
PEOPLE AND TECHNOLOGY

Asset Management with IoT and AI

IndoorPlus+ Asset Management solution
Standard solution for Healthcare

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<https://healthcare.indoorplus.io/>



2024

| The questions we answer

Base solution

Tracking

1. Where is asset X located now ?
2. What are all assets available on this floor/department ?
3. Where are they located now ?
4. Which assets are out of the zone now ?
5. Where was asset X at a given time/given date ?
6. Is the asset in/out of the geofenced zone ?
7. Is the asset exiting the geofenced zone ?
8. What zones are most concentrated in assets at a given time/ period ?

>> *Where should the asset be stored for most efficient use/ fewer travels ?*

Inspection Management

1. When should the daily asset inspection be done ?
2. What are the results of the daily inspection at a given date ?
3. What was the asset count at a given shift/date ?
4. Was the asset count checked at the end of the shift ?
5. Was the asset inspection released at the end of the day ?
6. Is asset X functioning normally ?

>> *Are assets missing ?*

>> *Which assets need maintenance/ repair ?*

>> *Is inspection conducted according to the schedule ?*

>> *Insights*

| The questions we answer

Add-ons

>> Insights

Asset sharing management To be deployed (GANGDONG)

1. Is the asset available at its standard department or is it being rented ?
2. Which department possesses the asset category I need ?
3. Which department is renting asset X ?
4. Why asset X can't be rented
5. For what period is asset X being rented
6. What is the rental status of asset X ?
7. What is the rental history of asset X/all assets in the department/ a category of assets ?

>> Are my assets assigned to the right department ?

Repair management In development (AJOU)

1. Which assets are defective in the department ?
2. What is the repair status of asset X ?
3. What is the repair history of asset X/ category/ department ?

Utilization monitoring In discussion (SEJONG)

1. What is the utilization rate/time of asset X in a given period ?
2. What is the utilization time/rate of a category at a given date ?
3. What is the utilization rate of asset X within its category ?
4. What is the most utilized asset in the category ? (ranking)
5. Which department is using asset X/ Category the most ? (ranking)

>> Is my asset profitable ? What are my least profitable assets?

>> Do I need to buy more equipment ?

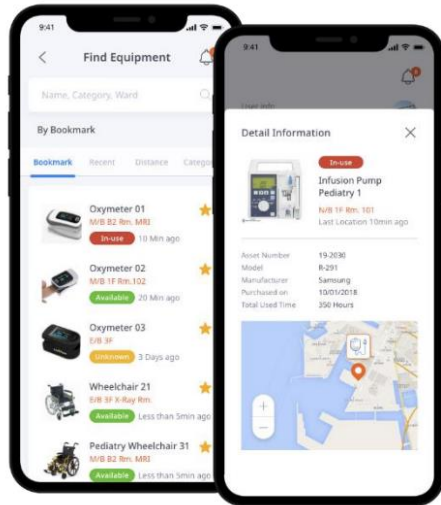
>> Are my assets assigned to the right department/ located accordingly ?

Medical waste management

1. What is the weight, volume and billed price of waste during the period ?
2. What is the number of medical waste generated in the period ?
3. What is the number of medical waste generated in the period per type ?
4. What is the weekly evolution of waste generation per type of waste ?
5. What is the amount of waste collected in the period ?

>> What type of waste is mostly generated ? > To take action on waste reduction

>> What is the portion of dangerous waste to isolate ?



