

# Cadastral Business Expansion Using Indoor Spatial Information

YANG Hyeondong  
LX corporation

## INDEX

Life Moved Into The Indoor Space  
From Outdoor Space

Indoor Spatial Information Survey  
Using Indoor Reference Point

One Step Evolved Life  
Through Indoor Spatial  
Information Survey

# 1 Life Moved Into The Indoor Space From Outdoor Space

## 1 Life Moved Into The Indoor Space From Outdoor Space

### Cadastre is...

=Actions to take advantage of the space that we live in and use

### The new concept of cadaster is necessary

Our land is not limited to more **outdoor** space

**Indoor space** is the part that can not be removed any more  
for cadastral survey workers



## 1 Life Moved Into The Indoor Space From Outdoor Space

This was a time when the **concept of cadastre** change

Cadastre should be able to span to **the indoor space**  
but is not limited to the outdoor space



## 2 Indoor Spatial Information Survey Using Indoor Reference Point

## 2 Indoor Spatial Information Survey Using Indoor Reference Point

Method was performed to obtain the data  
for the indoor space in the meantime?

-3D LiDAR

Available precise and high-quality data acquisition  
-but **expensive, time-consuming**

Existing methods are not suitable  
for building **indoor spatial information database**



## 2 Indoor Spatial Information Survey Using Indoor Reference Point

Indoor space is being addressed without a **formal numerical data**

Indoor space also must be changed in order to meet the **needs of users**



## 2 Indoor Spatial Information Survey Using Indoor Reference Point

### Indoor reference point

-Reference points that installed indoor space

A new approach is needed because **VRS can not be used indoor**



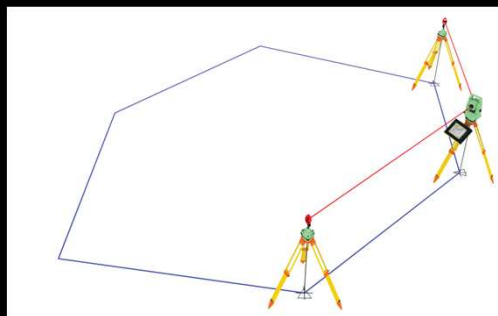
## 2 Indoor Spatial Information Survey Using Indoor Reference Point

### Backward intersection

-Set a plane-table at the unknown point and calculate the coordinates of the point

### VRS + Backward intersection

-Install a reference point in the indoor space

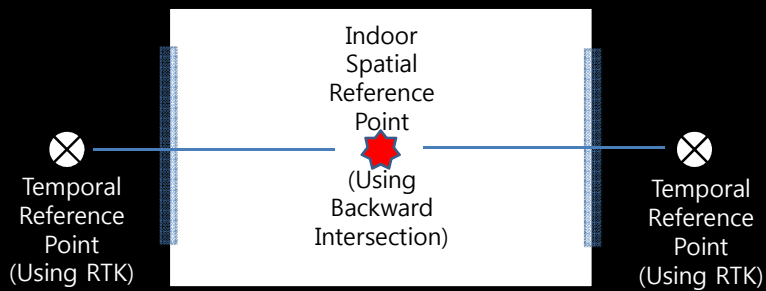


## 2 Indoor Spatial Information Survey Using Indoor Reference Point

Install **temporary reference point** for outdoor **use with VRS**

Calculate indoor reference point coordinates with temporary reference point coordinates from **backward intersection**

The error of the reference point can be checked through the 3 points more indoor reference points



## 2 Indoor Spatial Information Survey Using Indoor Reference Point

Can obtain the **coordinates for the indoor space** by using the indoor reference point

The obtained data is available in a variety of indoor spatial information service

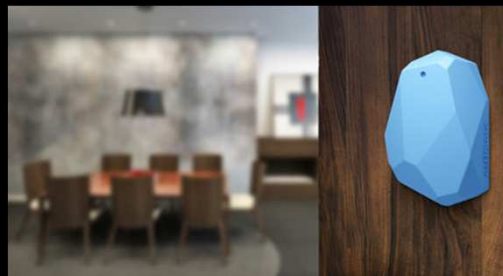
(X9, Y9)	(X10, Y10)	(X13, Y13)	(X14, Y14)
(X12, Y12)	(X11, Y11)	(X16, Y16)	(X15, Y15)
(X1, Y1)	(X2, Y2)	(X5, Y5)	(X6, Y6)
(X4, Y4)	(X3, Y3)	(X8, Y8)	(X7, Y7)

### 3 One Step Evolved Life Through Indoor Spatial Information Survey

### 3 One Step Evolved Life Through Indoor Spatial Information Survey

This benefit is provided through the **Beacon**

Provide a variety of services to a user using position data



### 3 One Step Evolved Life Through Indoor Spatial Information Survey

Provides services, such as advertising, information, guidance

**Disconnection** of the outdoor space and indoor space can be a **barrier**



### 3 One Step Evolved Life Through Indoor Spatial Information Survey

Beacon + New services provided through the **indoor reference point**

Apply the indoor reference point coordinates in **Beacon**

Can prevent the **interruption** of outdoor space and indoor space



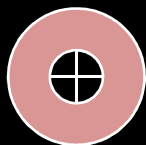


### 3 One Step Evolved Life Through Indoor Spatial Information Survey + Conclusion

Integrated indoor and outdoor spatial information  
can be provided to the user advantageously

Indoor spatial information will be a **new market** for cadastral technician

A deep study of the indoor reference point and system improvement  
must be accompanied by further



PLUS



## Q&A

### Contact

E-mail : [coldsoul84@lx.or.kr](mailto:coldsoul84@lx.or.kr)  
Cell : +821052626638



Thank You