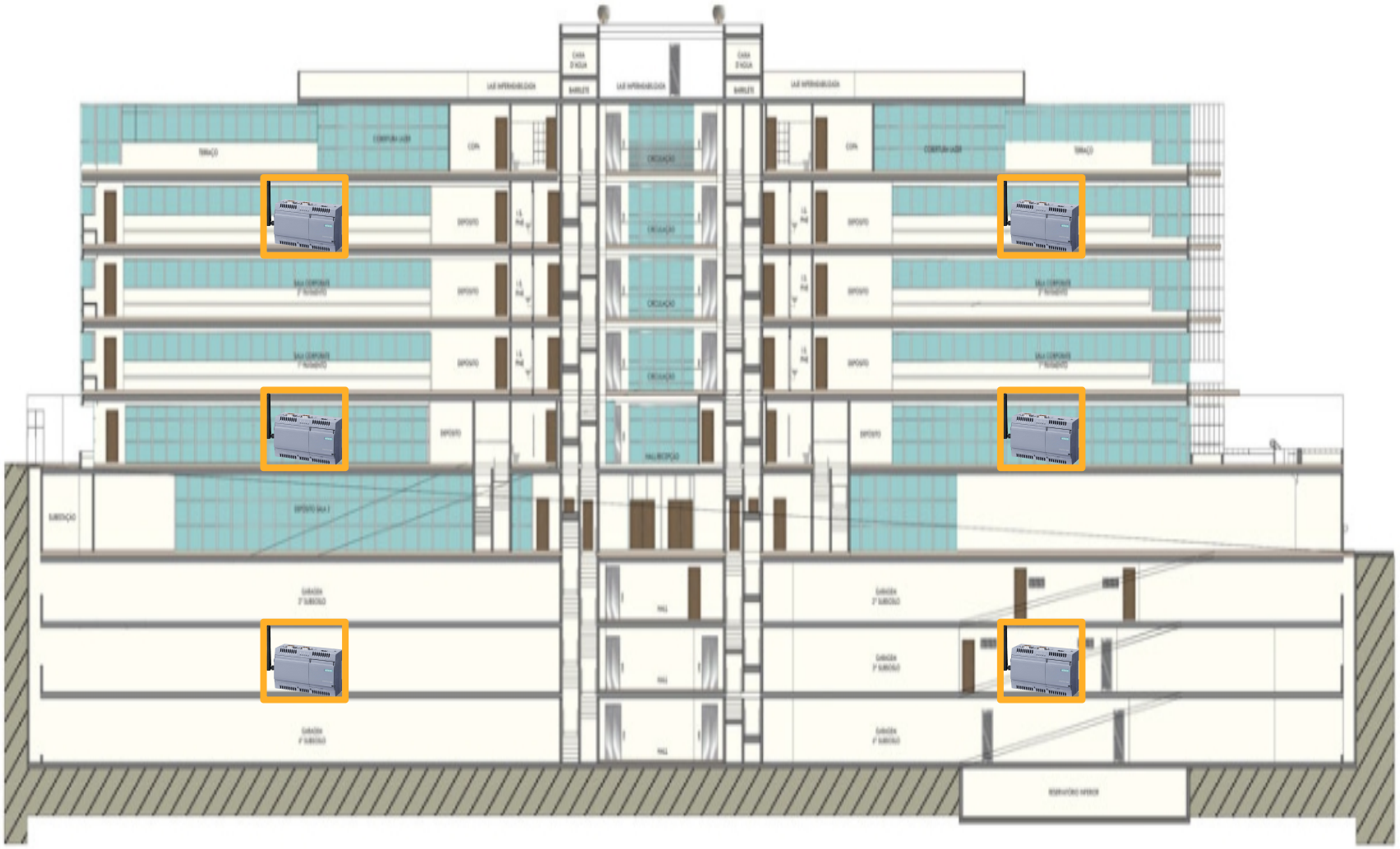
Gateway Placement Example



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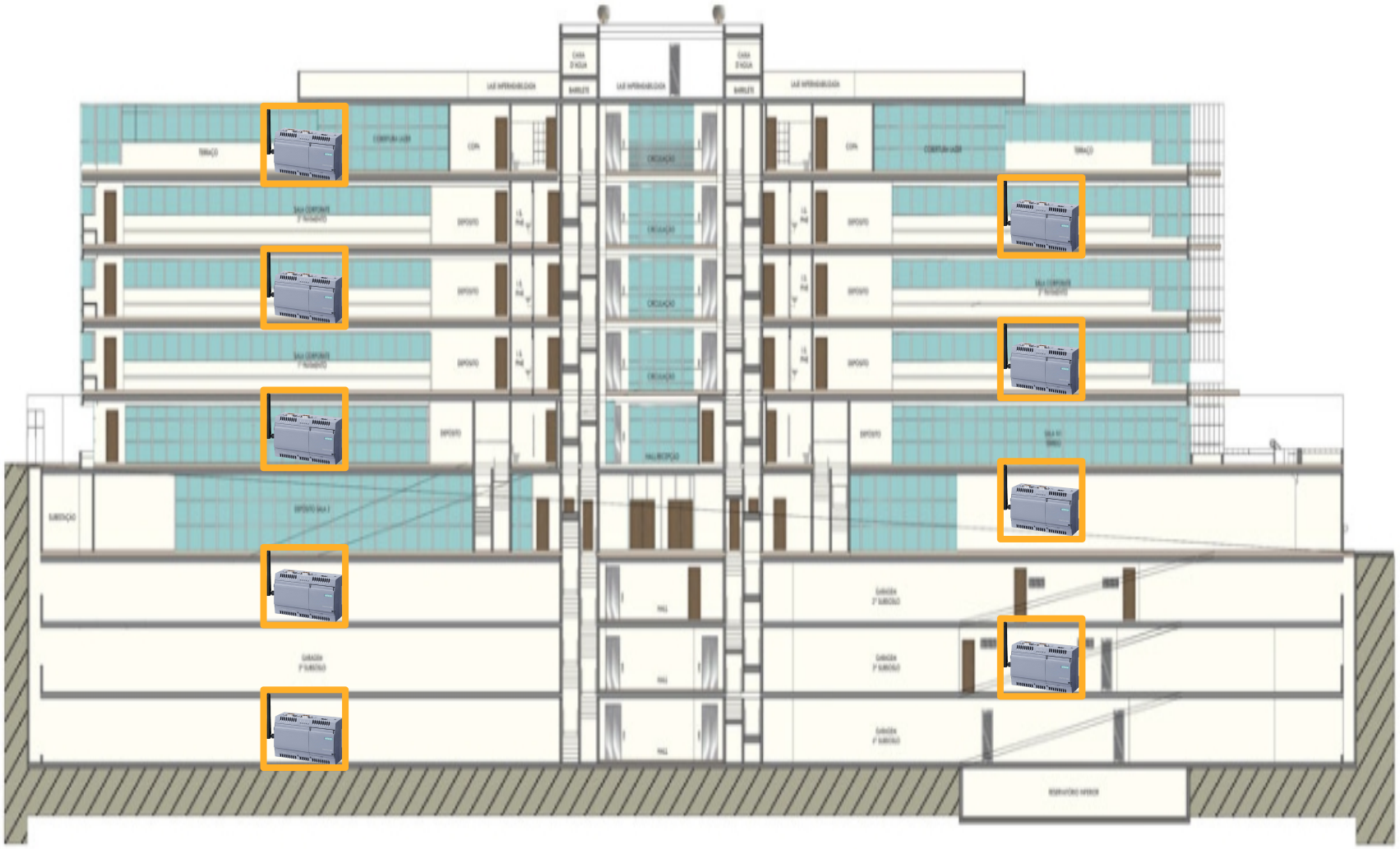
Gateway Placement Example



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Commissioning

Registering Sensors to Gateway

File name:
SensorMapping.csv

Location:
/usr/bin/SensorMapping.csv

Step 1:
Prepare config file

Step 2:
Login IOT2040 using WINSCP

Step 3:
Copy file to destination

Step 4:
Reboot IOT2040 to take effect

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Checking Registering Results

