ITS –Quick Start Guide

The purpose of this documentation is to give you the overview of the Interactive Tracking System called ITS and to walk you through it.

1. Getting Started

ITS software package contains 4 main parts :

- **Calibrator**
- **ITS Configuration Manager**
- **iTrack**
- **Track Analysis**

2. Calibrator

The Calibrator tool can be started from your desktop or from the **Programs – Bio-Signal Group Corp**. program folder.

The Calibrator tool is used to analyse the visual environment, set the parameters that will define the object(s) and region of interest within which tracking will occur. Because tracking in ITS works on the optical basis – subject is distinguished from the background by the contrast difference, its size etc., we need to set those parameters precisely, so the system may distinguish our subject in a stable manner. Because the Calibrator is an independent tool, it only allows you to find the tracking properties, but not directly set them. For this purpose we have the ITS Configuration Manager. After you find the properties, you need to write them down, because you will need them later when you create the experiment configuration.

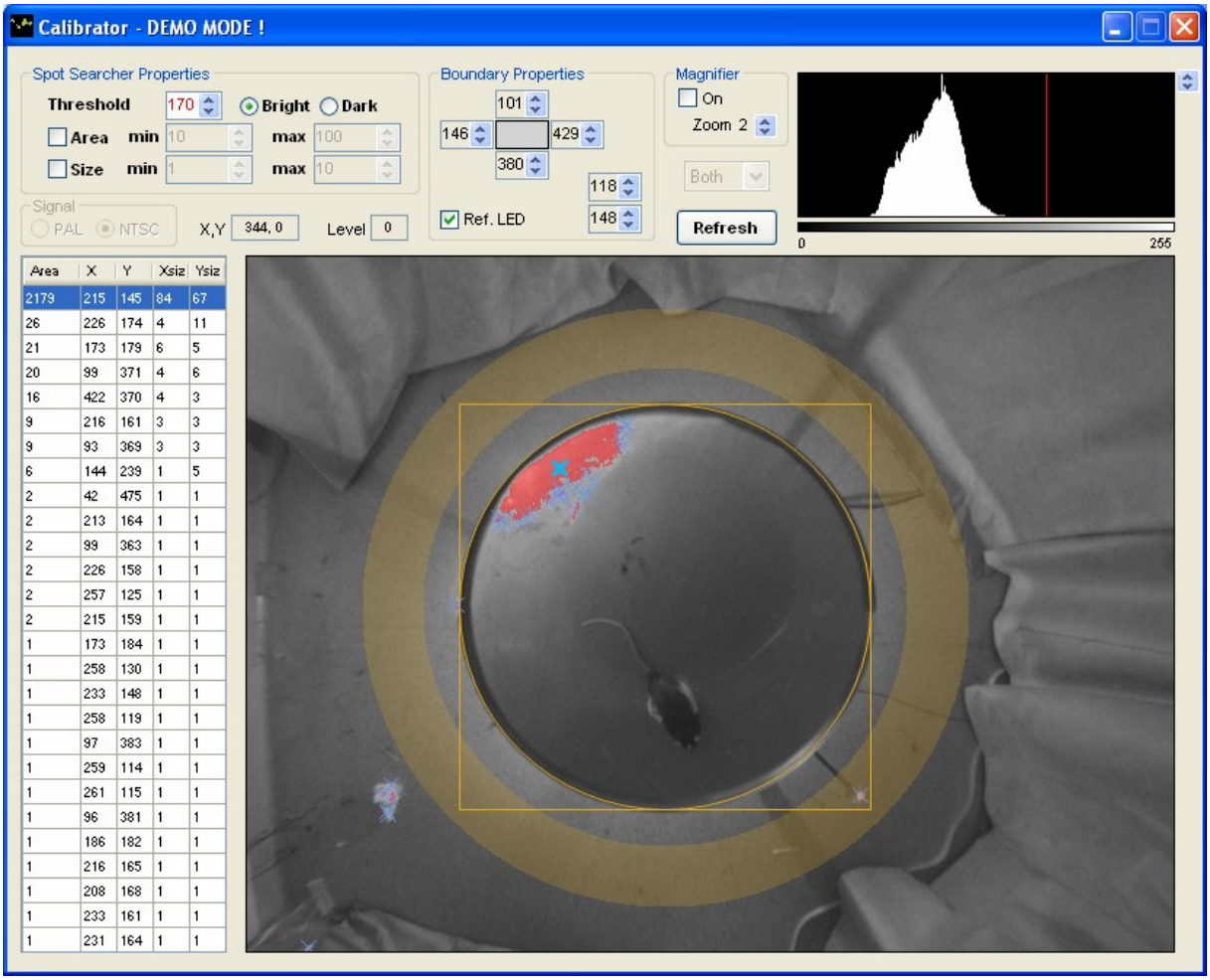

Figure 2.1 Calibrator

The goal of using the Calibrator is to find the accurate values of a single spot or multiple spots.