Mobile application

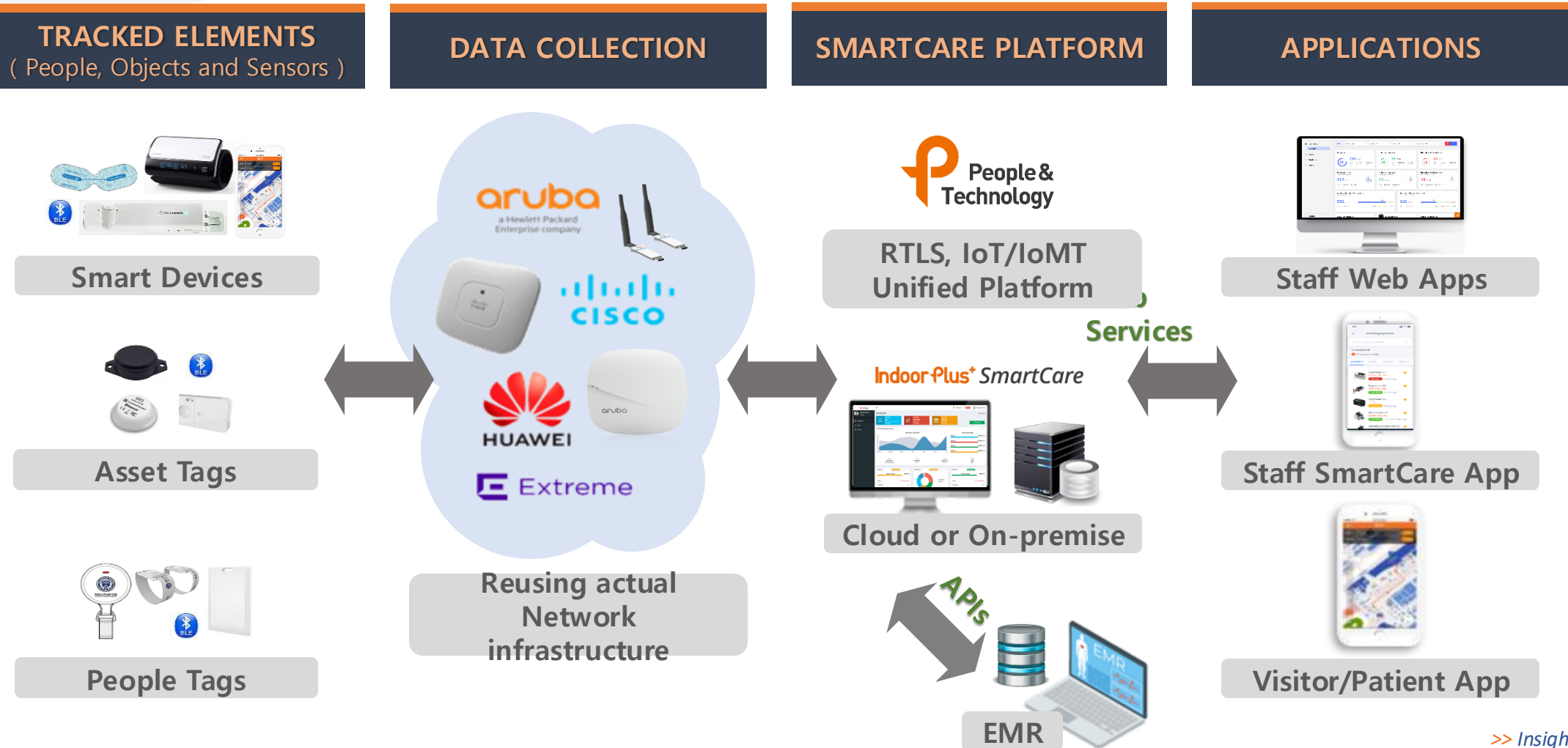
For nurses use in mobile situations



Web application

For nurses' stationary use and managers

Solution Overview



| Value Proposition > Base solution/ Tracking

+ Value for the nurses

- All assets are displayed on the ward map in real time for **easy location search**.
 - A sound or light signal can be triggered from the mobile application to **locate an asset in the room**. *(given the tag is compatible)*
-
- Convert search wasted time into Care time
 - Reduce patient treatment delays (equipment available)
 - Smooth shift handover for staff
 - Increase nurse's job satisfaction

