

ZORABOTS

PEPPER MANUAL

VERSION 0.1.33

07/11/2018

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Pepper Manual

1 Preface

This document is designed to explain the general procedure for working with the Pepper robot and to give a brief explanation on the current functionality.

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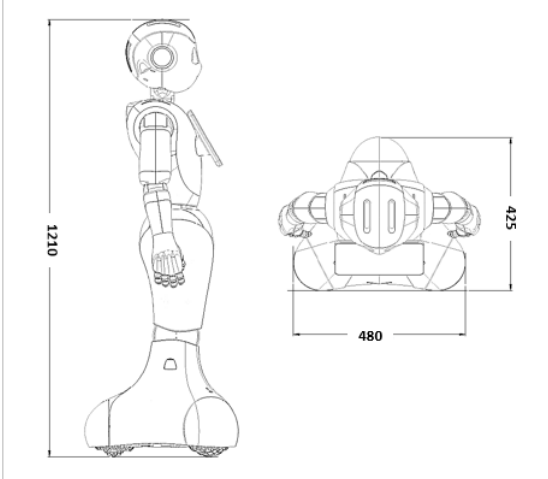
2 Hardware

This section deals with the built-in hardware of Pepper.

2.1 General

This chapter describes the physical measurements and the charging method of Pepper.

2.1.1 Dimensions

	Height	1210 mm
	Width	485 mm
	Depth	425 mm
	Weight	28 kilograms (62 lb)

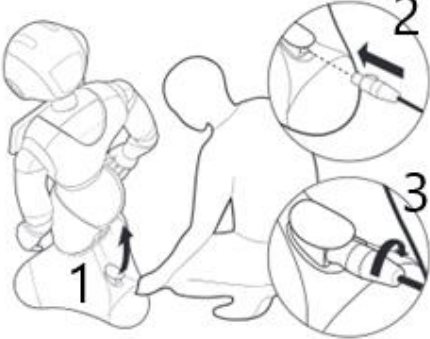
2.1.2 Battery

The battery is built into the base of Pepper and has the following specifications:

Type	Lithium-ion battery
Capacity	30.0Ah/795Wh
Weight	5 kg

To charge the battery of Pepper, there are 2 possibilities, specifically charge by charger or by using the charging station.

2.1.2.1 Charge by charger

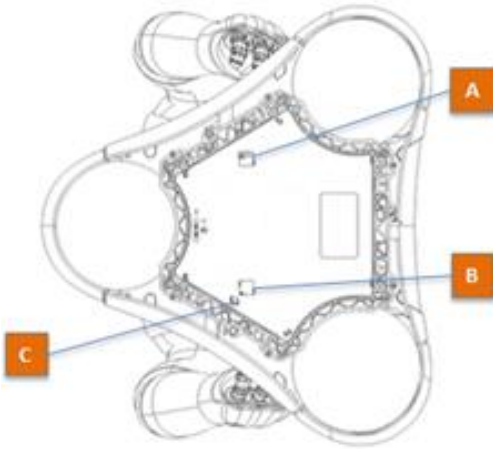
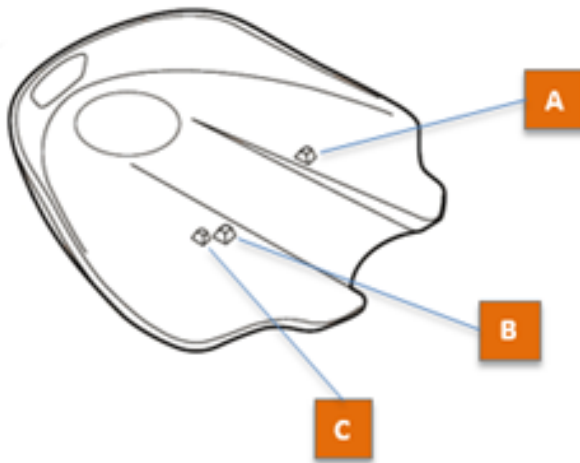
	Step 1: Open the power hatch at the base of Pepper
	Step 2: Plug in the charger into the power hatch
	Step 3: Turn the charger clockwise until a click is heard and the connection is complete.

If Pepper is fully charged, the LED-lights on the shoulders will blink green.

Warning: If the power hatch is open, the motors and brakes of the wheels are no longer driven. This is necessary to move Pepper safely by hand. It does contain a risk of Pepper rolling down a slope.

2.1.2.2 Charging station

If Pepper detects the charging station through the sensors, Pepper will put itself into position on the charging station to charge. The connections that must be made are as follows:

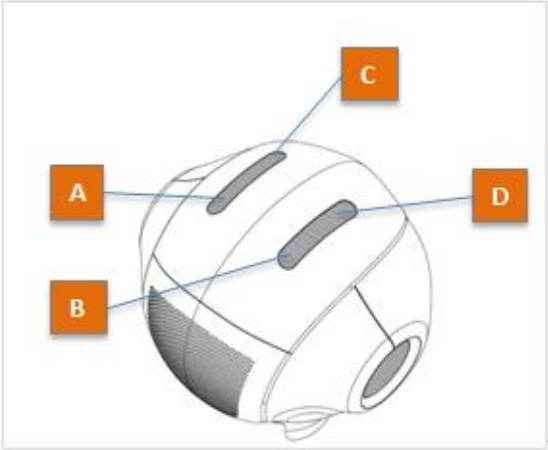
Pepper	Charging station
	


2.2 Communication

Pepper has several devices for communicating with the users.

2.2.1 Input devices

2.2.1.1 Microphones

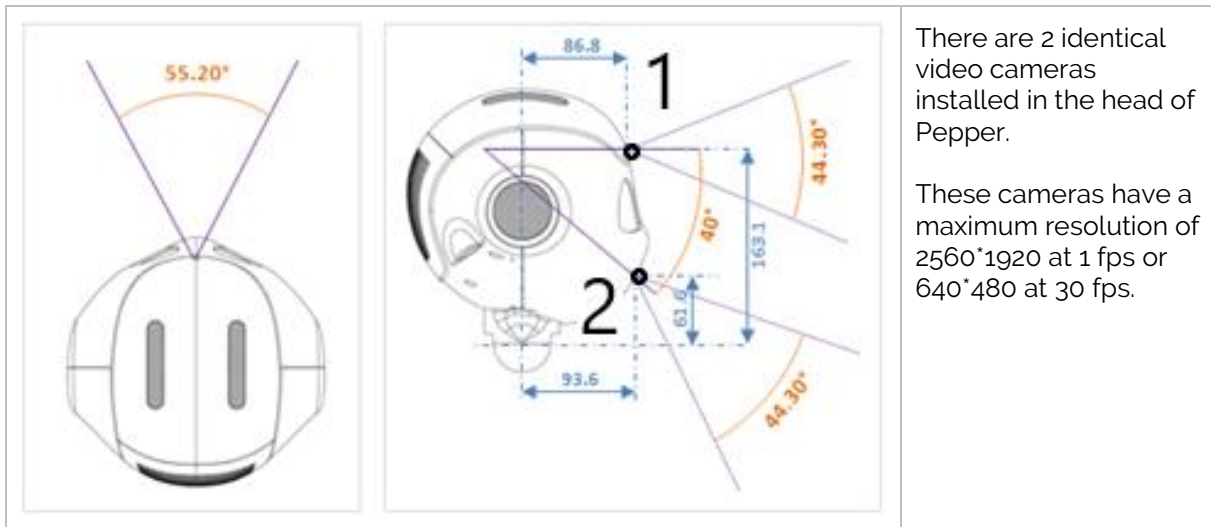
	<p>Pepper has a total of 4 microphones at the top of the head.</p> <p>These can detect sounds with a frequency between 100Hz and 10kHz.</p>
---	---

