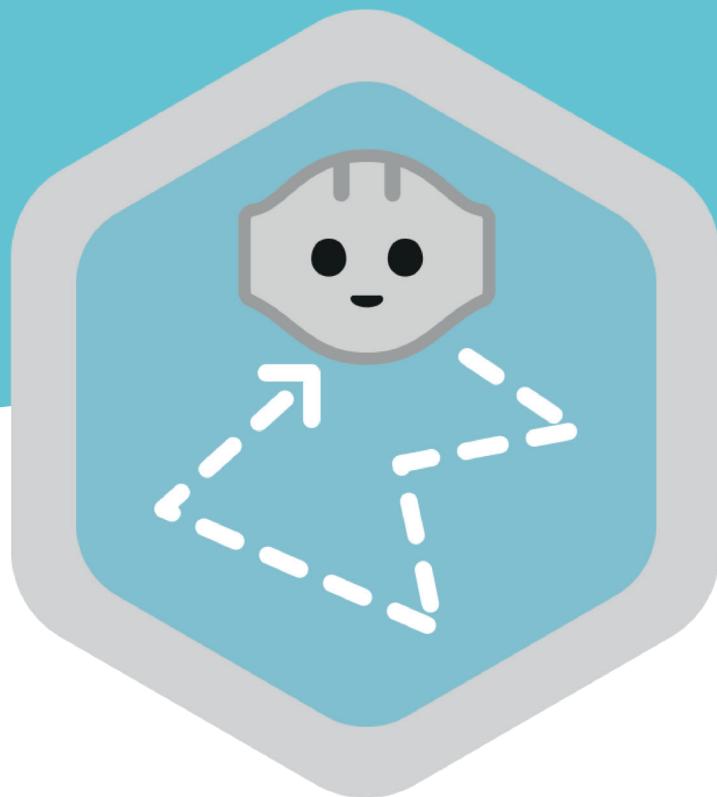


Proactive Mobility

User Guide



pepper

SoftBank
Robotics

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Introduction

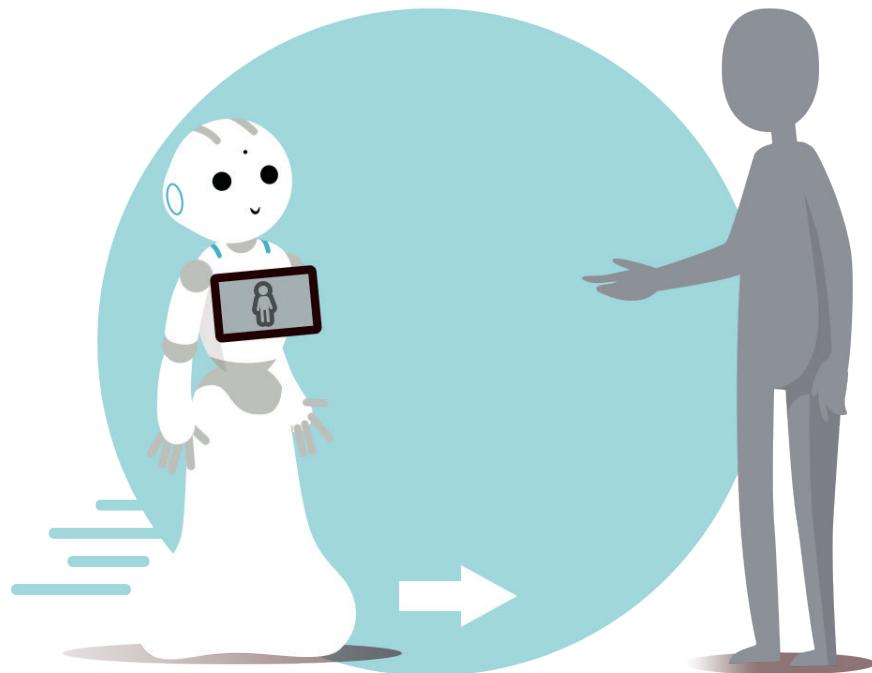
5

What it Does

With this “First Move” application, Pepper will engage with people nearby by physically moving up to them.

After remembering its Home just after wake up, Pepper will move to-and-fro to interact with people, within a predefined working segment (angle and radius).

Easy to setup and easy to launch, there are three methods to use it, with a mat (ARUCO) or a Charging Station, or using just the contours of the room as a guide, ie Simultaneous Location and Mapping (SLAM). The parameters of each method are programable, as well as the working segment.