The principle of this component is the following – by specifying limiting factors, the system is searching for the spots on the single frame whenever you press the **Refresh** button. It marks the spots which fit the searching criteria by a cross on the camera image and lists their properties in the table.

For more details please refer to section 2.1 in the Calibrator manual, which can be found in your Program Files folder under Bio-Signal Group Corp / Doc.

Second reason for using the Calibrator is the Boundary calibration.

In fact setting this boundary defines the coordinate system within which iTrack operates. The region of interest is set in the iTrack Configurator and it is defined in this coordinate system. In this way iTrack can correct for a user's crooked and/or non-centered placement of the camera. If the viewing plane is not parallel to the space in which the object will be tracked then for example, 10 pixels in the x dimension may correspond to a longer real world distance than 10 pixels in the y dimension. If the arena moves relative to the camera (by accident) then tracked coordinates at a particular place on the arena will not correspond from one session to the next. iTrack uses the Boundaries of a user-defined circle (or square) region of interest to correct for non-ideal or inconsistent camera placement.

For more details please refer to section 2.3 in the Calibrator manual.

3. Configuration Manager

The Configuration Manager can be started from your desktop or from the **Programs – Bio-Signal Group Corp**. program folder.

The Configuration Manager controls the set of parameters that configure iTrack to do a particular experiment. There is a specific Configuration Manager for each experimental paradigm (e.g. for the Place Avoidance module, there is a Config-Avoidance).