	<p>These microphones are designed to listen in a cone-shape to voices in front of Pepper.</p>
---	---

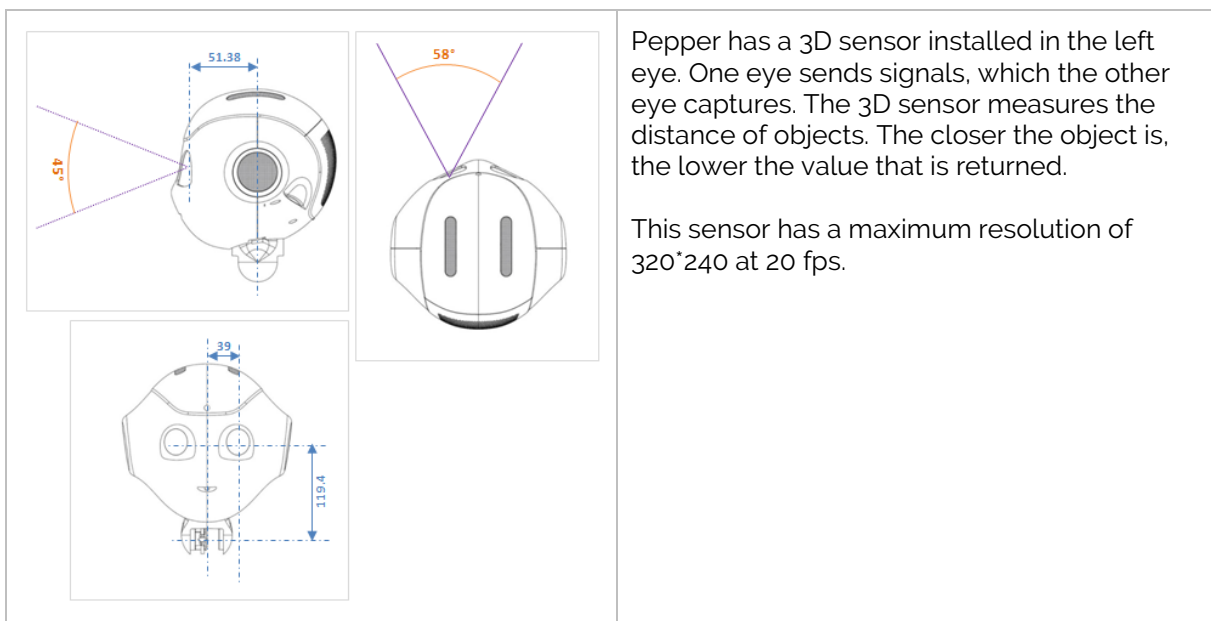
2.2.1.2 Cameras

Pepper has 3 cameras to detect images, specifically two 2D-cameras and one 3D-camera.

- **2D Cameras**



- **3D Camera**



2.2.1.3 Sensors

The sensors installed on Pepper work together to create a 3D model of the immediate surroundings. This model is called the 'collision space' and is used to detect obstacles.

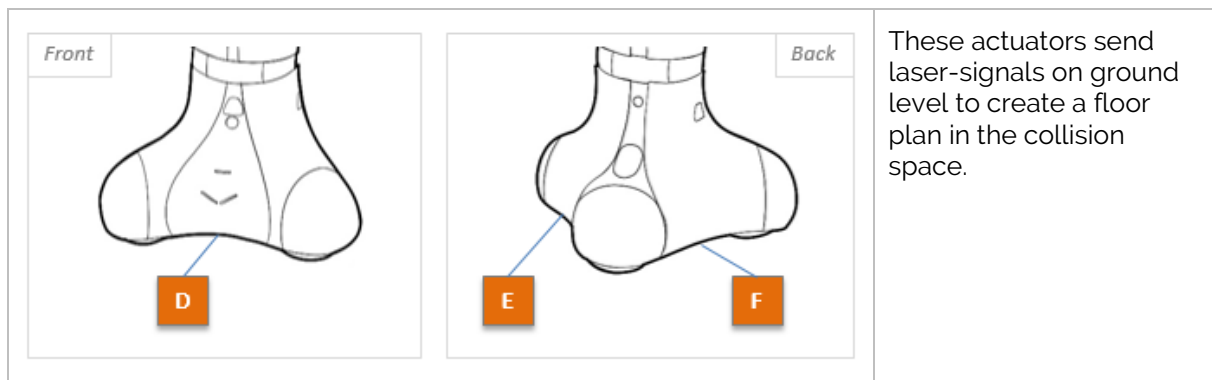
- **Inertial Unit**

Pepper is equipped with an inertial unit, which is responsible for calculating Peppers current orientation. This system uses odometry, accelerometers (horizontal and vertical) and a gyroscope. The accelerometers have a fast response time but create relative values. The gyroscope is slower but generates absolute values (based on gravity). The system (courtesy of Aldebaran) uses a combination of both systems when Pepper is in motion to offset the rounding errors from the accelerometers.

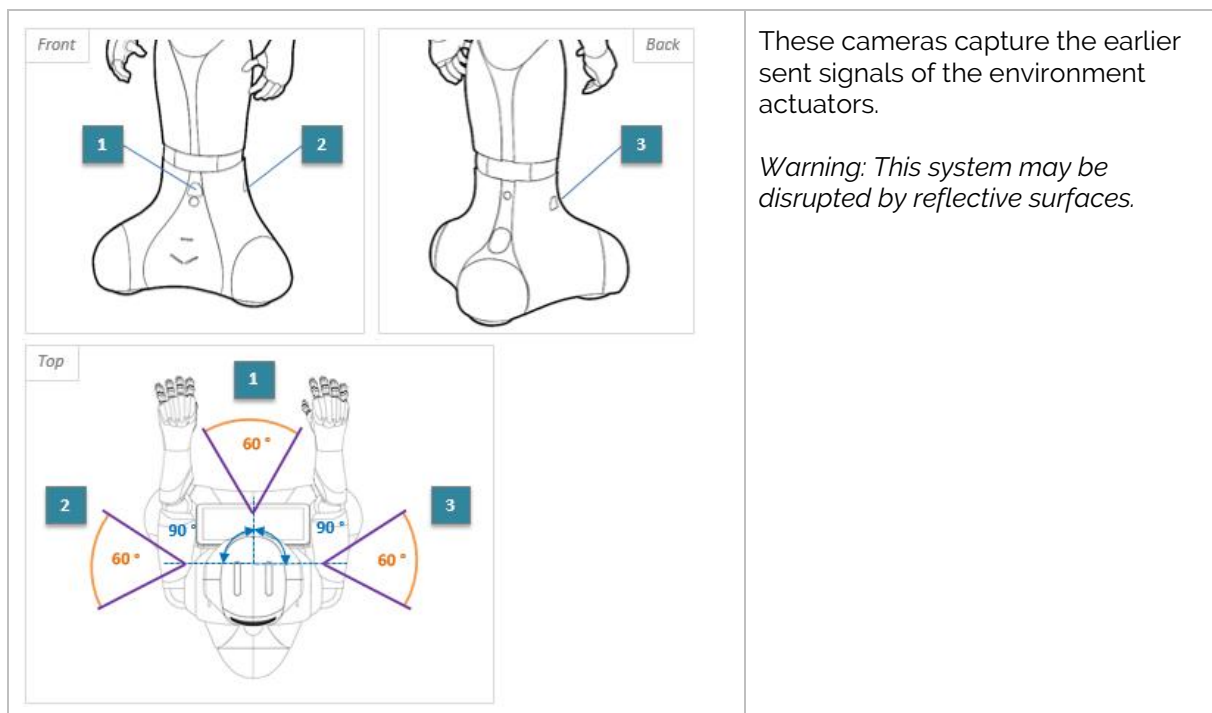
- **Laser sensors**

The laser sensor consists of several actuators that send laser-signals and a central receiver.