What You Need

➤ Software

To use **Proactive Mobility**, you need to install three applications:



1. Config Launcher

<https://cloud.aldebaran-robotics.com/application/config-launcher/>



2. Web Settings

<https://cloud.aldebaran-robotics.com/application/web-settings/>



3. Proactive Mobility

<https://cloud.aldebaran-robotics.com/application/proactive-mobility/>

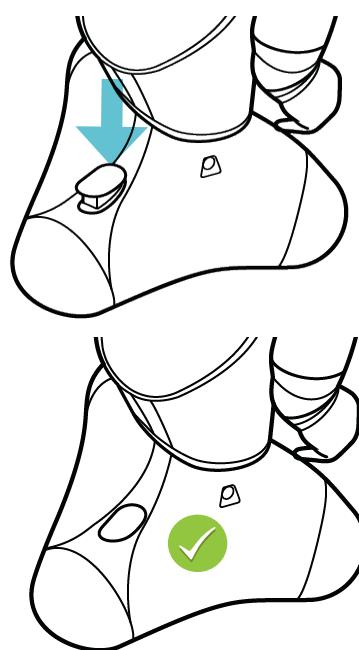
➤ Preparing the Robot

1. Make sure Pepper is charged.
2. Make sure Pepper is switched ON.
3. Make sure the Charging Flap is closed.

If the charger flap is open, the initialization phase is blocked but starts after closing it.



Pepper can't move if its charging flap is open.



➤ Where to Place the Robot



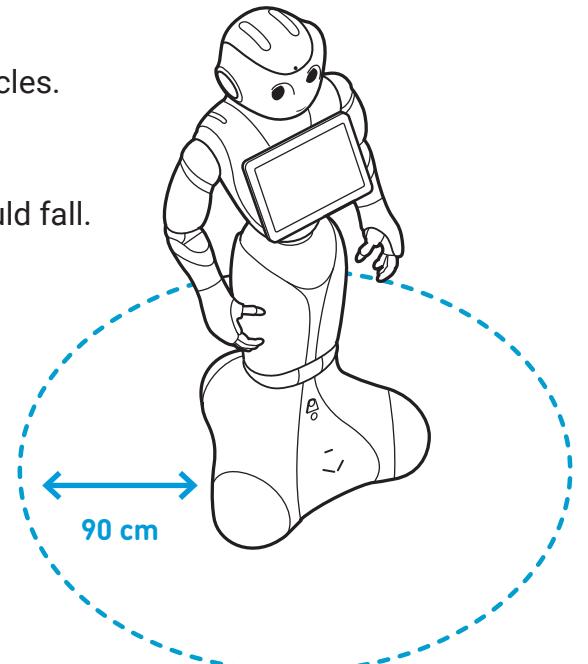
Lighting

- Make sure the room is not too brightly lit, as Pepper may not detect obstacles properly and may be dazzled.
- Make sure the room is not too dark, as Pepper may not detect its charging station or marker.



Home Area

- Make sure the floor is level and free from obstacles.
- Do not put Pepper near steps or slopes as it could fall.
- Make sure at least 90 cm (approximately 3 feet) around Pepper is free.
- Don't stand next to the robot when it is defining its Home. There must be no obstacles to allow Pepper to recognize its Home when going back to it.



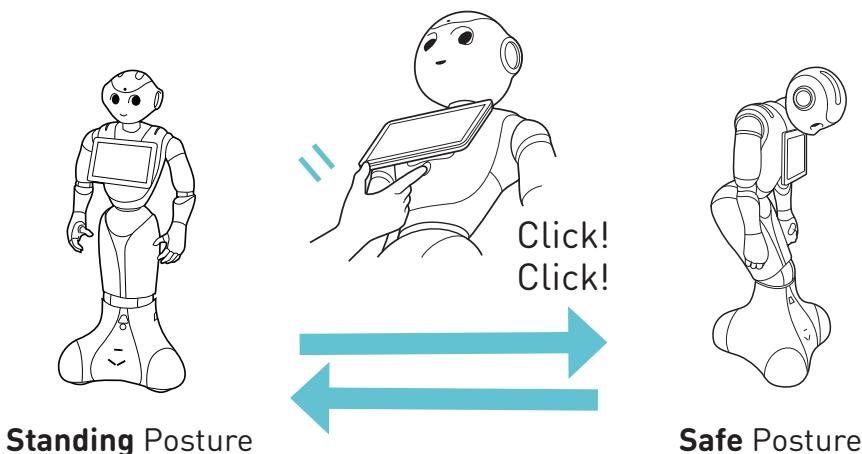
- Pepper does not like tables, rugs, thick carpets for example, as it could fall.

A - Bringing up the Menu



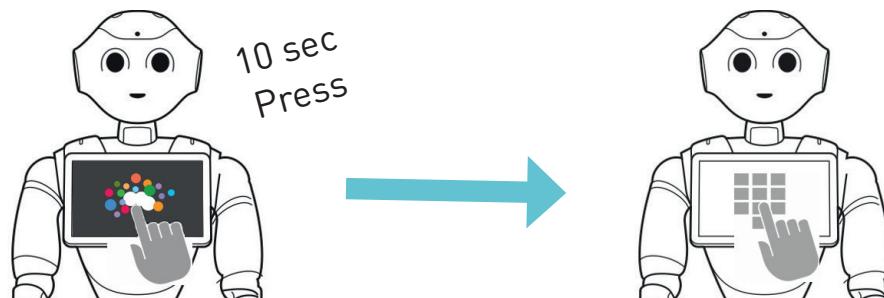
By default, Proactive Mobility is OFF.