+ Value for the managers / biomed

- All **assets location history** can be checked in a given Time frame.
 - A **heatmap** of assets(unit or category) locations can be displayed at a given time or period.
 - A notification is received (on station or mobile phone) when an asset **exits the authorized geofenced zone**.
-
- Identify assets prone to exit the zone
 - Identify biggest usage zones for category/asset to optimize assets flows
 - Prompt alert if an asset exits the restricted zone for quick response
 - Reduce asset loss and prevent theft

| Value Proposition > Base solution/ Inspection Management

+ Value for the nurses

- Asset count check can be **registered directly on the mobile app** and saved into the system at the end of each shift.
 - Asset inspection results can be **registered directly on the mobile app** and saved into the system at the end of the day.
 - Inspection/ asset count check schedules can be checked in the system. A **notification** can be sent as a **reminder** to the nurse (both on station and mobile app)
-
- **No more asset inspections skipped by mistake and limited risk of using a defective asset**
 - **Time and effort saved on preventive maintenance**
 - **Increase nurse's job satisfaction**
-
- Nurses can define an asset as 'defective' at any time on the mobile app to notify other nurses in the ward
 - Critical assets can require to register the inspection through a PDA (QR code scanning with the mobile app) to ensure that the inspection has been released.

+ Value for the managers

- The asset count check and **inspection schedules** for nurses can be defined and edited in the system.
 - The asset count check/ **inspection results history** can be consulted in form of reports for a given period/date.
-
- **Ensure that nurses are doing the necessary checks at given times**
 - **Have insights about the assets functioning / failure rate**

Asset Management standard solution

Menu

- Menus and features access are defined by the User type.
- User types commonly includes Nurses and Managers, but can be extended to more types with defined permissions upon request.

Nurse

- Assets Dashboard (list/status)
- Asset Tracking (map)
- Inspection Management
 - Count check
 - Asset inspection (preventive maintenance)

Manager

- Add ons...
- Heatmap
- Reports
 - Count check history
 - Asset inspection history
 - Asset location history
 - Login history

Features details – Assets Dashboard

Asset Management > Asset status

Asset status

1

필터

Ward

Category: all

Sharing state : all

2

11

Total as-
sets

11

Tags

1

Out of zo-
ne

0

Lost sig-
nal

0

Low batte-
ry

0

No respo-
nse

3

Asset list

자산의 이름 또는 아이디를 입력하세요.

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No.	Category	Asset Name	Asset ID	Ward	위험도	Rental state	floor	Location
1	Patient monitor	9w_환자모니터_02	9W_PATIENTMONIT...	9병동	-	Available	9층	9병동
2	Stretcher cart	9w_환자운반카_01	9W_STRECHERCAR...	9병동	-	Available	10층	rehab
3	Patient monitor	9w_환자모니터_01	9W_PATIENTMONIT...	9병동	-	Available	10층	-
4	Urine meter	9w_잔뇨측정기_01	9W_RESIDUALURIN...	9병동	-	Available	10층	-
5	Nebulizer	9w_네블라이저_01	9W_NEBULIZER_01	9병동	-	Available	10층	-
6	Defibrillator	9w_심장충격기_01	9W_DEFIBRILLATO...	9병동	-	Available	10층	-

- 1 Filters : ward/asset category/ availability
- 2 Status : total devices/ total tags/ out of zone / lost signal/ low battery / no response
- 3 Asset List :
 - Asset category
 - Asset name
 - Asset ID
 - Ward/department
 - Risk level
 - Availability
 - Floor
 - Location

• Search bar (per device ID)

Features details – Asset Details Screen

No.	카테고리	자산 이름	자산 ID	부서/병동	위험도	자산상태	층	위치
1	환자모니터	9w_환자모니터_02	9W_PATIENTMONIT...	9병동	-	대여가능	9층	9병동
2	스트레처카트	9w_환자운반카_01	9W_STRECHERCAR...	9병동	-	대여가능	10층	재활의학과
3	환자모니터	9w_환자모니터_01	9W_PATIENTMONIT...	9병동	-	대여가능	10층	-
4	잔뇨측정기	9w_잔뇨측정기_01	9W_CC/DUALURIN...	9병동	-	대여가능	10층	-
5	네블라이저	9w_네블라이저_01	9W_NEBULIZER_01	9병동	-	대여가능	9층	9병동

Asset status

뒤로

1

필터

Ward

Category: all

Sharing state: all

2

Category

환자모니터

Asset Name

9w_환자모니터_01

Asset ID

9W_PATIENTMO...