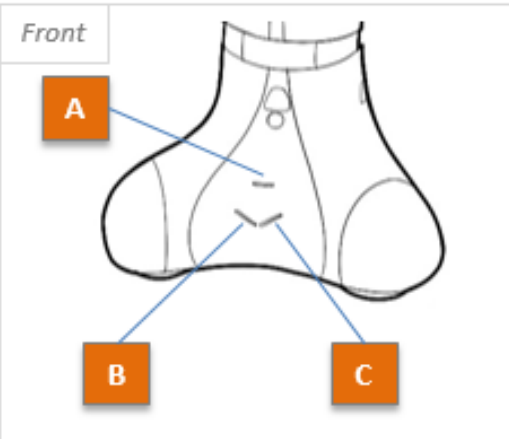
- Laser Actuators – Environment Evaluation



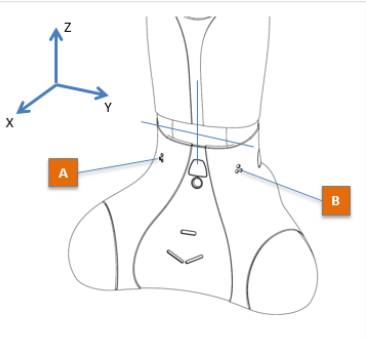
- Laser Sensors



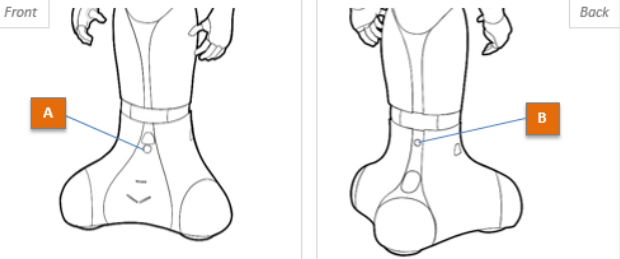
- Laser Actuators – Ground evaluation (front)

	<p>This part sends vertical signals to the front of Pepper.</p> <p>This part is made of 3 actuators that send signals to the left (C) and right (B) and a central actuator (A) that sends vertical signals.</p> <p>The laser-signal emitted from these actuators is received by the same camera as the environment evaluation (in front).</p>
---	---

- Infrared Sensors

	<p>Besides laser-sensors, Pepper has 2 infrared-sensors at its disposal to improve the measurements in the dead corners of the laser-sensors.</p>
--	---

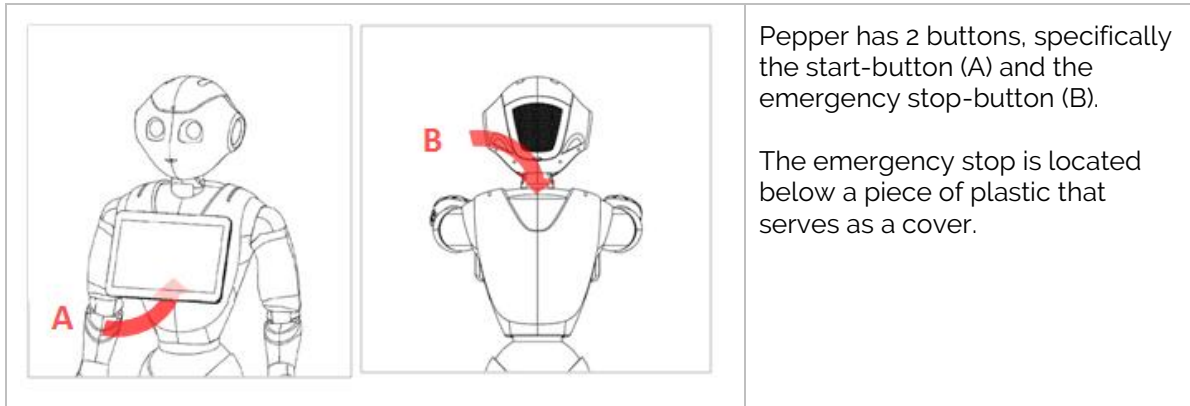
- Sonar

	<p>Finally, Pepper has a sonar system to further improve the measurements. This system works on a different principle compared to the laser-sensors.</p>
---	--

2.2.1.4 *Tactile sensors*

This section describes the devices that detect input by touch.

- **Buttons**



- Start button

The start button has several functions: Starting Pepper, stating a system message (i.e. the current IP address of Pepper), stopping Pepper and putting Pepper in a resting posture.

- **Starting Pepper**

To start Pepper, the start button must receive a brief push. Once the screen displays the Zorabots-logo, Pepper can be used.

- **Stating a system message**

If the LED-lights on the shoulder are blinking or if the IP address of Pepper must be known, a brief push can be given on the start button to have Pepper state the system message.

- **Stopping Pepper**

To stop Pepper, the start button can be held for a brief time (about 2 seconds) until a sound is heard. After which, Pepper will go to a resting posture and shut itself off safely.

- **Hard shutdown**

If the option above doesn't work to shut Pepper down (and Pepper Control does not shut Pepper down either), the start button can be held until Pepper is fully shut down.


- **Double push**

If the start button is briefly pushed twice **when standing**, Pepper will go to the rest-posture.

- Emergency Stop

The emergency stop-button is designed to shut Pepper down in case of emergencies.

This is an **option of last resort** and should only be used if all other means of stopping Pepper (including the start-button) aren't working. The cover doesn't have to be removed, the button can be pushed through the cover.

	<p>To unlock the emergency-stop, the button must be turned clockwise until the button is in an upright position again.</p> <p><i>Tip:</i> <i>If Pepper won't start, check the stop button first. The emergency stop button may have been pushed.</i></p>
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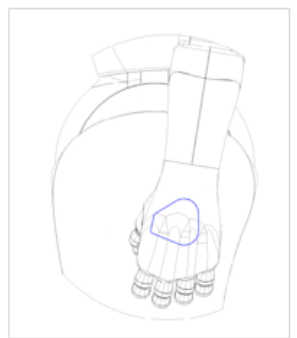
- **Touch-sensors**

Pepper also has touch-sensors to register input. These can be found on top of the head and the outside of the hands.

