How to use the Particle Location System (PLS)

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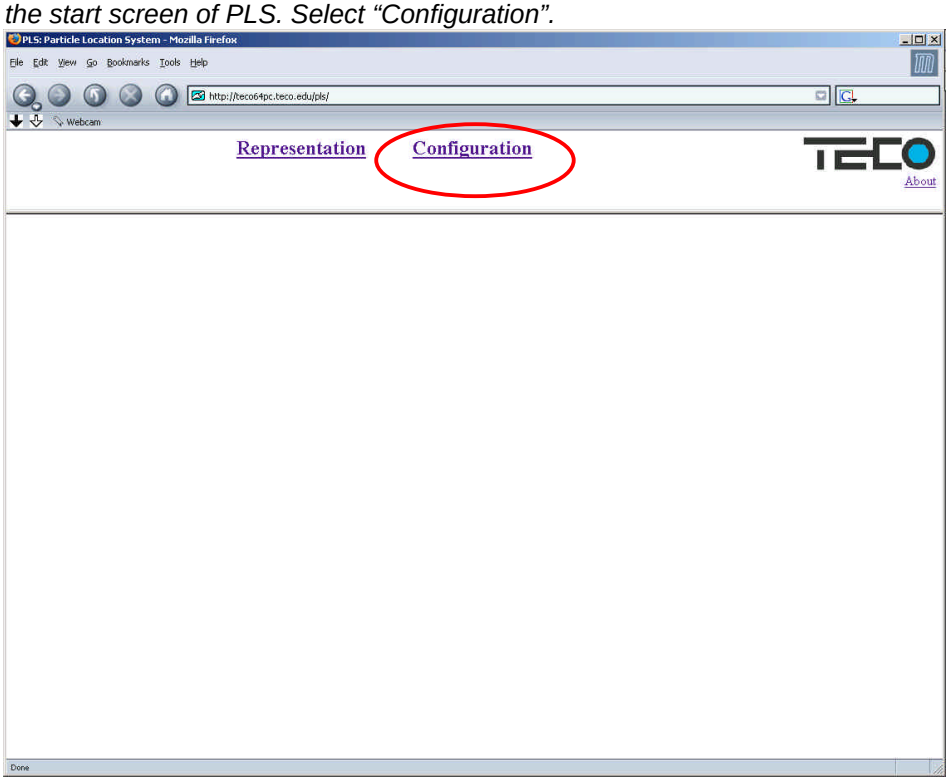
Oct. 16th, 2004

Version 1.0

1. Configuration

In order to use PLS, one has to first create the location tree and afterwards draw the floorplan.

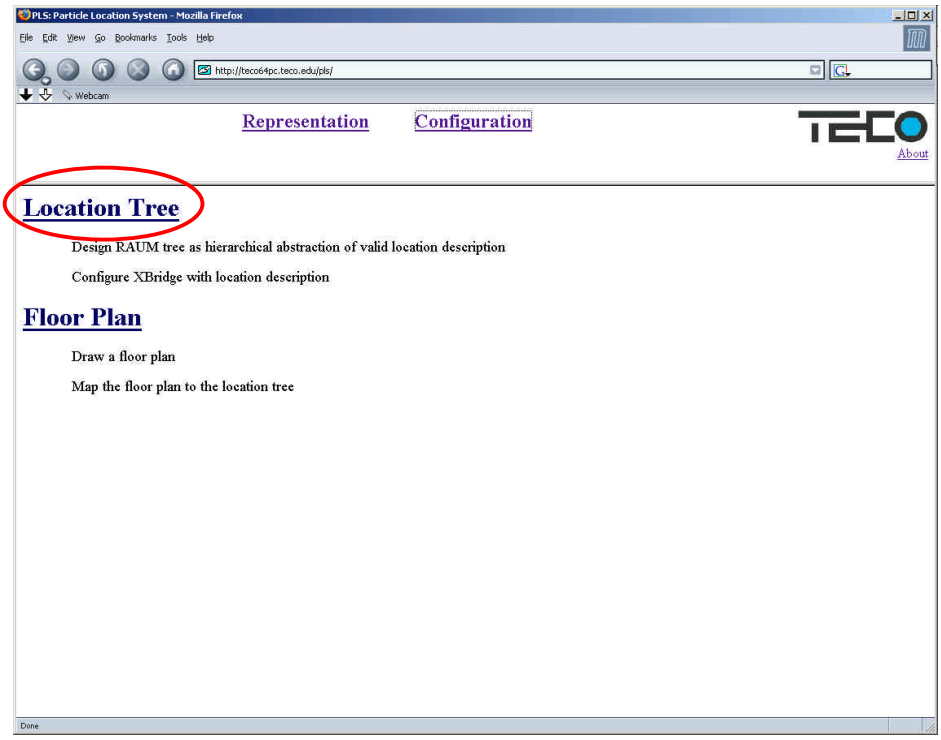
This is the start screen of PLS. Select "Configuration".



