BVITS Environmental Tagging System Instructions

The BVI Environmental Tagging System (BVIETS)

The BVIETS system employs the BVITS App in "Directions Mode" to read from a set of pre-established machine-readable tags that have been pre-positioned in an area like a hotel or conference center. The purpose of the system is to foster independent mobility for BVI users while within the environmentally tagged space.

NOTE

The BVITS system can acquire an 8" tag from our catalog from a distance of up to 40 ft. This can take a significant amount of time and it is recommended that environments are tagged with a maximum target acquisition distance of 20-30 ft in mind.

BVIETS Tags

The current BVIETS tag catalog references basic instructions that are to be used independently or sequential to one another to lead a person with low or no vision to key places of interest such as:

Table 1 Table Showing General BVIETS Destinations

Registration Desk	Elevator
Information Desk	Escalator (up and Down)
Ladie's Room	Dead End
Men's Room	Event Rooms
Dog Relief Area	Lobby
Exit	(We are open to adding additional tags in the future.)

For each of the potential destinations listed in the table above, the following directional tags are available:

Table 2 Table Showing General BVIETS Mobility Instructions

Forward	Turn right
Forward, on right	Turn left

Forward, on left	Up escalator
Forward, turn right	Down escalator
Forward, turn left	Too far, Turn around

All of the tags are available in a single .pdf file posted in the BVIETS section of the BVITS product website at https://dxdtengineering.com/BVI -Target-System/

Planning BVIETS Tag Placement

A basic but accurate graphical layout of the environment to be tagged is necessary. Hand drawn is sufficient. Key architectural elements that we hope to guide attendees to should be marked on the layout. Make note of areas that already receive increased attention like kiosks, loudspeakers and doorways. Such areas can be effective locations to place tags near since they are easily located themselves.

Follow these directions:

1. Choose one destination from Table 1.
2. Choose a starting point for placement and orientation of the first tag. This should be an area that would be central or commonly visited by all visitors. It could be at the hotel or conference room entrance or registration or information desk. Using tags from the catalog defined by the destination (Table 1) and mobility instruction (Table 2) plan a path of tags that lead to the destination from the chosen starting point. Mark the tag ID, location and necessary orientation of the tags on the layout diagram. The BVITS system should be able to acquire an 8” environment tag (such as those in our catalog) from at least 40 ft. dxdt recommends planning for a maximum target acquisition distance of no more than 30 ft in order to save people time in acquiring targets.
3. Repeat step 2 for any additional starting points to lead to the chosen destination. Mark the tag ID, location and necessary orientation of the tags on the layout diagram.
4. Repeat steps 1-3 for any additional destinations from Table 1. Note that the BVITS app can read multiple tags within its view at one time.

BVIETS tags are typically printed out on copy paper and affixed to walls, free-standing signs and easels and to doors. Generally, they should be posted high up or in locations where they will be less likely to be blocked by passersby. Some BVIETS users may be inclined to stop while they collect their tags and listen to their associated messages. If possible, try to plan so they can get out of the way of traffic while they do this. If the BVIETS tag is place on a free-standing sign or easel, be aware that if someone relocates or re-orients the sign it will be giving erroneous directions at that point. Hotel or conference staff should all be made aware that the BVIETS system is in use and that signs should remain as they were placed.

Be aware of the difference in orientation between a sign taped to a hallway wall and one facing the direction of traffic. Regardless how a BVIETS tag is located or placed, it's directions should be assured to be correct when a person is facing it directly.

Configuring the BVITS app for Directions Mode:

The app includes the following features that can be useful:

- Directions mode involves acquiring targets at varying distances and in unknown directions. For this reason, we recommend the following BVITS App settings:
  - "Auto Zoom Sweep": on
  - "Minimum Zoom": mid-position (2.5X). This slider controls a trade-off between acquisition of targets within a wide field of view and the time to acquire a target. The further to the left that the slider is positioned, the wider the field of view for capturing tags will be- but the more time it will take to zoom sufficiently to acquire the distant tags and the BVITS user will have to scan the area in smaller angular increments. Setting the minimum zoom slider further to the right will cause the BVITS app to capture tags faster and increase the incremental angle of scan, but will add the risk of missing distant tags.