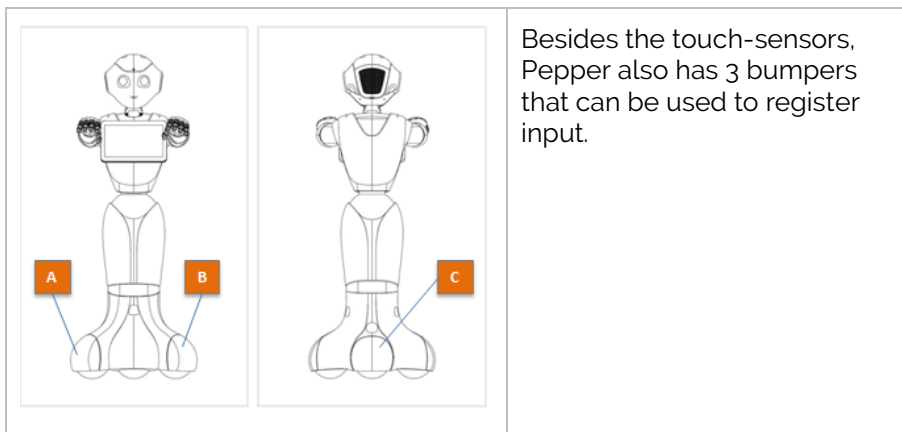
- Touch-sensors - Head

	<p>Pepper has 3 sensors on top of the head, even though there are no indicators on the plastic cover.</p>
--	---

- Touch sensors - hands

	<p>Pepper has touch-sensors that are indicated by a blue plastic on the outside of the hands.</p>
---	---

- **Bumpers**



2.2.15 Tablet

By using the tablet on Pepper, input can be selected (for example, the Kiosk-behavior creates icons that can be pushed).

The tablet screen also has a menu to the side which can be used to change some system settings or to start a **composition** by scanning a QR code (see also [Tablet-screen](#))

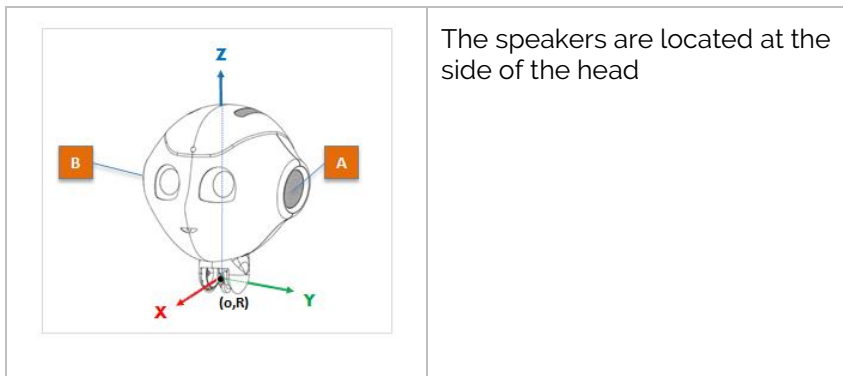
2.2.2 Output devices

Pepper has a variety of devices to express itself, specifically the tablet-screen, speakers, led-lights and motors in the joints to make gestures.

2.2.2.1 *Tablet*

The tablet-screen can be used to display images, videos (with subtitles if needed) or plain text.

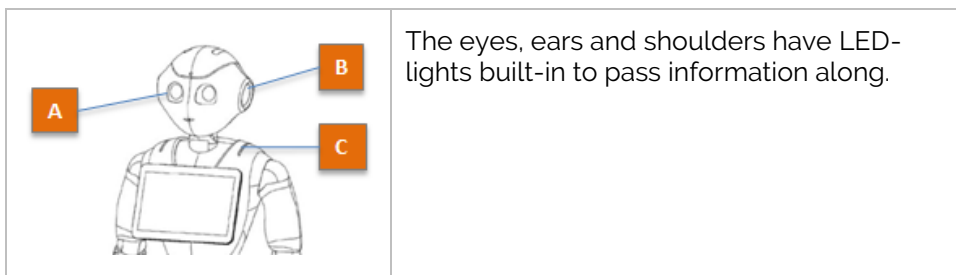
2.2.2.2 *Speakers*



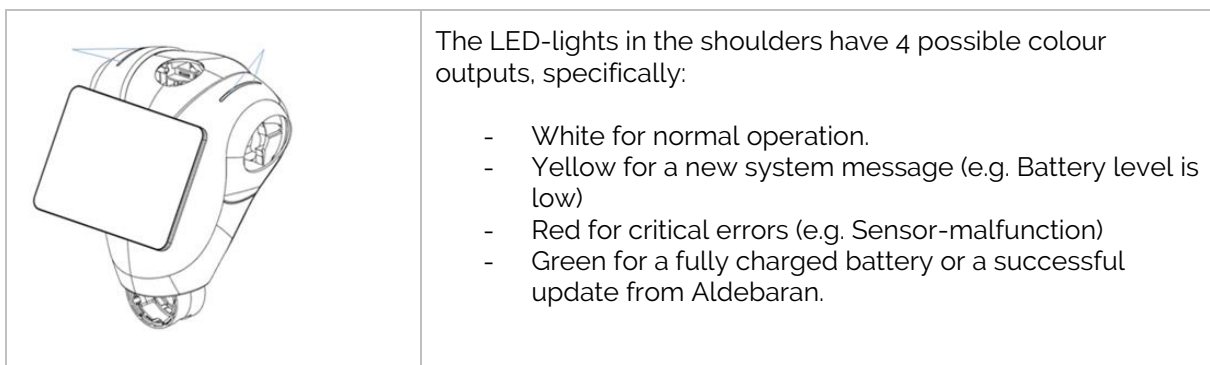
2.2.2.3 *LED-lights*

This section shows the different LED-lights installed on Pepper.

- **Head**



- **Shoulders**



3 Pepper-Control

Pepper-Control is the website portal that controls and contains the settings of Pepper.

The current version of Pepper-Control is designed to be used with the browser Chrome by Google. Other browsers (or newer versions than 59) are currently not supported and may not have access to all functions of the portal-website.

The portal is running on Pepper itself. By entering the IP-address (e.g. 192.168.0.100) in the address-bar of Chrome, the portal is accessed. The IP-address for the Pepper in question (see also [Wifi-settings](#)) can be heard by briefly pushing the start button.

Note: If Pepper is connected with a network by cable AND by wifi, by pressing the start-button, only the IP address of the wired connection will be spoken aloud.

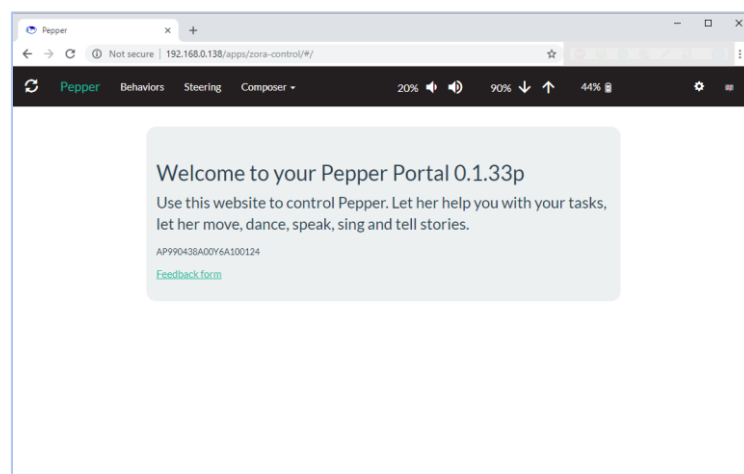
3.1 Used terminology

The following terms are used throughout this document:

Behavior	<i>A programmed set of motions or routines to mimic a behavior.</i>
Composer	<i>The part of the website to construct a home-made routine by using pre-programmed blocks (composer-blocks).</i>
Composition	<i>The home-made routine made in the composer-page.</i>
Dataset	<i>The collection of data that can be customised for a behavior (e.g. questions of a QR-quiz or the parts of a kiosk).</i>
Settings	<i>The settings that can be adjusted for a behavior (e.g. background-image, skipping introduction-text)</i>

3.2 Pepper-page

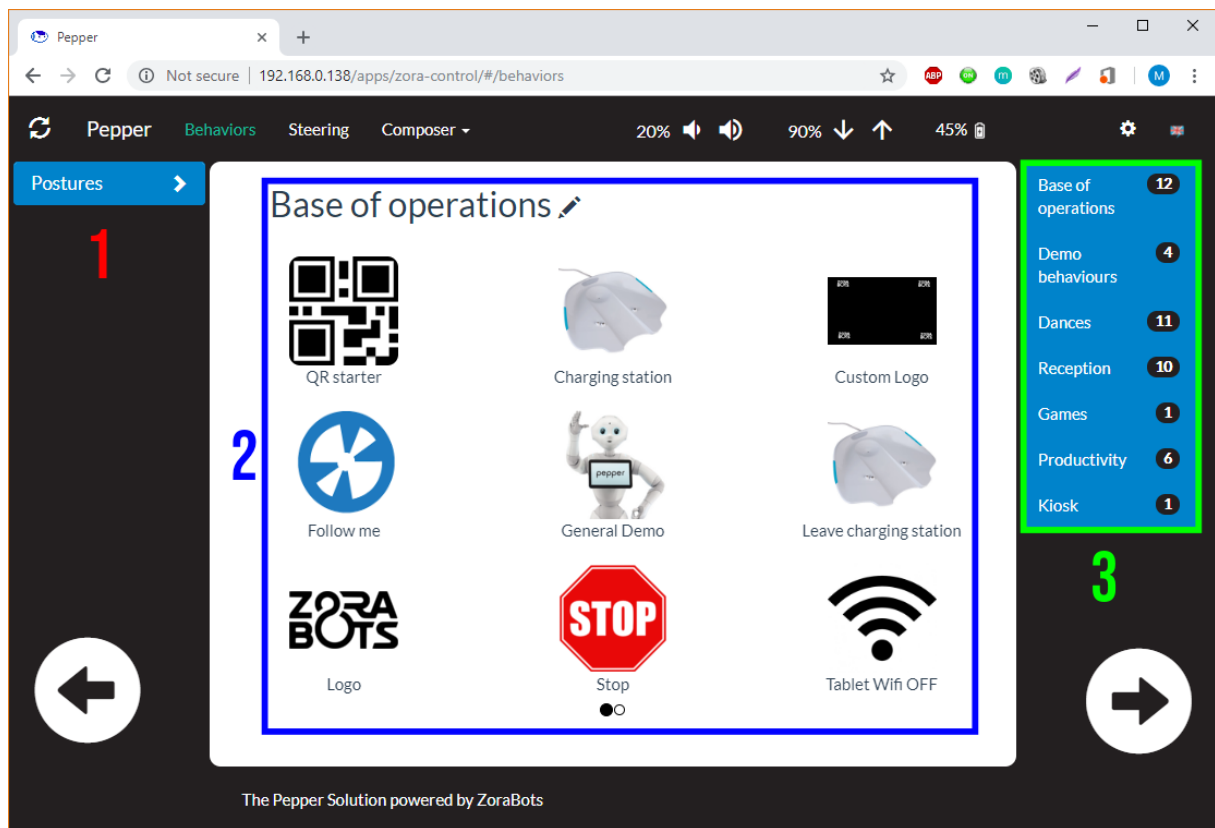
When opening the portal, the following screen appears:



This webpage is also accessible by clicking the tab Pepper in the menu-bar of the portal. This screen is also where the hint of the day appears if this setting is active. The chapter [General Settings](#) contains more information on turning the hint of the day on or off.

3.3 Behavior-page

By clicking the tab 'Behaviors' in the menu-bar of the portal for the first time, the following screen appears:



This page can be divided into 3 major categories, specifically the postures-menu, the selection-screen and the category-menu.

3.3.1 Postures-menu

This menu is on the left side of the screen and contains the possible postures for Pepper.

<div>Postures</div>	By clicking this field, the menu containing the possible postures for Pepper is displayed or hidden.
Crouch	Crouch is a rest-posture (slightly leaning forward, head down). In this posture, Pepper uses less power.
Stand	Stand is the default posture for (most) behaviors to start.
Stand zero	Stand Zero is a posture used by the tutorial behavior to display the optimal distance for the speech recognition.

3.3.2 Selection-screen

This section is in the middle of the page and contains the behaviors and their properties. The behaviors are displayed as icons:






Base of operations	Name of the category This is the name of the category to which the behaviors belong. (see also Category menu).
	Editing Buttons These symbols are used to start and stop adjusting the settings of a behavior.
 Custom Logo	Behavior-icon The behaviors themselves are displayed as an icon with the title of the behavior just below. The behaviors can be started by using a single mouse click or a gentle tap on a tablet-screen.
 Kiosk	Collection-icon This icon is shown when multiple datasets are defined for a single behavior. By clicking this icon, the selection below is shown.
<div data-bbox="373 1552 1217 1879"> <div> Variants <div> <div> Kiosk Andromeda Start </div> <div> Kiosk Andromeda Restaurant </div> <div> Kiosk Andromeda Activities </div> <div> </div> <div> </div> </div> </div> </div>	

This screen shows the possible datasets for a behavior. This also applies for adjusting the settings of the behaviors. The names of these items are made as follows: *name of the behavior + name of the dataset*.


For more information on datasets, see chapter [Data management](#)

3.3.2.1 *Adjusting the settings*

This chapter shows how to adjust the settings of a behavior.

	By clicking this icon, the editing mode becomes enabled. The behavior-icons change slightly.		
	The behaviors without settings turn light grey .	The behaviors with settings are given a shadow .	
	 Custom Logo	 Kiosk	

After clicking on a behavior a popup-screen appears with the settings that can be adjusted. After adjusting the settings to the appropriate values the changes can be saved by clicking the 'Save' button or not saved by clicking the 'Close'-button or the cross in the top right hand corner of the popup-screen.

	By clicking this icon, the editing mode is disabled. The icons regain their former appearance.
--	---





3.3.2.2 *Types of Settings*

There are several types of setting that can be adjusted.

1. **Media-files.**

This field is used to save the references to media-files that will be used by the behavior.



	This icon shows the type of file used. The possible icons that can appear are: <i>image, movie or music</i> .
	The name of the file to be used.
	Erase the setting This button erases the name of the file and makes a new selection possible.
	Adding a file This button adds the file to be used by the setting ⁽¹⁾ .

⁽¹⁾: New files can be uploaded, or previously used files can be chosen. This button only becomes active if the previous setting has been erased.

2. Drop-down list.



Basis
Custom Logo
Logo
QR starter
Stop
Tablet Wifi OFF
Tablet Wifi ON

By clicking the arrow at the top, the list of the possible values for this setting is displayed or hidden.

To undo a selection, the selected option must be selected again.

3. Text- and number-input

Valid entry:

Invalid entry:

These fields can contain any data, but only certain values are valid.