- 1 Make sure Pepper is switched on and put the robot in rest mode by pressing the Chest Button twice.

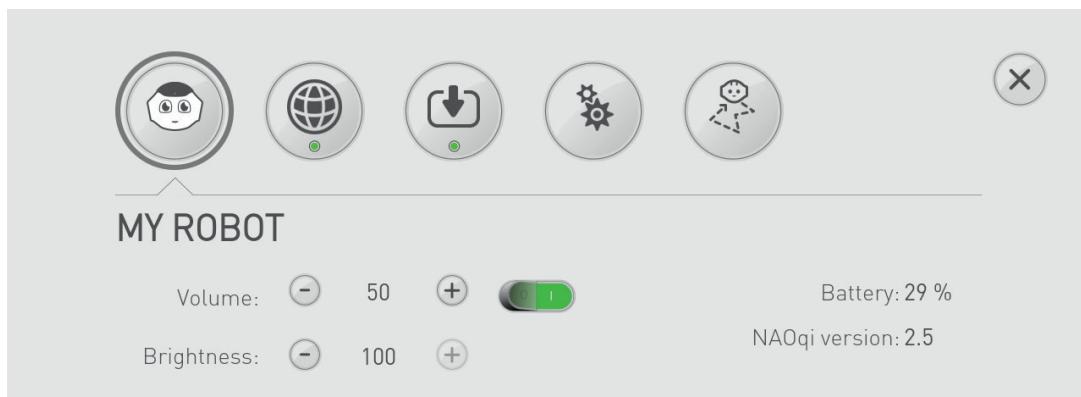


You can only launch the proactive Mobility Menu if the robot is in rest mode.

- 2 Tap and hold the tablet until the bubbles disappear (10 seconds).



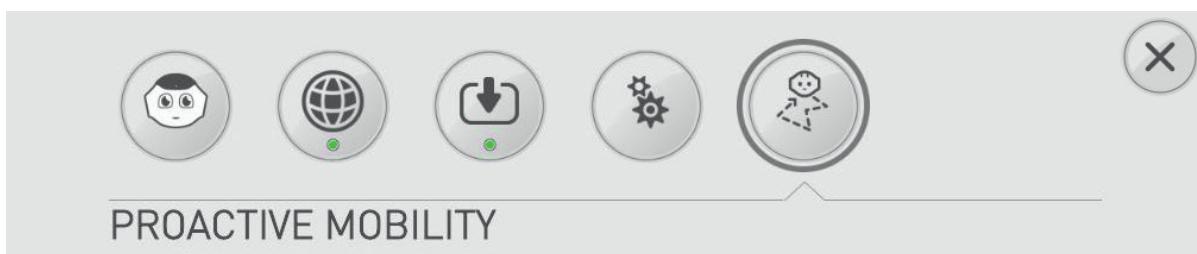
- 3 Enter the pincode you have defined or directly click **OK** when the digicode appears. You have 3 seconds.



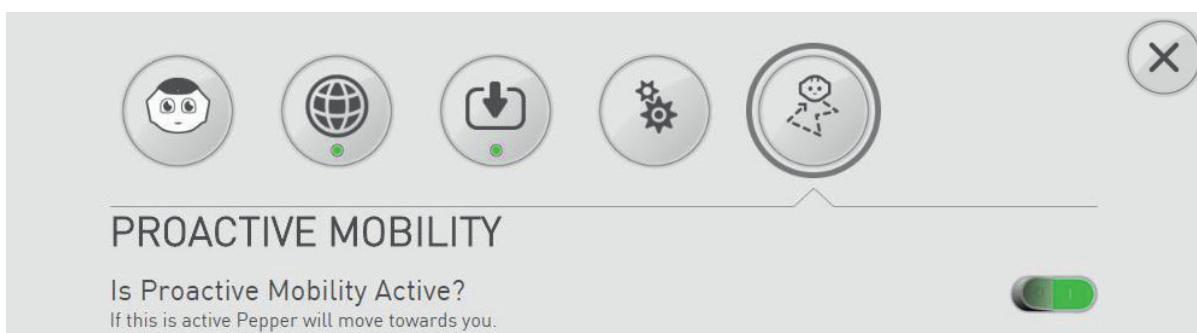
Configuration Menu

B - Menu Settings

- 1 Select the Proactive Mobility icon.



- 2 Set "Is Proactive Mobility Active" switch button to 1.