Using the BVIETS System to Find Destinations

BVIETS tags are designed to give accurate directions when they are read from the perspective of a person facing it. In other words, if a tag is posted on the wall of a hallway, it should read correctly from an observer facing the wall. It will not read correctly from the perspective of someone facing the direction of the hallway.

When in a locality that is using the BVIETS system, open your BVITS app and set it to Directions Mode- configured as described in the previous section. As you move about the environment, scan the environment slowly with your phone even if you are not actively trying to find a destination. Do this so you will acclimate yourself to the locations of the BVIETS tags. Remember to scan slowly and at sign levels and higher. The more distant the tags are that you would like to capture, the more time the BVITS system will require to zoom and re-zoom to scan the wider area and to capture distant tags.

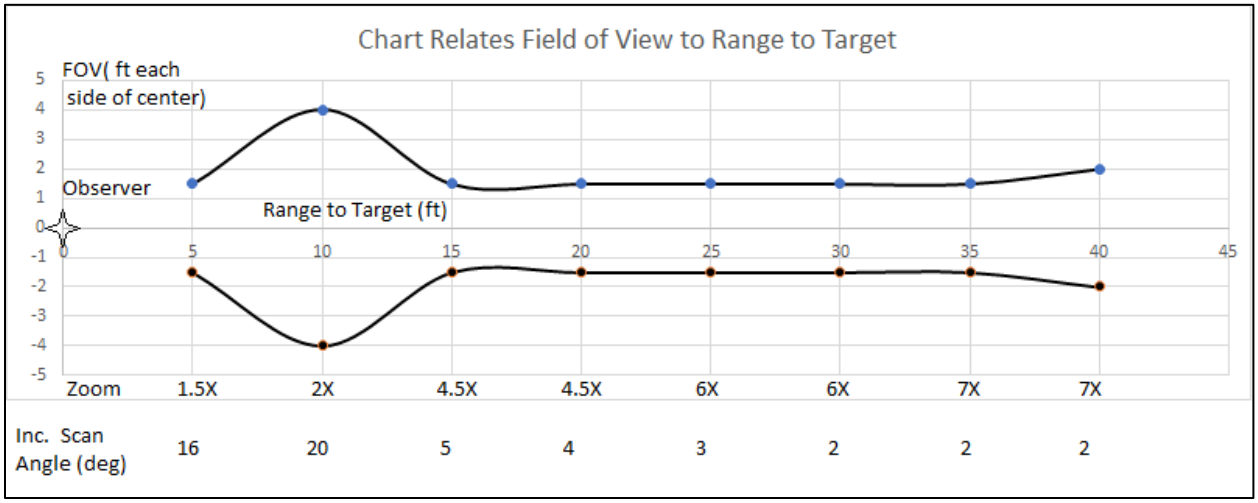
Notes on Scanning with the BVITS App

The BVITS App can acquire an 8" target, like those in our catalog, from distances of a few feet up to 40 feet. Targets can potentially be printed larger or smaller, which would impact the capture distance.

Two factors impact the BVITS systems ability to capture targets at a distance and quickly. These are:

- Minimum zoom. Regardless of the minimum zoom setting the BVITS system will increase the zoom from that point until a target is acquired. A low minimum zoom setting will not increase the likelihood of finding a target because the FOV of the app is reduced as zoom is increased. Decreasing the minimum zoom will tend to increase the time it takes to zoom to a level where a target can be found.. Minimum zoom levels too high can limit the Field of view (FOV) of the app to make acquiring grouped targets harder to acquire. We recommend a minimum zoom setting of 2x- 3x.
- Side to side pan rate or the rate at which the angle of the phone is changed by the user to scan an area.
- ea. The BVITS system takes a maximum of 10 seconds to complete a zoom cycle. Should a cycle be completed and no target found, the user should aim adjust the aiming position of the phone incrementally by some small angle we refer to as the "incremental scan angle".

The plot below relates the factors described above. In short, if targets can be expected to be encountered at close in ranges of about 10 ft or less an incremental scan angle of about 20 degrees is warranted, and a minimum zoom setting of 2x should be optimal. Such settings will allow an area to be scanned most efficiently and with low risk of missing a target.



If targets are expected as distant as 20 ft, the minimum scan angle should be 4-5 degrees and the minimum zoom can be increased to 3x to reduce the scan time.

If targets can be expected at ranges 25 ft or greater use a minimum scan angle increment of 2 degrees and increase the minimum zoom beyond 3x if you want to try to save scan time.