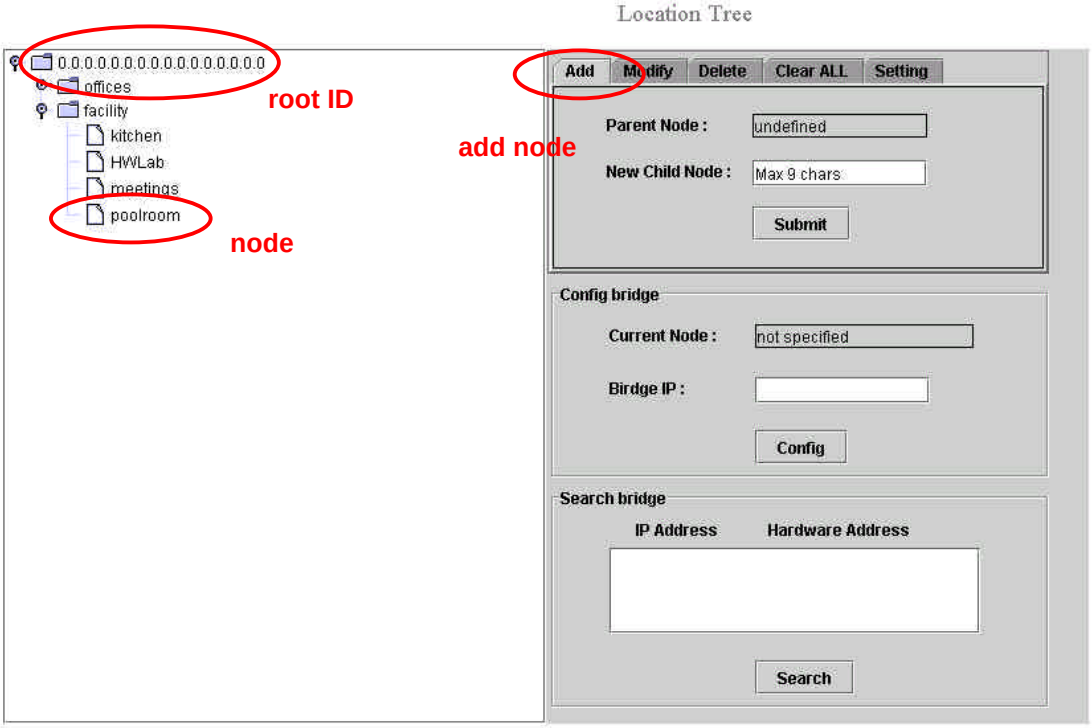
1.1 Location Tree

PLS relies on the RAUM model[1] represented by the location tree. The path to a node through the tree describes a location and is finally stored on a Xbridge representing this location. Each packet forwarded from the Particles into the UDP network is signed by this location description and can then mapped to physical location of the bridge.