Model number

-

Serial Number

-

Registration date

-

Sharing status

대여가능

Owning dept

9병동

Using dept

-

Last inspection

-

Tag name

21664

Floor

10층

Location

-

Signal state

정상

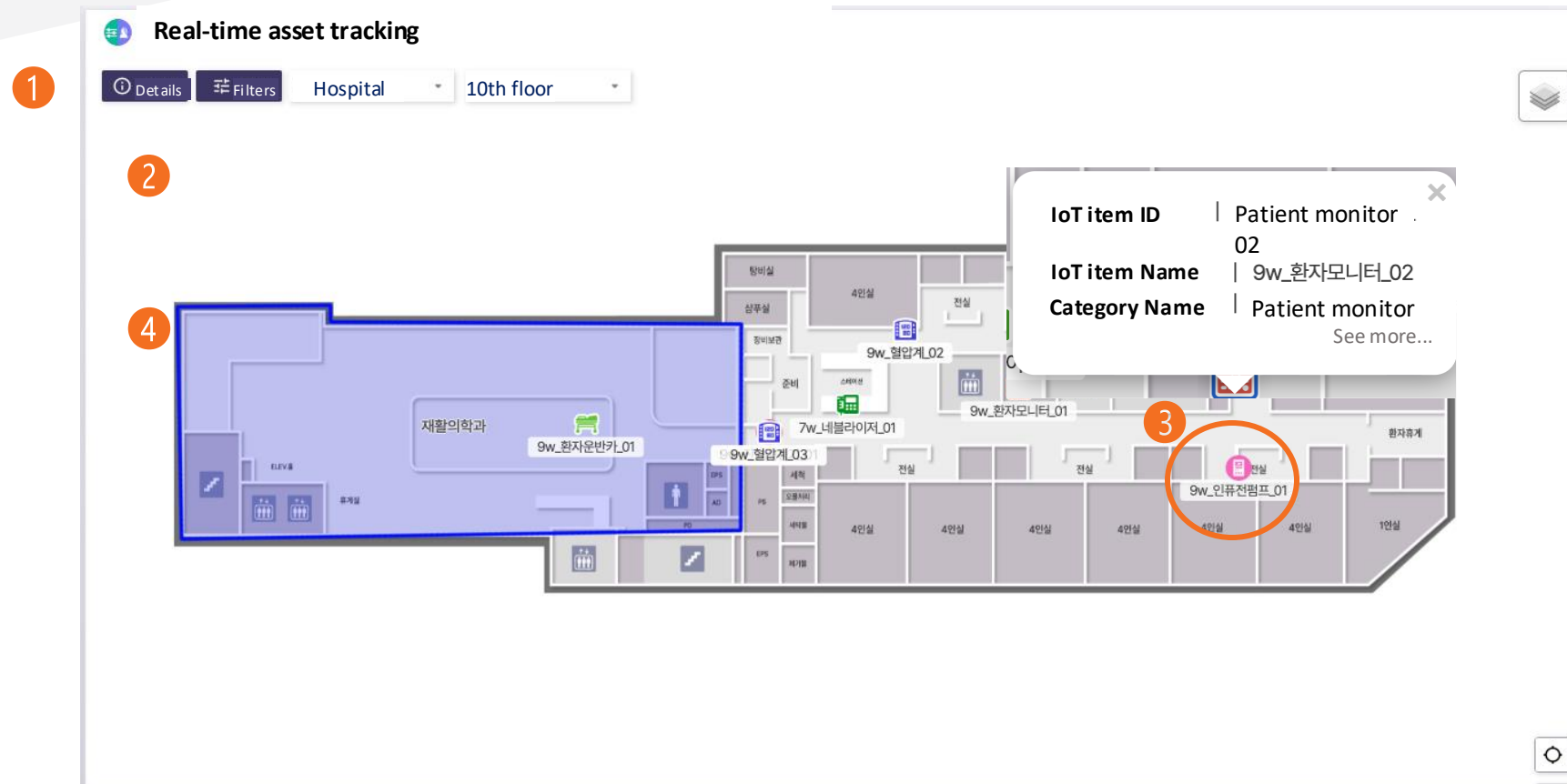
3

1 Filters : ward/asset category/ availability

- 2 Details :
- Asset category
 - Asset name
 - Asset ID
 - Model number
 - Serial Number
 - Registration date
 - Sharing status
 - Asset owner (department)
 - Asset user (department)
 - Last inspection day
 - Tag name
 - Floor
 - Location
 - Signal status

3 Map : The selected Asset is displayed on the map in its last known position in form of a moving icon.

Features details – Asset Tracking



1 Filters : Hospital / Floor / Asset category

2 Map showing :

- All room and room numbers
- Elevators/ staircases/ toilets
- Infrastructure

3 Asset location : The selected Asset is displayed on the map in its real time position in form of a clickable moving icon. Once clicked, basic asset display appear in a message box (5). It is possible to click on "on details" to enter the asset details pages (previous slide).

4 Geofenced zone (optional)

5 Asset details message box

Features details – Asset count verification

1

2

Asset count Verification

Filters Ward Category 2024-04-17 Today Day

Asset count Verification

No.	Category	Ward	Count	Inspector	User Account	Inspection Time	Shared asset count
1	혈압계	9병동	3 / 3	-	-	-	0
2	심장충격기	9병동	1 / 1	-	-	-	0
3	심전도	9병동	1 / 1	-	-	-	0
4	인퓨전펌프	9병동	1 / 1	-	-	-	0
5	네블라이저	9병동	1 / 1	-	-	-	0
6	환자모니터	9병동	2 / 2	-	-	-	0
7	잔뇨측정기	9병동	1 / 1	-	-	-	0
8	스트레처카트	9병동	1 / 1	-	-	-	0

1 Filters : Ward / Asset category / Inspection date / shift

2 Asset Count Verification :

- Asset category
- Ward/ department