If the frame of the value turns red, the input is invalid for this setting (e.g. inputting text in a number-field)

By keeping the mouse still on the input-field, a tooltip is shown with the reason for the invalidity of the entry.

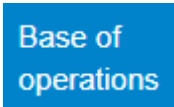

4. Check box



If checked, the setting will be active in the behavior. If unchecked, the setting will be inactive.

3.3.3 Category menu

This part of the behavior screen contains the following elements:

	Name of the category		The number of behaviors registered to the category
---	----------------------	---	--

By clicking the name of the category, the selection-screen is reloaded and the behaviors registered to this category are shown.

3.4 Steering-page

This page contains (most of) the control-methods of Pepper.



3.4.1 Behavior-menu

A first significant part of the page is the behavior-menu on the left side of the screen which has the following elements:

<div>Postures</div>	Posture-menu This menu contains the possible postures for Pepper.
<div>Animation</div>	Animation-menu This menu contains the possible animations that Pepper can show.
<div>Base of operations</div> <div>Demo behaviours</div> <div>Dances</div> <div>Reception</div>	Behavior-categories This section contains the behavior-categories containing the behaviors.

Each of these menus can be opened or closed by clicking the ►-icon to the right of the name.

Tip: If the behavior-category is not visible, please scroll down (or up) the list until the desired category is shown.

3.4.1.1 *Posture-menu*

This menu contains the possible postures for Pepper.

<div>Postures ></div>		By clicking this field, the menu containing the possible postures for Pepper is displayed or hidden.
Crouch	Crouch is a rest-posture (slightly leaning forward, head down). In this posture, Pepper uses less power.	
Stand	Stand is the default posture for (most) behaviors to start.	
Stand zero	Stand Zero is a posture used by the tutorial behavior to display the optimal distance for the speech recognition.	

3.4.1.2 *Animation-menu*

This menu contains the possible animations that Pepper can show.

<div>Animation ></div>		This field displays or hides the list of possible animations
<div>Zoeken...</div>		Search field This field contains a text-field that can be used to search the list of animations.
<div> Listening 1 Listening 2 Listening 3 Listening 4 Listening 5 Listening 6 Listening 7 </div>		List of animations The list contains all possible animations that Pepper can show. This is a very long list, hence the need for a search field.

3.4.1.3 Behavior-categories

In this section, the example of the category kiosk is used. By clicking on the name of the category, the list of possible behaviors in the category is shown.



This list contains 2 parts, specifically the name of the behavior and the possible operations for the behaviors. By clicking the name of the behavior, the operation starts.

There are 3 possible operations for a behavior:

	Generate QR Code	By clicking this icon, a popup is shown with the QR code belonging to the behavior. In later versions of Pepper-Control, this could be used to start the behavior.
	Settings	By clicking this icon, a popup is shown with the settings applicable for this behavior. This icon will only be visible if the behavior has customizable settings
(start)	Starting or stopping the behavior	The start-button starts the behavior. This icon changes to the stop-button if the behavior is already running. The stop-button stops the behavior and is changed to the start-button if the behavior is not running.
(stop)		



When multiple datasets are defined for a single behavior, the layout changes a little bit, but the functionality is unchanged.



The names and layout are changed a little, specifically the name of the behavior is followed by the name of the dataset. By clicking the name of the behavior, the datasets will be shown or hidden.

3.4.2 Movement panel

The panel in the bottom left side of the screen shows the movement panel.

	This enlarges or shrinks this panel to/from full screen mode. This is particularly useful in combination with the tablet.
	The 'Wake up' button activates Pepper's motors bringing the robot to the Stand-posture. This posture is most used as start position for behaviors. The Rest-button causes Pepper to switch to a stable rest-position and switches the motors off. This also means there is less power consumption.

The next part of the panel moves Pepper in fixed directions from Pepper's perspective *IF the power hatch is closed*.

The first row moves Pepper forward.



Left Turn
Forwards



Straight Forward



Right turn
Forwards

The second row moves Pepper sideways or stops the robot.



Left



Stop robot



Right

The last row moves Pepper backwards.



Left turn
Backwards



Straight Back



Right Turn
Backwards






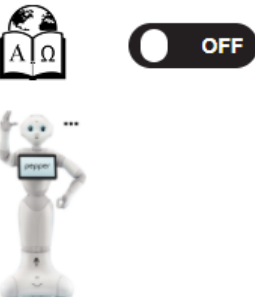
Notes:

1. Pepper will only move if the power hatch is CLOSED.
2. Pepper will stop automatically IF an obstacle is detected. However, since the number of sensors in front is higher than the number of sensors in the back or to the sides, obstacles in the back are less likely to be detected.

3.4.3 Basic Functions

This part of the steering-tab is located on the left side of the centre-screen and contains some basic functions for Pepper.


The first part contains the following basic gestures:

	Clap Hands Pepper will make the gesture of clapping hands but will not make physical contact with the hands.
	High Five Pepper will make the gesture of a high five.
	Hand shake Pepper will offer the right hand for a handshake.
	Blink eyes If switched on, Pepper will blink the eyes.
	Follow Person If this function is turned ON, Pepper will follow the face of the person found.
	Translation option and Text-To-Speech These buttons allow Pepper to speak and translate simple pieces of text. This will be explained in more detail in the following pages.

If these functions are turned off from the on-position, Pepper will return to the default head-position.

Note: If the blink eyes function is switched on, the colour of the eyes will reset as well.

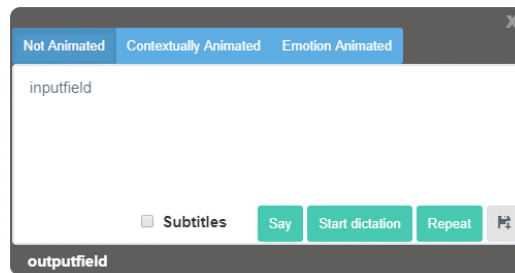
3.4.3.1 *Speech module*



When clicking on the Pepper screen with the ...-symbol in the top righthand corner, 2 possible reactions are available depending on whether the Translation module is turned on or off.

- **Translation Module OFF**

When the translation-module is turned off, the following screen will appear:



This pop-up contains the following segments: **Type of animation, input-field, output-field and options for the speech.**

- Type of animation

Not Animated	Contextually Animated	Emotion Animated
This option does not cause any motions.	This option causes Pepper to gesticulate.	This option ⁽¹⁾ searches for linked words in the dataset Emotions to execute the selected animations.

⁽¹⁾: This option is currently inactive.

- Input field

This field contains the words Pepper should speak. By pressing the 'Start dictation' the connected device is asked to connect the microphone to the portal ⁽¹⁾, and the input via the microphone appears in the input field.





If the option 'Contextually Animated' is selected, the used animations during the speech can be specified. For more information, see [Using Animations in speech-blocks](#).

It is recommended however, to turn the subtitles off when using this feature as the full text will be shown in the field.

- Output field

This field contains the last output Pepper spoke. By clicking on this field, the value in the output field is sent back to the input field to repeat or to make adjustments if needed.

- Speech Options

<input type="checkbox"/> Subtitles	If this field is checked, the text will be displayed on the tablet.
	This button reads out the text to the output field, and thus to Pepper.
	This button activates the microphone to translate speech to text. The translated speech will appear in the input-field
	This button repeats the value in the output field without filling it back in in the input field.
	This option makes Pepper speak the text in the input-field and saves that output to a wav-file on the disc (see Disc Explorer). This can be used in other applications (e.g. Powerpoint)

⁽¹⁾: This function is not available in Google Chrome v60+.