Configure the "Location Tree"

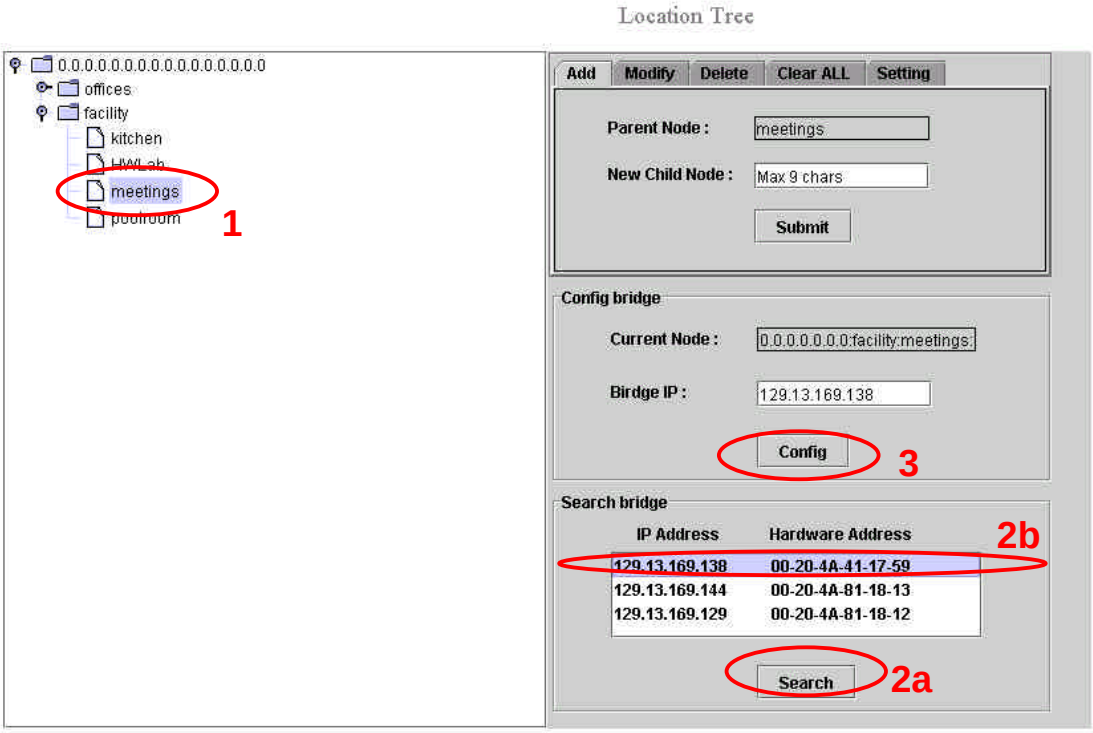


Configure the root ID (16byte)
Describe your environment, e.g. building, by adding nodes to the location tree.



Configure XBridges with location descriptions

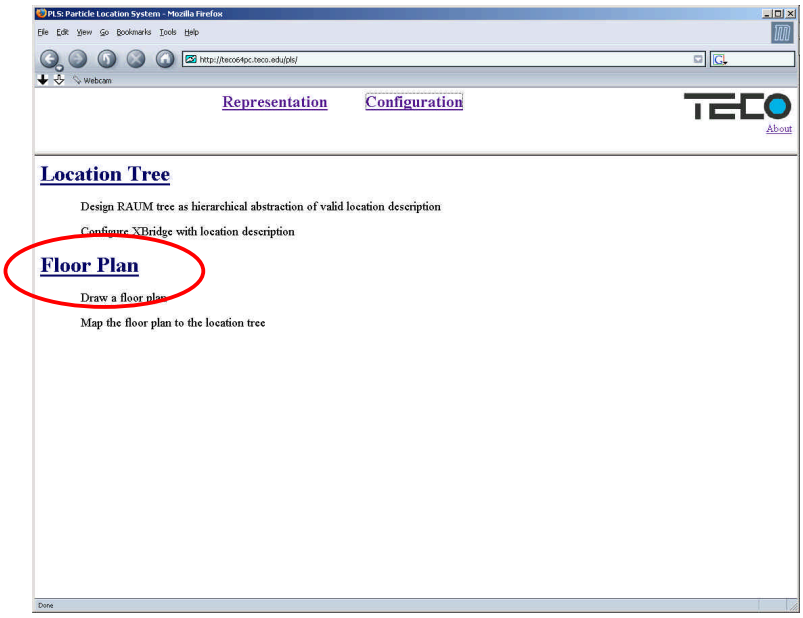
1. *select the node*
2. *search (2a) and select (2b) a XBridge*
3. *Config XBridge*