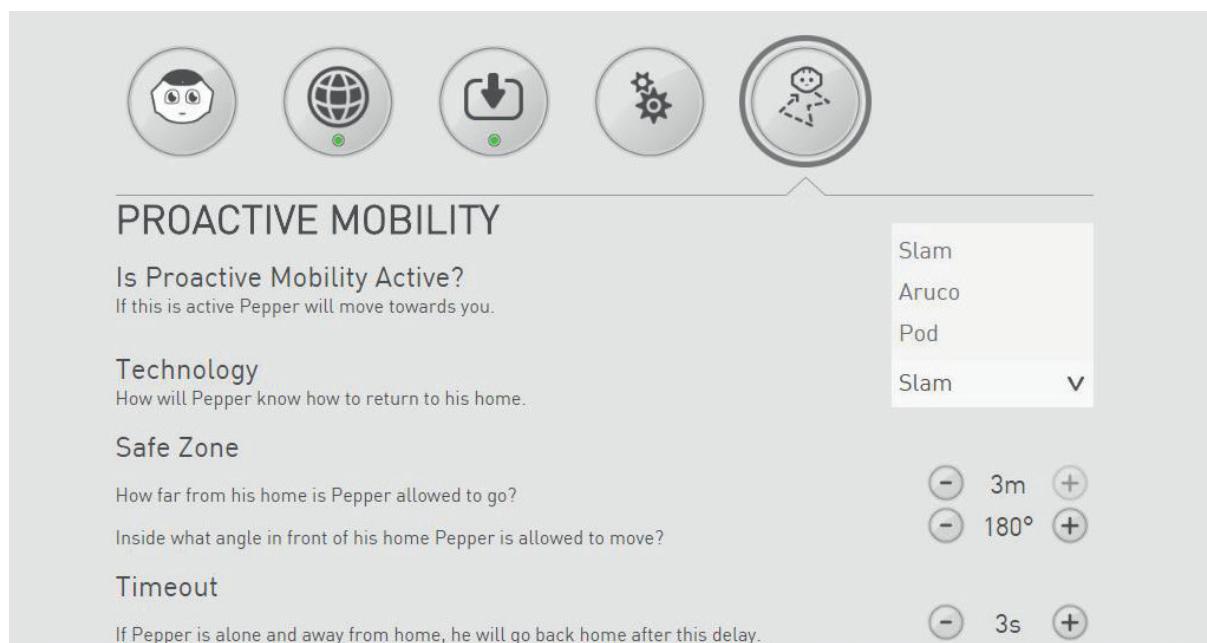
When you click Exit on the Settings menu, the application starts.

> The application is now running. It will use the default configuration.

You can customize the parameters according to the environment and accessories available.

3 You can choose between the three following **technologies** (Optional):

- If you have no accessory, choose **SLAM** (see page 14).
- If you have the marker, choose **ARUCO** (see page 15).
- If you have a charging station, choose **POD** (see page 16).



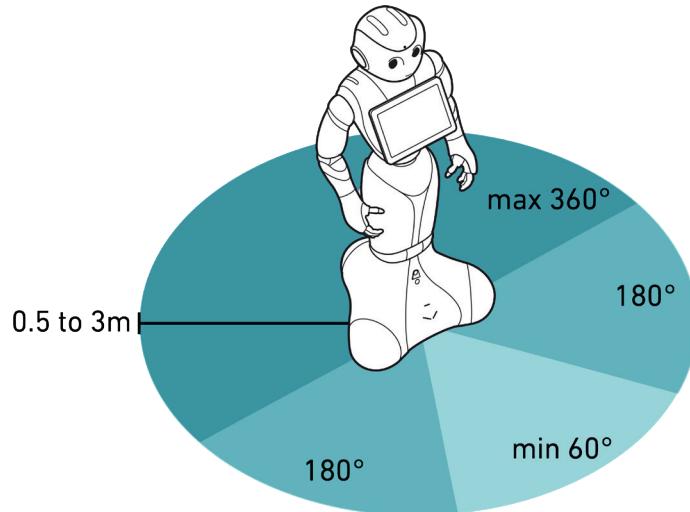
When switching on, the default **technology** is SLAM.

- 4 You can set the **Safe Zone** (Optional).

The safe zone is the area in which the robot is authorized to move. It is defined by an angle from 60° to 360° (180° for the POD mode) with a radius from 0.5 to 3 meters.



Make sure there are no obstacles (especially tables) in the defined Safe Zone.



By default, the safe zone is set to 180° with a radius of 3m.

- 5 You can also set the **Time out** (Optional).

The Time out refers to the time Pepper waits before returning to its Home after an interaction.