- Daily count
- Inspector
- User Account
- Inspection time
- Shared Asset Count

Add-on with Asset sharing package

Every day or every shift, Nurses are required to check the availability of assets in the ward / department. (Check that nothing is missing)

This feature allows them to input the data directly in the system and comfortably record everything directly on their mobile phones rather than write it on a free paper that could be lost. This also allows to keep track of all inspections in a given time-frame.

Features details – Asset count report

1

Asset count report

필터

Ward

2024-04-10

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2024-04-17

Category

Asset count report Search

Download

2

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No.	Date	Memo	Category	1st shift	Inspector	User account	Time	2nd shift	Inspector
1	2024-04-17		혈압계	- / 3	-	-	-	- / 3	-
2	2024-04-17		심장충격기	- / 1	-	-	-	- / 1	-
3	2024-04-17		심전도	- / 1	-	-	-	- / 1	-
4	2024-04-17		인퓨전펌프	- / 1	-	-	-	- / 1	-
5	2024-04-17		네블라이저	- / 1	-	-	-	- / 1	-
6	2024-04-17		환자모니터	- / 2	-	-	-	- / 2	-
7	2024-04-17		잔뇨측정기	- / 1	-	-	-	- / 1	-

1

Filters : Ward / Asset category / Period

2

Asset Count Inspection List :

- Date
- Memo
- Asset Category
- 1st shift count
- Inspector
- User account
- Inspection time
- 2nd shift count
- ...

Can download the report in form of excel file

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1

2

1 Filters : Ward / Asset category / Period / Criticality /

2 Asset Inspection List :

- Inspection day
- Inspection time
- Department/ward
- Criticality
- Category
- Asset name
- Asset ID

- Can download the report in form of excel file



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