1.2 Floorplan

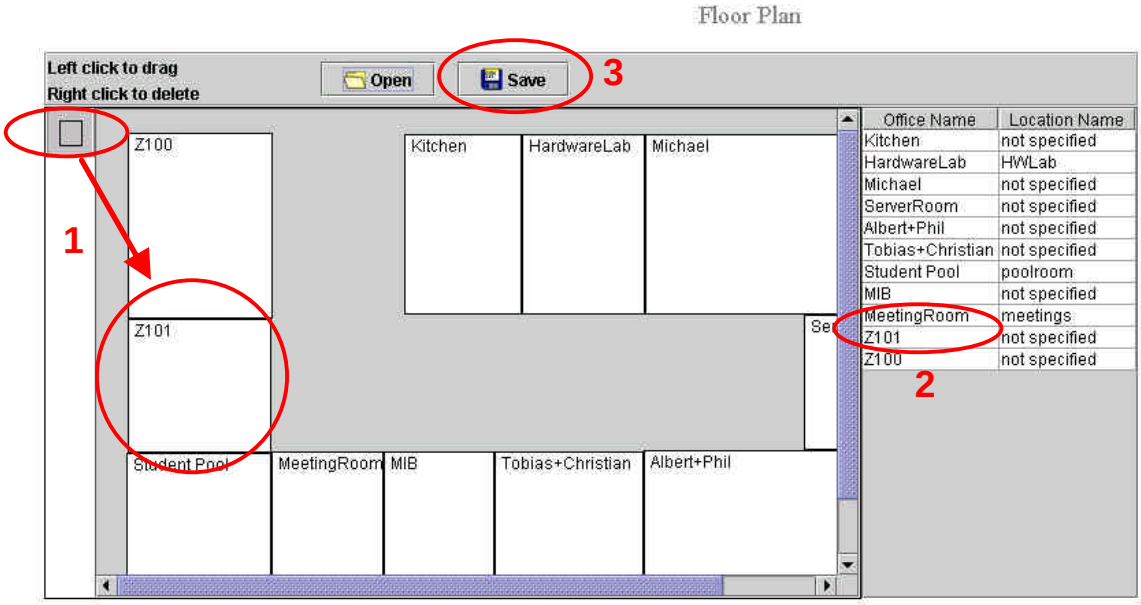
This mapping of packets from the Xbridges on physical locations is done via the Floorplan. Nodes from the location tree are mapped on physical locations represented by polygons, currently boxes.

Configure the FloorPlan



Draw the FloorPlan

1. *Drag a box on the canvas by pressing the left mouse button*
2. *Alter name of the box*
3. *Store the plan by pressing "Save"*