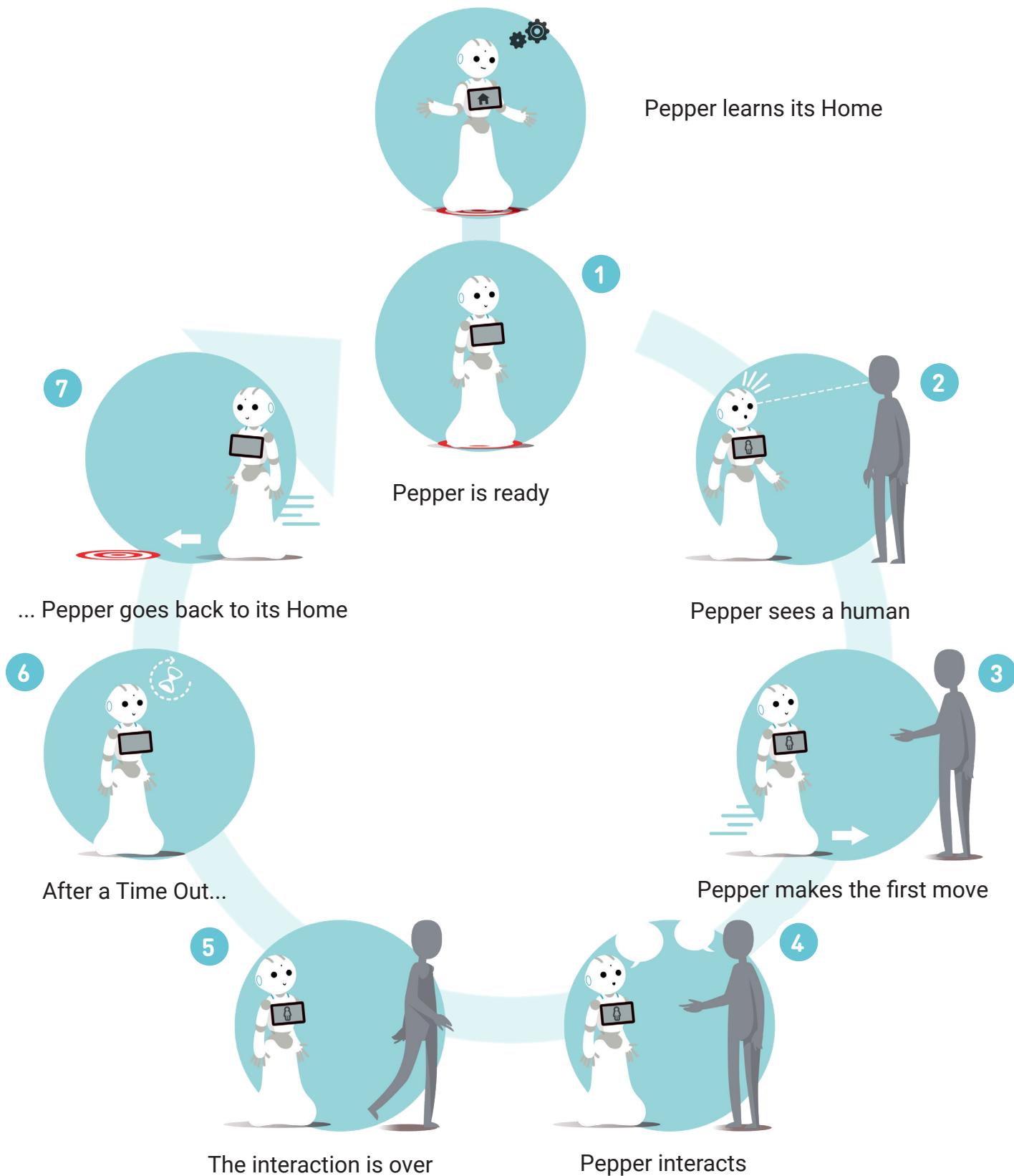


By default, the time out is set to 3 seconds.

Operation

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Interaction Cycle



Pepper is learns its Home

Pepper starts defining its Home when it stands up:

- after the robot has been turned ON,
- after clicking twice on Pepper's Chest Button if the robot was in rest mode,
- or after leaving the settings menu.

1

Pepper is ready

Pepper is on its Home and looks around to see if there is any potential user to interact with.

2

Pepper sees a human

Pepper has detected a human with its cameras and is about go towards him.

3

Pepper makes the first move

Pepper goes to the human within the limits of the defined zone trying to avoid obstacles.

4

Pepper interacts

Pepper engages in conversation with the human.

5

The interaction is over

The human leaves and is no longer in Pepper's field of view. The interaction ends.

6

After a Time Out...

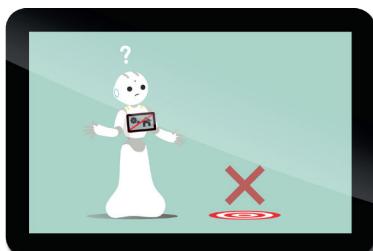
Pepper looks around to see if there is any other potential user to interact with. If it doesn't see anyone, it goes back to its Home after the defined time out.

7

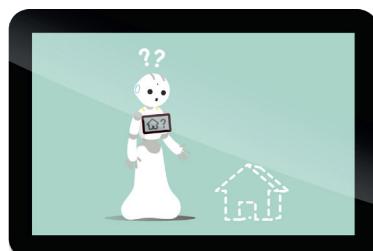
...Pepper goes back to its Home

Pepper goes back to the Home it has previously defined.