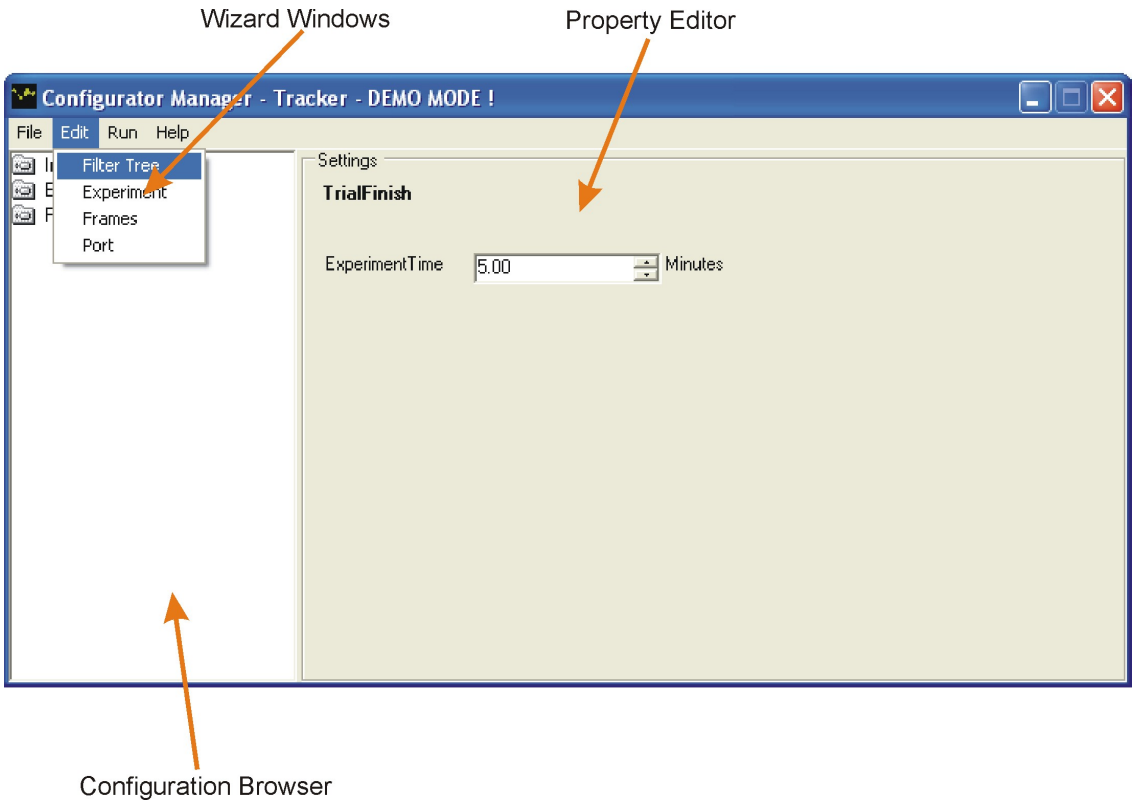

Figure 3.1 Configuration Manager

There are two ways how to create and modify the experiment configuration. The first one uses the left application panel - **Configuration Browser** for browsing the configuration details and lets the user edit its properties in the right panel – the **Property Editor**. The second way uses simple **Wizard Windows** to create or edit the configuration. The windows group most of the configuration properties into a few thematically-related groups, which are available through the **Edit** menu in the main application screen. The first way is more advanced and more complicated to use, however, it allows you to set some of the properties more freely, which is not possible through the wizard windows. The second way is much easier and user-friendly for use; it pays more attention to the fail-safe properties in the configuration.

For more details please refer to section 3. in the Configuration Manager manual.

4. iTrack

iTrack is a real-time kernel of the ITS software. Based on the values you get from the **Calibrator** you create the experiment configuration with the **ITS Configuration Manager**. Configuration Manager than launches iTrack to run the experiment.

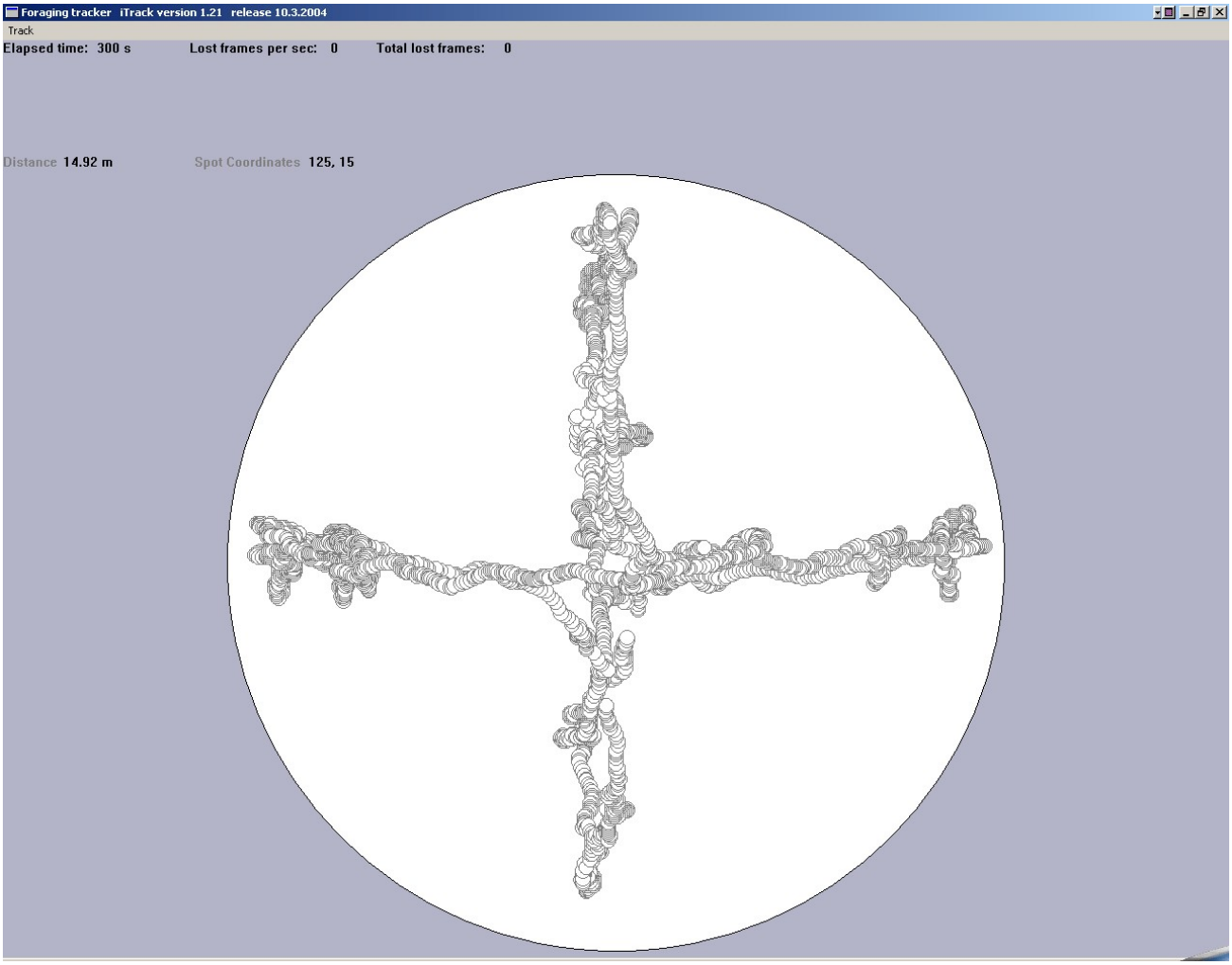

Figure 4.1 iTrack

For more details please refer to section 2. in the Configuration Manager manual.