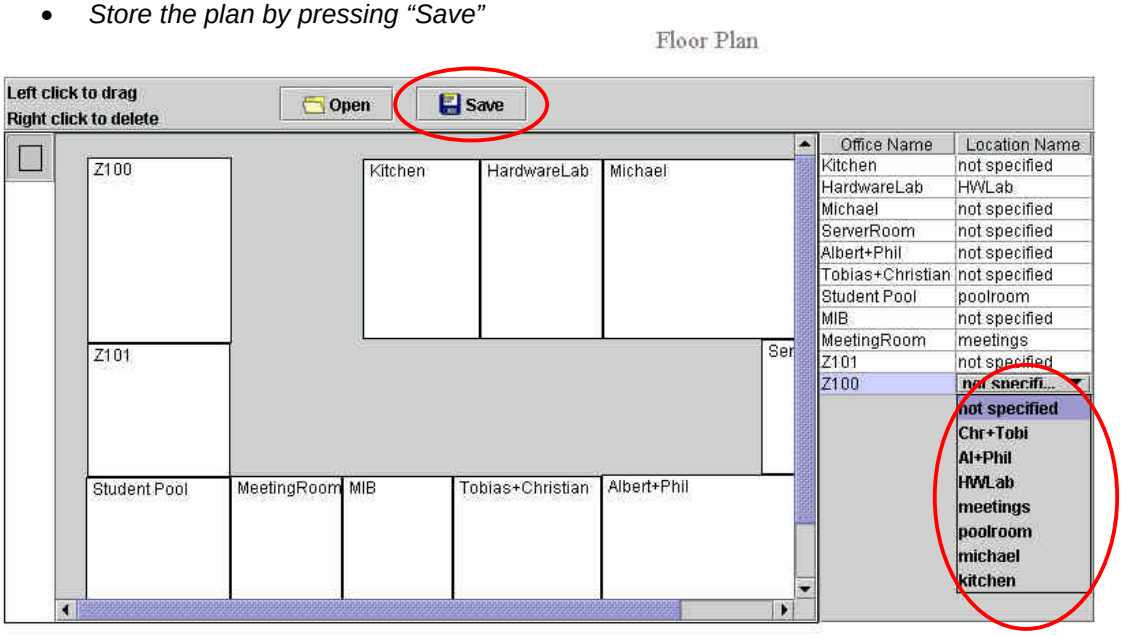


Notes:

- *Boxes can be changed in their dimensions*
- *Delete a box: move cursor over the box and press the right mouse button*

Map Nodes from the location tree onto the physical location from the floorplan

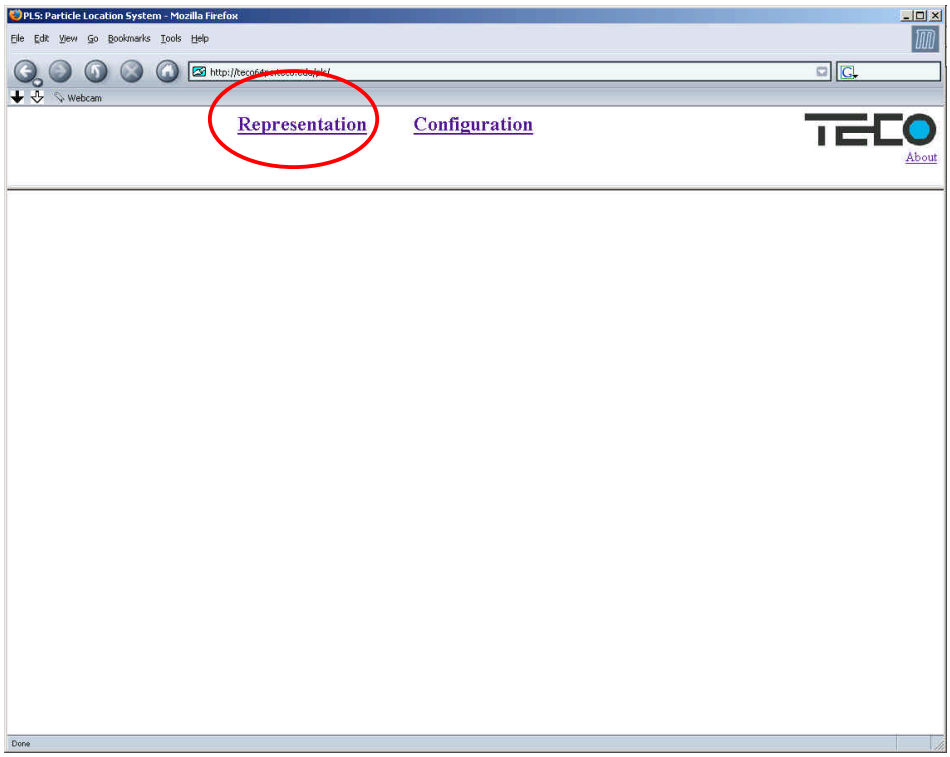
- *Select the node from the tree for a specific physical location represented by a box on the floorplan*
- *Store the plan by pressing "Save"*