Borderline Cases



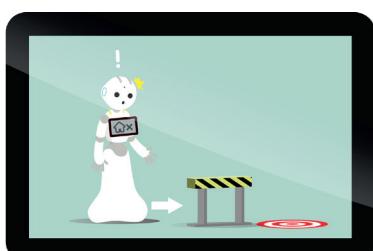
Pepper failed to **define** its Home. The Robot will stay in its initial position to interact with the users and needs a “Resseting procedure” to redefine Home.



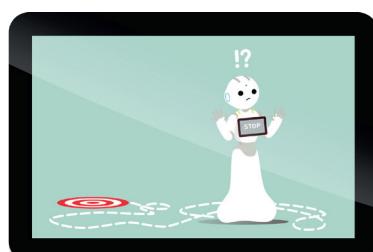
Pepper failed to **go back** Home (only in ARUCO and POD). The Robot will turn back to try to interact with other users and go back Home later. It may need a “Resseting procedure” to redefine home.



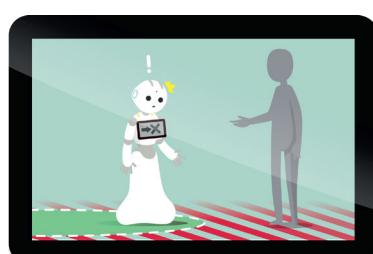
A **human** prevents Pepper from going back Home but the Robot will interact with him.



An **obstacle** prevents Pepper from going back Home, but the Robot will turn back to try to interact with the other users and will try to go back Home later.



Pepper has gone **moved too much**. The Robot stops and then will try to go back Home as soon as possible to learn its Home position.



Pepper **cannot go further** (mobility limited to the Safe Zone).

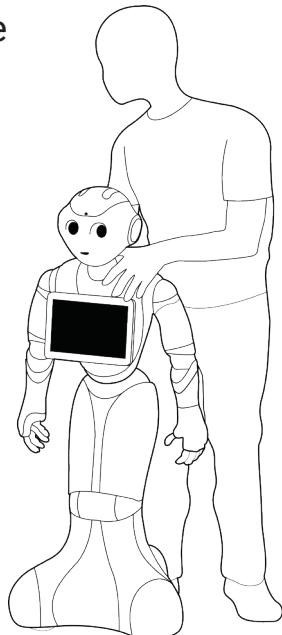
> Reset Procedure

If Pepper failed to **define** its Home or to **go back** Home many times:

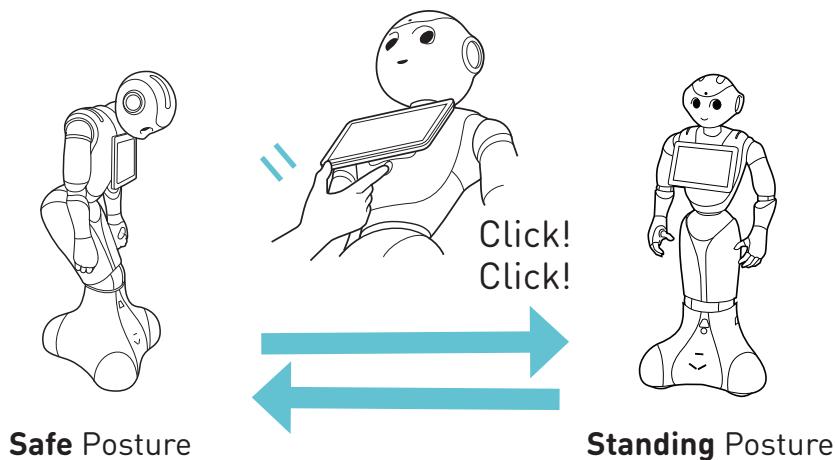
- 1 Put Pepper in rest mode by pressing the Chest Button twice quickly.
- 2 Move Pepper to its Home.



Be careful when moving Pepper: place one hand on its shoulder, the other one on its hip and push it.



- 3 Press the Chest Button twice quickly to wake up Pepper.



- 4 Pepper will redefine its Home.

> Pepper can now move to interact with people!