- **Translation module ON**

IMPORTANT: This feature ONLY works with a stable internet connection.

By activating the translation module, the following screen appears:



This screen contains the following elements:

	<p>Input Field</p> <p>The field with the microphone icon indicates the field in which input can be typed. Alternatively, by clicking the microphone icon, the connected device will try to connect the microphone, so speech can be used as input.</p> <p>By hitting the Enter-key, the input will be translated to the set language.</p>
	<p>Output Field</p> <p>The field with the speaker symbol will show the translation of what Pepper is speaking or has spoken.</p>
	<p>Reverse selection</p> <p>This button changes the in- and output fields.</p>
	<p>Language Selection</p> <p>These fields select the used language for the speech engine. Not only do they have to be set for the output-language, but also the input-language, when using the microphone. This enables the speech-recognition function to enter the correct language in the input-field.</p>
	<p>Subtitles Selection</p> <p>If this option is checked, the speech Pepper will say will also be displayed on the tablet.</p>

Note:

It is not possible to use the microphone in Google Chrome v60+. If Google Chrome does not ask for permission to use the microphone, please (re)install an older version of Google Chrome. Use this older version ONLY for accessing Pepper-Control and NOT for surfing the internet.

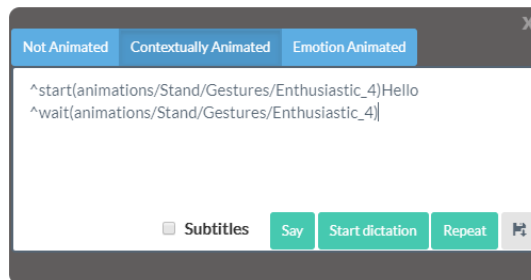
- **Using Animations in speech-blocks**

It is possible to use specific markers to use (certain) animations in speech-fields. It is however, necessary to select the '**Contextually Animated**' option before these can be used.

This applies to:

- **Text Snippets**
- **Text-To-Speech (NOT the translation module)**
- **Composer-block 'Speech'**

For example, when having Pepper read aloud a text by clicking the image of Pepper with dots:



To use animations in the text-block, a specific animation can be chosen from the list at the end of this article. To use an animation in the text-fields, the following commands must be used (animation_name is the full name of the animation):

<code>^start(animation_name)</code>	<i>This command starts the selected animation WITHOUT stopping the speech-text ⁽¹⁾.</i>
<code>^stop(animation_name)</code>	<i>This command stops the selected animation IMMEDIATELY.</i>
<code>^wait(animation_name)</code>	<i>This command finishes the animation ⁽¹⁾.</i>

⁽¹⁾: The animation will only be played **WHILE** there is text being spoken. If the text is not long enough for the animation to finish, the animation will be stopped halfway through as well. This can be avoided by using a `^wait(animation_name)`-command.

An example would be:

- Hello, I am Pepper. It is nice to meet you

```
^start(animations/Stand/Gestures/Enthusiastic_4) Hello
^wait(animations/Stand/Gestures/Enthusiastic_4).
^start(animations/Stand/Gestures/Me_1) I am Pepper. It is
nice
^start(animations/Stand/Gestures/You_1) to meet you.
^wait(animations/Stand/Gestures/You_1)
^start(animations/Stand/Gestures/BowShort_1)
^wait(animations/Stand/Gestures/BowShort_1)
```

Note: The reason why the animation 'You_1' is started while the sentence 'to meet you' is already being spoken is to make sure the animation is already pointing at the user, by the time the term 'you' is spoken. This may take a little trial-and-error to make sure the timing is correct, especially when customizing the speech-speed.

The following list contains all animations that can be used in these fields:

<u>Animation</u>	<u>Animation name</u>
BodyTalk_1	animations/Stand/BodyTalk/BodyTalk_1
BodyTalk_10	animations/Stand/BodyTalk/BodyTalk_10
BodyTalk_11	animations/Stand/BodyTalk/BodyTalk_11
BodyTalk_12	animations/Stand/BodyTalk/BodyTalk_12
BodyTalk_13	animations/Stand/BodyTalk/BodyTalk_13
BodyTalk_14	animations/Stand/BodyTalk/BodyTalk_14
BodyTalk_15	animations/Stand/BodyTalk/BodyTalk_15
BodyTalk_16	animations/Stand/BodyTalk/BodyTalk_16
BodyTalk_2	animations/Stand/BodyTalk/BodyTalk_2
BodyTalk_3	animations/Stand/BodyTalk/BodyTalk_3
BodyTalk_4	animations/Stand/BodyTalk/BodyTalk_4
BodyTalk_5	animations/Stand/BodyTalk/BodyTalk_5
BodyTalk_6	animations/Stand/BodyTalk/BodyTalk_6
BodyTalk_7	animations/Stand/BodyTalk/BodyTalk_7
BodyTalk_8	animations/Stand/BodyTalk/BodyTalk_8
BodyTalk_9	animations/Stand/BodyTalk/BodyTalk_9
Bored_1	animations/Stand/Emotions/Negative/Bored_1
Embarrassed_1	animations/Stand/Emotions/Neutral/Embarrassed_1
Happy_4	animations/Stand/Emotions/Positive/Happy_4
Hysterical_1	animations/Stand/Emotions/Positive/Hysterical_1
Peaceful_1	animations/Stand/Emotions/Positive/Peaceful_1
BowShort_1	animations/Stand/Gestures/BowShort_1
But_1	animations/Stand/Gestures/But_1

CalmDown_1	animations/Stand/Gestures/CalmDown_1
CalmDown_5	animations/Stand/Gestures/CalmDown_5
CalmDown_6	animations/Stand/Gestures/CalmDown_6
Choice_1	animations/Stand/Gestures/Choice_1
Desperate_1	animations/Stand/Gestures/Desperate_1
Desperate_2	animations/Stand/Gestures/Desperate_2
Desperate_4	animations/Stand/Gestures/Desperate_4
Desperate_5	animations/Stand/Gestures/Desperate_5
Enthusiastic_4	animations/Stand/Gestures/Enthusiastic_4
Enthusiastic_5	animations/Stand/Gestures/Enthusiastic_5
Everything_1	animations/Stand/Gestures/Everything_1
Everything_2	animations/Stand/Gestures/Everything_2
Everything_3	animations/Stand/Gestures/Everything_3
Everything_4	animations/Stand/Gestures/Everything_4
Excited_1	animations/Stand/Gestures/Excited_1
Explain_1	animations/Stand/Gestures/Explain_1
Explain_10	animations/Stand/Gestures/Explain_10
Explain_11	animations/Stand/Gestures/Explain_11
Explain_2	animations/Stand/Gestures/Explain_2
Explain_3	animations/Stand/Gestures/Explain_3
Explain_4	animations/Stand/Gestures/Explain_4
Explain_5	animations/Stand/Gestures/Explain_5
Explain_6	animations/Stand/Gestures/Explain_6
Explain_7	animations/Stand/Gestures/Explain_7
Explain_8	animations/Stand/Gestures/Explain_8