2. Representation

When the location server is running one can query the backend database for the location information for Particles. Information is collected passively by logging location descriptions from Particle packets. After one minute of collecting a the final position of each noticed Particle is written in the database. The representation allows to review each last minute on the last 60 minutes. It provides further, the opportunity to track all Particles over a day. However, even if a Particle doesn't send at all, one can try the active scan. The location of a Particle is represented by a marker on the floorplan.

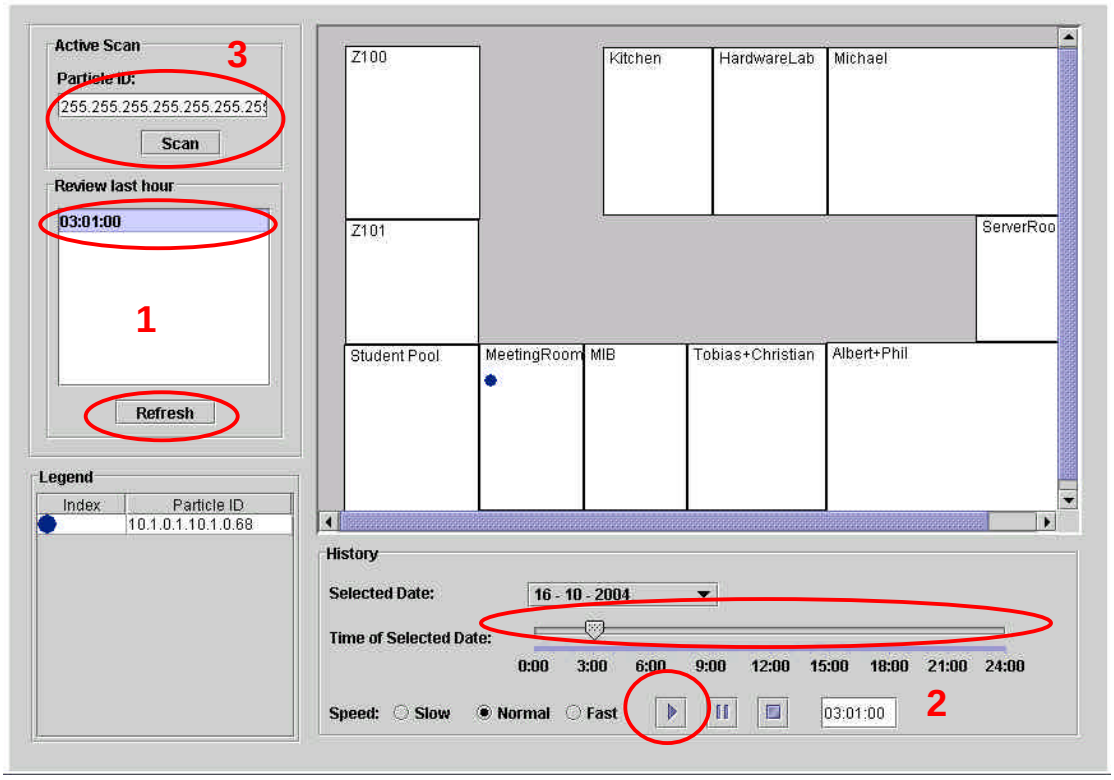
Select "Representation"



The representation allows one to

1. *Review last hour in intervals of 1 minute*
2. *Replay day history*
3. *Actively scan for Particles (255.255.255.255.255.255.255.255 for all Particles, other wise use a specific ID, e.g. 10.1.0.1.10.1.0.58)*

Representation



Notes:

- *By clicking on the marker a window with the Particle ID pops up*
- *By moving the mouse over a marker the ID is shown in the tip box*
- *By clicking on the box, all markers contained are selected in the legend*