How it Works

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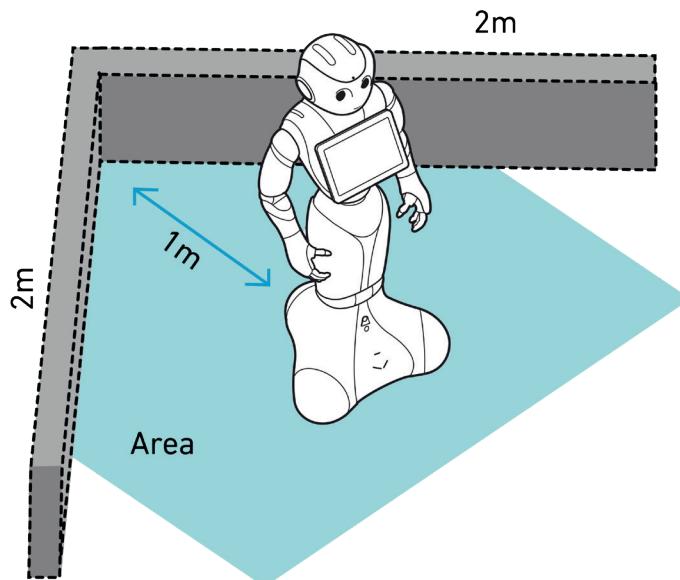
Localization Technologies

Pepper is able to localize its Home using 3 different technologies. You can choose among those three, depending on the environment and accessories available.

➤ SLAM

How it Works

The robot maps the surrounding area as Home using its lasers. The location should have no obstacle within less than 1m from the robot. A corner with 2m sides is the ideal location to allow the robot to recognize its Home.



Pros	Cons
Easy setup	Slight drift
No accessory needed	



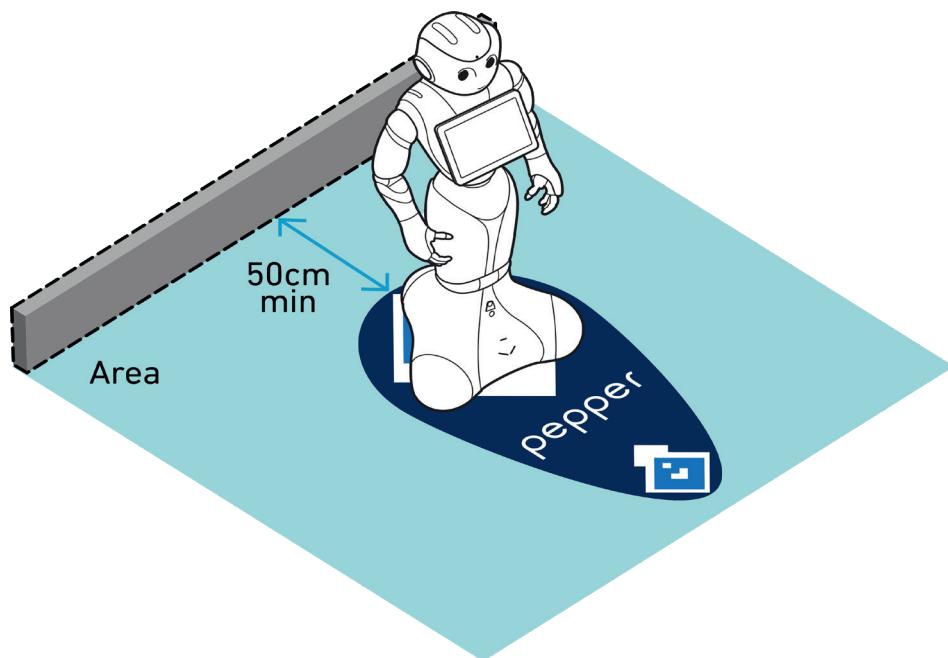
The robot may reposition a few centimeters and a few degrees away from its Home.

> ARUCO

How it Works

The robot identifies the Augmented Reality codes located on the marker as Home. The marker should be placed on the floor, according to the template:

- a big one of 20cm side on which the robot will be placed
- a smaller one of 10cm side in front of the big one used as reference.



Pros	Cons
No drift	Need a specific accessory (the marker) and respect the guidelines: “pepper_AR_template.ai”