File name:
MappingResult.csv

Location:
/usr/bin/MappingResult.csv

Step 1:
Config file registered

Step 2:
Reboot IOT2040

Step 3:
Wait for 5 minutes

Step 4:
Use WINSCP to download result

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Files at a Glance

Items	Description
Lora_dev	Lorawan sensor #1
id	sensor #1 device address (devaddr)
ASK	sensor #1 application session key (appskey)
NSK	sensor #1 network session key (nwkskey)
Lora_dev	Lorawan sensor #2
id	sensor #2 device address (devaddr)
ASK	sensor #2 application session key (appskey)
NSK	sensor #2 network session key (nwkskey)
modport	MODbus port number
modaddr	sensor #1 MODbus device address
Datapt	Sensor #1 number of datapt
modport	MODbus port number
modaddr	sensor #2 MODbus device address
Datapt	Sensor #2 number of datapt

Config File:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	Lora_dev	id	ASK	NSK	modport	modaddr	Datapt	Dptstart1	Dptend1	Dptdiv1	Dpttype1	Dptstart2	Dptend2	Dptdiv2	Dpttype1
2	1	1824293	85b851c2abf69214ec6baf587397d528	85b851c2abf69214ec6baf587397d528	503	1	2	3	3	10	float	4	5	1	float
3	2	018242FA	85b851c2abf69214ec6baf587397d528	85b851c2abf69214ec6baf587397d528	503	2	1	11	12	100	float				

Result File:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Status	Lora_dev	id	ASK	NSK	modport	modaddr	Datapt	Dptstart1	Dptend1	Dptdiv1	Dpttype1	Dptstart2	Dptend2	Dptdiv2	Dpttype1
2	ok	1	1824293	85b851c2abf69214ec6baf587397d528	85b851c2abf69214ec6baf587397d528	503	1	2	3	3	10	float	4	5	1	float
3	Syntax error	2	018242FA	85b851c2abf69214ec6baf587397d528	85b851c2abf69214ec6baf587397d528	503	2	1	11	12	100	char				

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WINSCP Usage

For WINSCP, please follow below IOT2040 forum

bergmanu

RNF(Antares):lblBadge-PlatinMembers-Expert

RNF(Antares):lblSharedPos
4/28/2015

RNF(Antares):lblSharedPos
3/18/2021

RNF(Antares):lblSharedPos
1934

RNF(Antares):lblSharedPostList_Rating

★★★★★ (265)

Technical Forum
EXPERT

Hi JDarius,

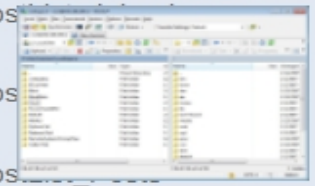
the easiest way is to use a software like WinSCP. It uses a SFTP connection to transfer files.

You have your engineering filesystem on the left side and the IOT filesystem on the right side of the programm. You can exchange data via Drag&Drop.

Best regards!

RNF(Antares):lblHtmlPost_Attachment

WinSCP.jpg (227 RNF(Antares):lblHtmlPost_DownloadCount)



Link to IOT2040 Forum:
https://support.industry.siemens.com/tf//ww/en/posts/how-to-move-file-onto-iot2040/162249?page=0&pageSize=10

CHINOINT SENSE CONNECT

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Support / Aftersales / Warranty

Common Support Model

Customer facing: Siemens' Team
Backend Support: ChinoINT

Severity	Response Time	Resolution Proposal Time	Contact method	Example
Critical	2 hours	4 hours	Messenger, phone, e-mail	LoRaWan gateway / service unreachable Server unreachable Service unavailable to visit Service unresponsive
General	1 working day	2 working days	Messenger, phone, e-mail	Data delay On-site hardware damage
Non-realtime	2 working days	5 working days	Messenger, phone, e-mail	General inquiries Technical consulting

With active warranty, hardware maintenance is included under normal usage.
Hardware maintenance happens as one-to-one replacement. Lead time applies.
Stolen, lost, vandalism or abused hardware are exempted from warranty.
Dismantle, installation, shipping are not included.
It is recommended to let customer keep spare parts for better service level.