5. Track Analysis

The Track Analysis tool can be started from your desktop or from the **Programs – Bio-Signal Group Corp**. program folder.

Track Analysis analyses the track in a data file. The parameters it calculates depends on which experimental **paradigm** is defined in the **.dat** file header, and which options are enabled. TrackAnalysis was designed for **batch processing** of .dat files, which contain a time series of the coordinates of the tracked object, events, and states of various devices.

Track Analysis requires the user to design their **analysis** by specifying which .dat files will be analysed together.

Three types of output files are generated by Track Analysis. They are suffixed by **.ps**, **.tbl** and **.sum**. Each file contains essential the same information but the data are organized in different formats.

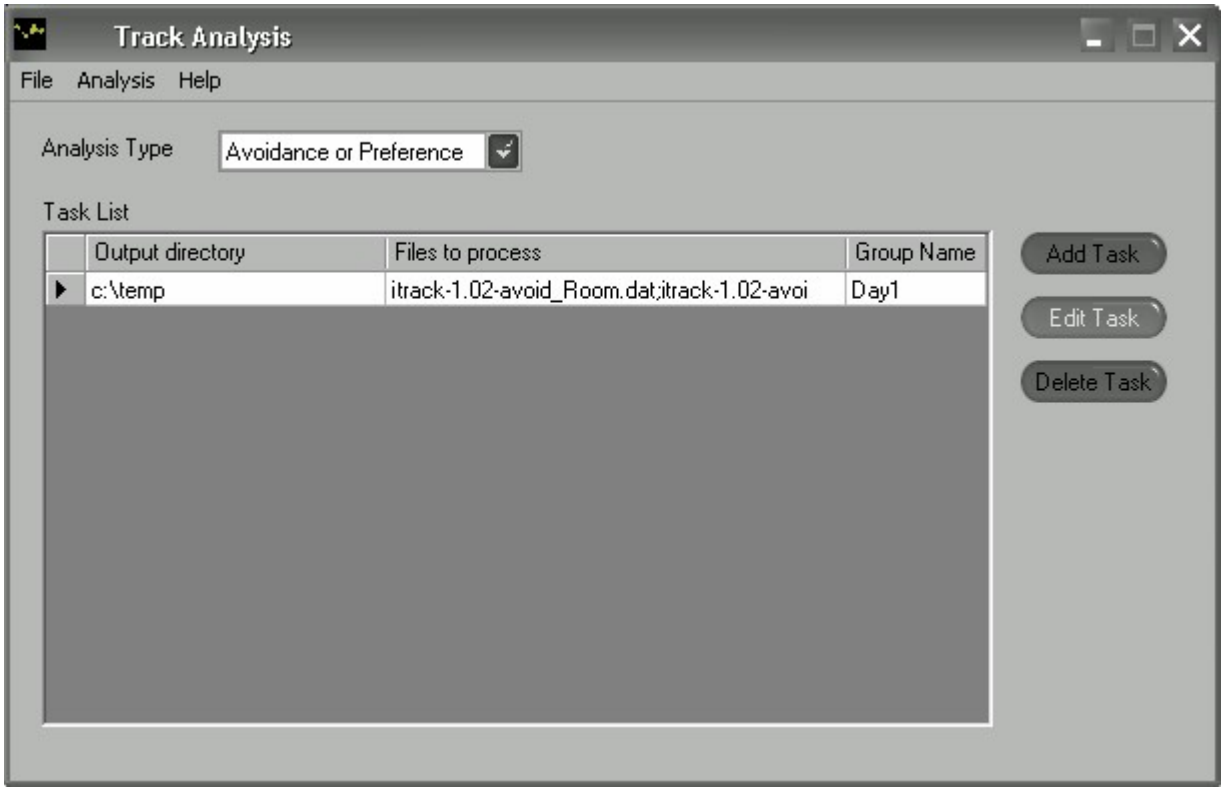

Figure 5.1 Track Analysis

For more details please refer to the Track Analysis manual.