Application Note AN03
Zones

Zone is a very powerful feature of the positioning system. It is virtual area defined by user. Zones can be easily created, managed and their forte lies in the resulting statistics that can be extracted based on Zone usage. Zones are created within the Sensmap software and user is then notified each time a Tag enters or leaves the defined Zone. This is done either via visualization or API. Finally, there are various types of Zones and the number of them is unlimited.

1 Zones Use Cases

Zones can be used in several use cases. For example:

- In Sports, you want to know how long a player has stayed under the basketball hoop. If he has stayed there for longer period than three seconds, this is considered a foul in the game of basketball.

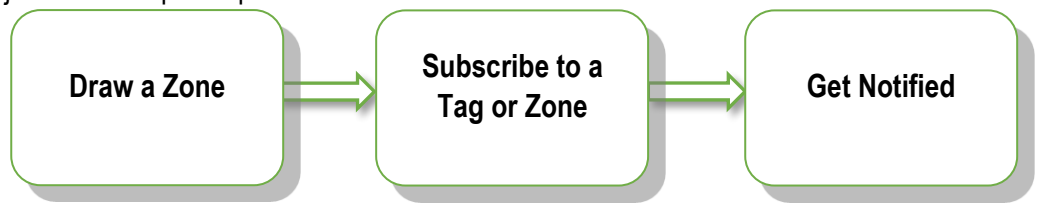
- In Retail, you want to know if a shopping trolley has stayed in the selected area for long, which would mean that the customer is interested in the selected product. This can be used in marketing.

- In Logistics, you want to monitor if your assets are moving in areas where they are supposed to move and that workers move in their designated places. Knowing the locations of assets and workers can also prevent injuries.

Other applications may include safety and security, where you want to ensure that your workers or employees don't enter life-threatening or otherwise hazardous places by using Zones. There are also many other use cases, where Zones can be utilized.

2 Zones Set Up

There are just three simple steps to create Zones:



- **Draw a Zone** – Zones can be drawn within Sensmap Visualization tool or defined programmatically with the REST API.
- **Subscribe to a Tag or Zone** – Websockets provide a real-time interface for Zone notifications. You need to subscribe to a particular Tag or Zone.
- **Get Notified** – After subscription, you will receive the position information from the Tag including the Zone information as well or from a Zone itself.

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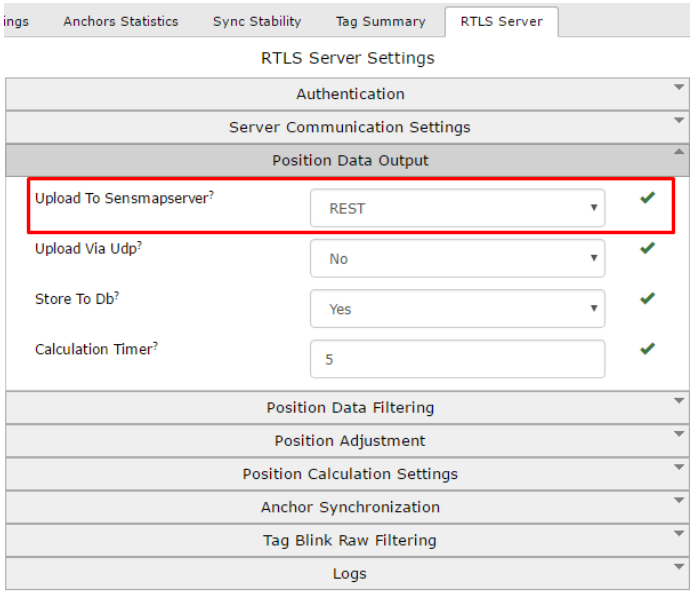
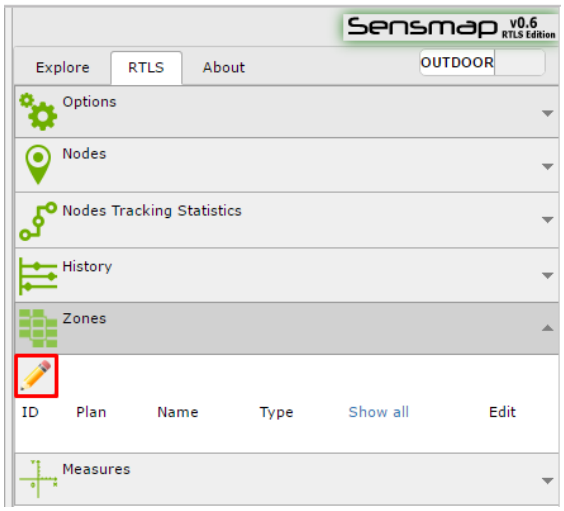
In order to use Zones, upload to Sensmapserver via REST must be enabled. To enable this feature, go to RTLS Manager -> RTLS Server -> Position Data Output -> Upload to Sensmapserver and select REST:



3 Draw Zones in Sensmap

In our Zones video, we focused on a sports application. We will follow the same procedure here. Let's say we want to create a Zone in a close proximity to the basketball hoop:

1) Go to RTLS Studio - > Sensmap -> RTLS tab -> Zones and click on the pencil button:



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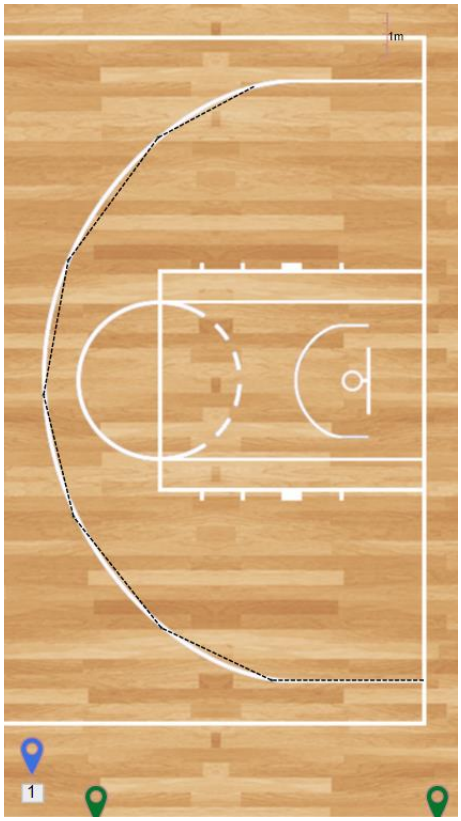
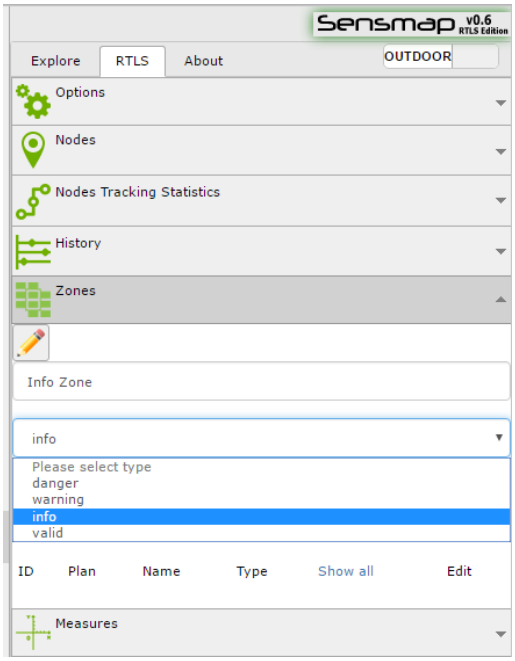
2) Draw the zone. It can have an arbitrary polygon shape:



3) Name the Zone as you wish and select the type:



And click on “Save”

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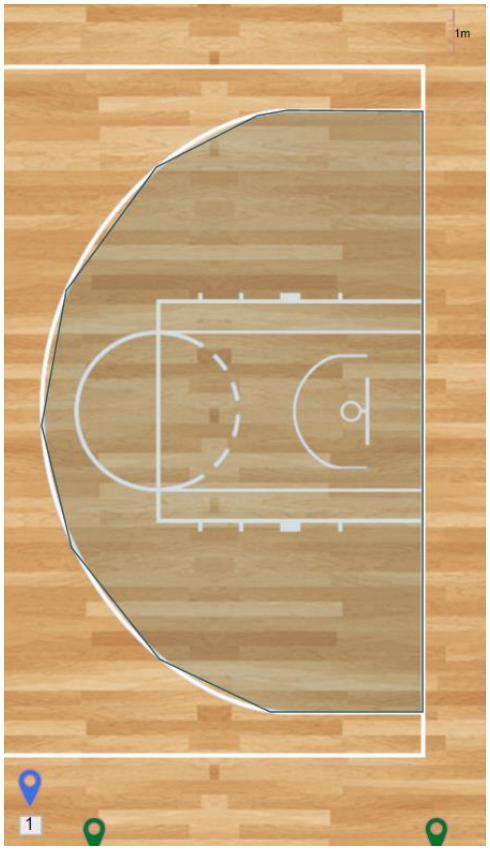
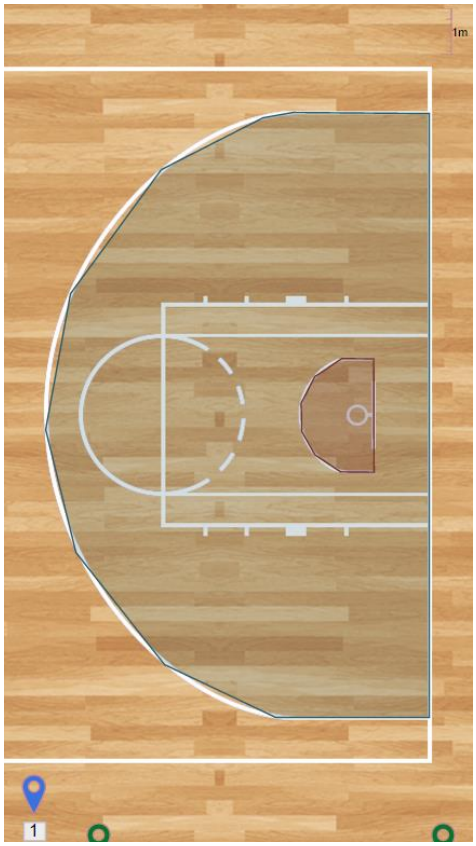
4) Your Zone is now ready to use:



As stated before, you can create as many zones as you like. Some of them may even lie on top of each other. Let's say you want to create another zone, right under the basketball hoop:



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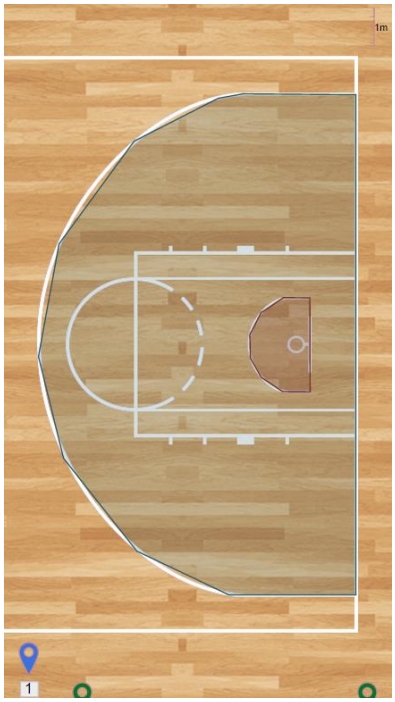
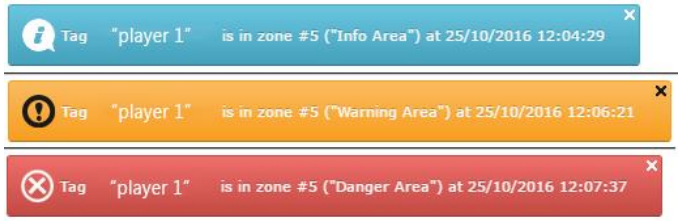
5) Your newly created Zones will now automatically inform you, when a Tag enters them. The color of the notification will also match the Zone type:





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4 Zones Notification in Websockets API

User can manually subscribe to a Tag or a Zone and receive information about Zone entrance. More about Websockets can be found in the API Documentation. The user can choose if he wants to subscribe to a specific Tag or to a specific Zone to receive data about Zone entrance.

Data received from Websockets have information about Zone(s) entering, for example a Tag with an ID of 18 is entering a Danger zone (with Zone ID 100 and name my_danger_zone), which is located in a Building with an ID of 7 on a Plan called my_plan at the given time. Note that the Tag can enter multiple zones at once.


```
{
    "body": {
        "id": "18",
        "zones": [{
            "id": "100",
            "type": "danger",
            "name": "my_danger_zone",
            "feed_id": "7",
            "plan": "my_plan",
            "at": "2016-10-18 15:02:07.610"
        }],
        "datastreams": [{
            "id": "posX",
            "current_value": " 6.48",
            "at": "2016-10-18 15:02:07.610"
        }, {
            "id": "posY",
            "current_value": " 2.32",
            "at": "2016-10-18 15:02:07.610"
        }, {
            "id": "clr",
            "current_value": " 0.00",
            "at": "2016-10-18 15:02:07.610"
        }]
    },
    "resource": "\/feeds\/18"
}
```


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5 Zones management in REST API

There is a REST API interface for Zone management. It contains methods for creating, updating, deleting or to get information about Zones. You can learn more about API | REST in section Everything about Zones.

Zones : Everything about Zones

Show/Hide | List Operations | Expand Operations

POST	/buildings/{id}/zones	Create Zone
GET	/buildings/{id}/zones/{plan_name}	Get Zones
PUT	/buildings/{id}/zones/{plan_name}	Update Zones
DELETE	/zones/{zone_id}	Delete Zone
PUT	/zones/{zone_id}	Update Zone
GET	/zones/{zone_id}/history	Get Zone History

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