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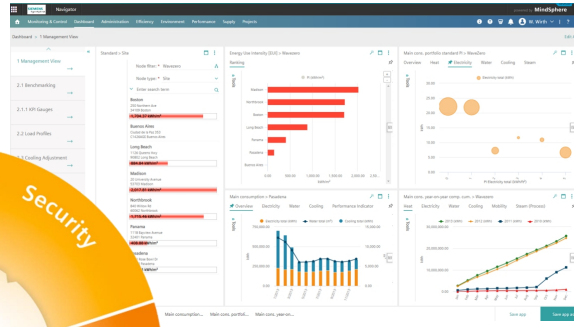
LoRaWan Gateway Demo

IOT2040 LoRaWan Gateway with Desigo

RHT sensor

Wireless Button

Network switch



Showing real time data on Desigo Dashboard

- Temperature
- Humidity
- Button pressed

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SENSE CONNECT

Suggested Pricing

as of March 2021

Pricing for LoRaWan Gateway Upgrade Kit

Upgrade Kit package:

- LoRaWan Gateway Software binary (pre-loaded onto SD card)
- All-in-one LoRaWan gateway board
- 32GB micro SD card
- 2dBi antenna
- Provisioning not included
- Installation Not Included

MOQ	HKD
1	4500
5	4000
15	3500
50	3000
100	2500

ChinoINT SENSE CONNECT

Pricing for MQTT Broker (one-off license)

Upgrade Kit:

- Software binary (to be run in IOT2040)
- Provisioning not included
- Installation Not Included

Description	300 data points (HKD)	1000 data points (HKD)	5000 data points (HKD)	10000 data points (HKD)
MQTT message broker per project **1 IOT2040 accomodates 5000 data points	4500	12000	30000	35000

ChinoINT SENSE CONNECT

Pricing for Protocol Converter (one-off license)

Upgrade Kit:

- Software binary (to be run in IOT2040)
- Provisioning not included
- Installation Not Included

Description	300 data points (HKD)	1000 data points (HKD)	5000 data points (HKD)	10000 data points (HKD)
Modbus TCP/IP, RTU over TCP/IP protocol convrter per project **1 IOT2040 accomodates 5000 data points	4500	10000	25000	30000
BACnet IP Basic* protocol converter per project **1 IOT2040 accomodates 5000 data points	4500	10000	25000	30000
BACnet IP Advance* protocol converter per project **1 IOT2040 accomodates 5000 data points	6000	13500	33000	40000

BACnet Advance - Change of value (COV) and trend log support in gateway
BACnet Basic - without advance features support

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Spare Parts

- Spare parts unit price
- Standard shipping included, destination Hong Kong
- Standard lead time: 8 weeks

Item	Price (HKD)
IOT2040 Gateway Board	2800
32G SD Card + Software (software module per project requirement)	2200
2dBi Antenna	45
5dBi Antenna	650

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Demo Site Setup Recommendations

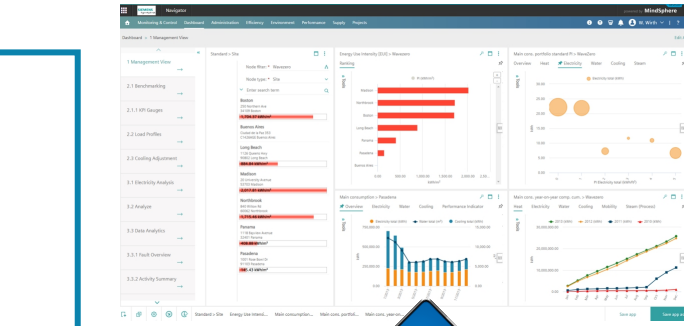
Demo Site

Smart Toilet

- Indoor Air Quality Sensor
- Emergency Button
- Paper Towel Sensor
- Rubbish Bin Level Sensor
- Soap Level Sensor

Smart Office

- Occupancy by PIR
- Lux sensor
- IAQ
- Door sensor
- People Counting
- BLE desk occupancy (BLE ride on LoRaWan)



Smart Facility Management

- RHT with 2 - 3 different models
- Water leakage sensor
- Differential Pressure Sensor
- CO2 sensor

Indoor Positioning System

- UWB technology for sub-1 meter accuracy
- UWB ride on LoRaWan

Show case: centralized data management, simple and efficient wireless topology, and full of ready solutions

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www.chinoint.com

For more information,
please feel free to contact us:

sales@chinoint.com