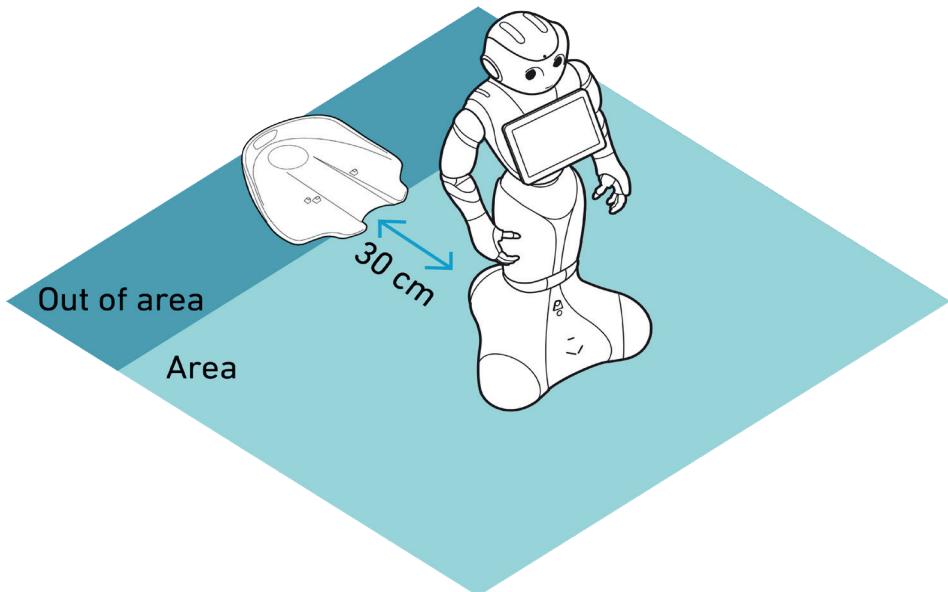
> POD

How it Works

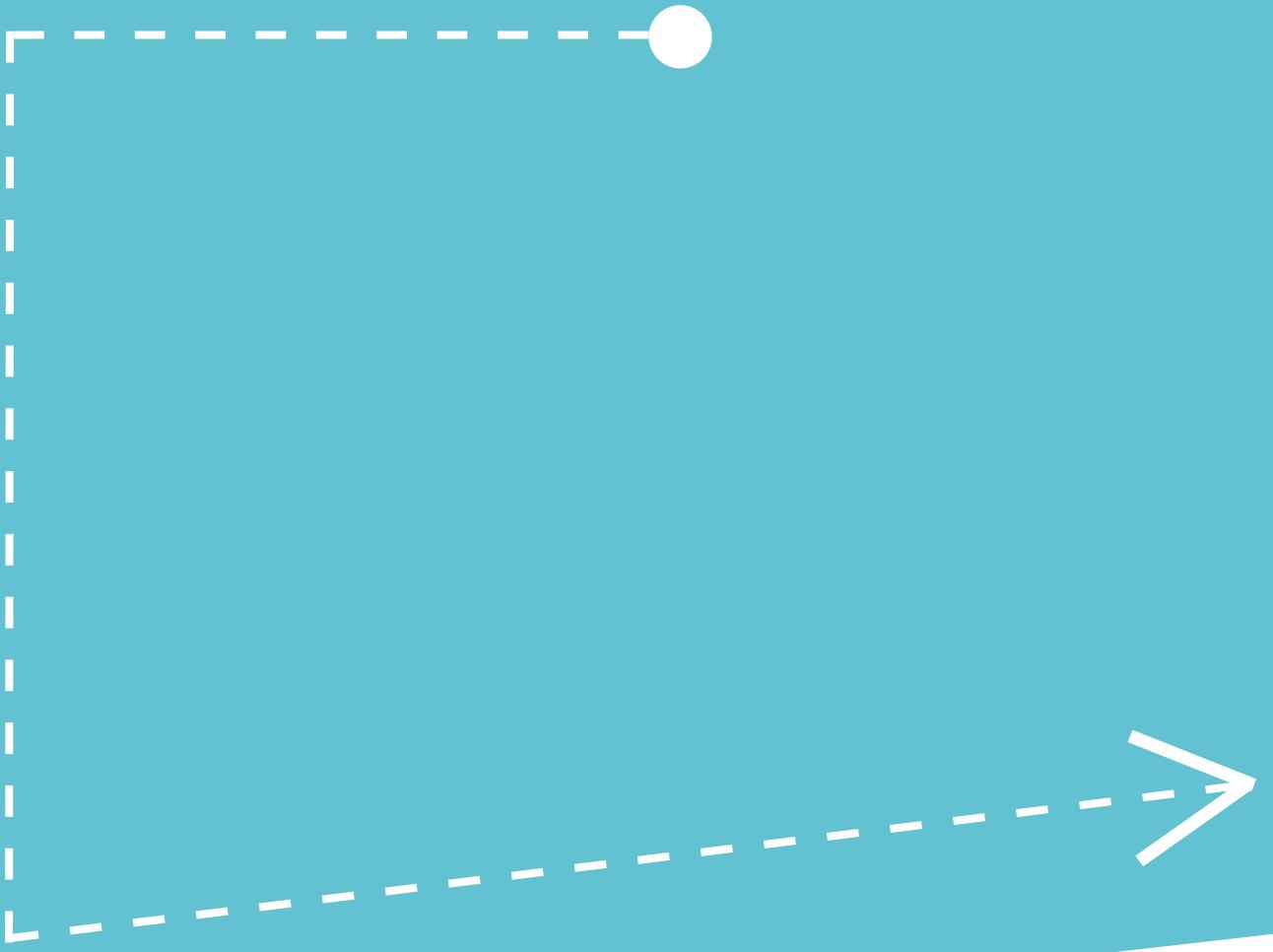
The robot identifies the charging station as Home. Pepper should be placed in front of the charging station with the charging station behind, at least 30cm away from it. The charging station should be plugged in and show the blue lights on both sides.



Don't forget to switch the charging station on before launching the application in POD mode. Otherwise, Pepper won't be able to define its Home.



Pros	Cons
No drift	The robot can't go behind the charging station
Existing accessory needed	The charging station is sold separately from the robot



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