Far_1	animations/Stand/Gestures/Far_1
Far_2	animations/Stand/Gestures/Far_2
Far_3	animations/Stand/Gestures/Far_3
Give_3	animations/Stand/Gestures/Give_3
Give_4	animations/Stand/Gestures/Give_4
Give_5	animations/Stand/Gestures/Give_5
Give_6	animations/Stand/Gestures/Give_6
Hey_1	animations/Stand/Gestures/Hey_1
Hey_3	animations/Stand/Gestures/Hey_3
Hey_4	animations/Stand/Gestures/Hey_4
Hey_6	animations/Stand/Gestures/Hey_6
IDontKnow_1	animations/Stand/Gestures/IDontKnow_1
IDontKnow_2	animations/Stand/Gestures/IDontKnow_2
IDontKnow_3	animations/Stand/Gestures/IDontKnow_3
Me_1	animations/Stand/Gestures/Me_1
Me_2	animations/Stand/Gestures/Me_2
Me_4	animations/Stand/Gestures/Me_4
Me_7	animations/Stand/Gestures/Me_7
No_1	animations/Stand/Gestures/No_1
No_2	animations/Stand/Gestures/No_2
No_3	animations/Stand/Gestures/No_3
No_8	animations/Stand/Gestures/No_8
No_9	animations/Stand/Gestures/No_9
Nothing_2	animations/Stand/Gestures/Nothing_2
Please_1	animations/Stand/Gestures/Please_1

ShowFloor_1	animations/Stand/Gestures/ShowFloor_1
ShowFloor_3	animations/Stand/Gestures/ShowFloor_3
ShowFloor_4	animations/Stand/Gestures/ShowFloor_4
ShowSky_1	animations/Stand/Gestures/ShowSky_1
ShowSky_11	animations/Stand/Gestures/ShowSky_11
ShowSky_2	animations/Stand/Gestures/ShowSky_2
ShowSky_4	animations/Stand/Gestures/ShowSky_4
ShowSky_5	animations/Stand/Gestures/ShowSky_5
ShowSky_6	animations/Stand/Gestures/ShowSky_6
ShowSky_7	animations/Stand/Gestures/ShowSky_7
ShowSky_8	animations/Stand/Gestures/ShowSky_8
ShowSky_9	animations/Stand/Gestures/ShowSky_9
ShowTablet_2	animations/Stand/Gestures/ShowTablet_2
ShowTablet_3	animations/Stand/Gestures/ShowTablet_3
Thinking_1	animations/Stand/Gestures/Thinking_1
Thinking_3	animations/Stand/Gestures/Thinking_3
Thinking_4	animations/Stand/Gestures/Thinking_4
Thinking_6	animations/Stand/Gestures/Thinking_6
Thinking_8	animations/Stand/Gestures/Thinking_8
Yes_1	animations/Stand/Gestures/Yes_1
Yes_2	animations/Stand/Gestures/Yes_2
Yes_3	animations/Stand/Gestures/Yes_3
YouKnowWhat_1	animations/Stand/Gestures/YouKnowWhat_1
YouKnowWhat_2	animations/Stand/Gestures/YouKnowWhat_2
YouKnowWhat_3	animations/Stand/Gestures/YouKnowWhat_3

YouKnowWhat_5	animations/Stand/Gestures/YouKnowWhat_5
YouKnowWhat_6	animations/Stand/Gestures/YouKnowWhat_6
You_1	animations/Stand/Gestures/You_1
You_4	animations/Stand/Gestures/You_4
ShowSky_1	animations/Stand/Waiting/ShowSky_1
ShowSky_2	animations/Stand/Waiting/ShowSky_2
Think_1	animations/Stand/Waiting/Think_1
Think_2	animations/Stand/Waiting/Think_2
Think_3	animations/Stand/Waiting/Think_3

3.4.4 Camera-screen

This part of the control is located in the centre of the screen and contains the following elements:












3.4.4.1 Camera-window

This field shows the video-output of the camera on Pepper's forehead.

3.4.4.2 Editing Buttons

This section contains the buttons that control the camera.

<u>Action</u>	<u>Start</u>	<u>Stop</u>
Turning the live video on or off		
Fullscreen display Note: These buttons only appear if a video-stream from Pepper is active.		
Take a picture (recommended to activate the video)		
Listen to the microphones of the robot.		
Video-recording This is limited by the available disk space. (see Disk Explorer)		

Note: After recording a video, some time is needed to merge the audio- and video-tracks. During this process Pepper-Control will be temporarily unavailable.

The refresh speed of the video is not very high. This is however the standard for a web display. The transfer speed of the video is dependent on the quality of the network connection.

3.4.4.3 *Disk Explorer*

This part of the webpage contains the media-files (audio and video) made in this tab.



This contains 2 major elements, specifically the menu and the file list.

- **Menu**




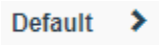
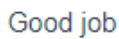
	This is the title of the disk explorer.
	This show the remaining free disk space.
	This button shows or hides the file list.

- **File list**

	This is the name of the file. By clicking this, the file will become available for download to the connected device.
	This is the size of the file.
	This can delete the file from the disc. However, this operation needs to be confirmed prior to deletion.
<div><p>By clicking the delete button, the corresponding file will be permanently deleted. By clicking the cancel button or the cross in the top right corner, the file will not be deleted.</p></div>	

3.4.5 Text Snippets

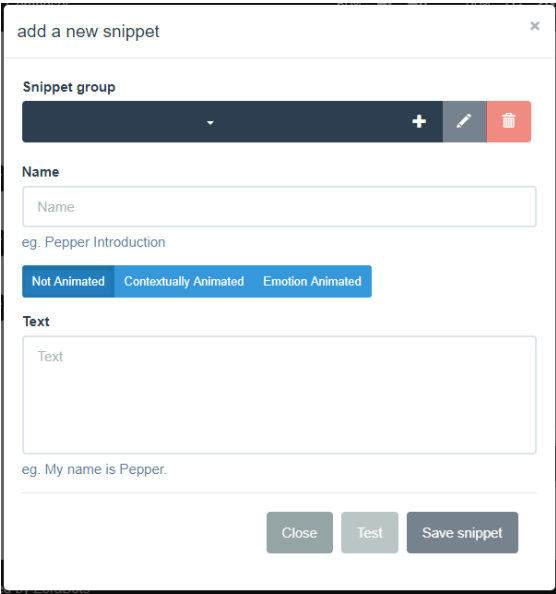
At the top right hand of the screen (excluding the tab bar) the snippets are visible. These snippets are only available in the system language.

	This enables the editing mode for the available snippets. By clicking this button, it changes to the 'Done' icon.
	This exits the editing mode and re-enables the editing and add buttons.
	This adds a new snippet and will be further explained in the following chapter. By clicking this button, it changes to the 'Done' icon.
	This is the standard category and contains by default only one snippet.
	This is the name of a saved snippet ⁽¹⁾ . By clicking it, Pepper will speak the snippet out loud.

⁽¹⁾: The colour of the name shows whether it is animated or not (black = not animated, green = animated)





3.4.5.1 Adding snippets

By clicking the  button, a screen appears to add a new snippet:

	<p>This section contains the information of the group to which the snippet will belong A group <i>must</i> be selected, otherwise the 'Save snippet' and 'Test' buttons will be unavailable.</p> <p>This section contains the name that will be displayed.</p> <p>This selects the type of animation to be used (see also Type of animation).</p> <p>This contains the text to be spoken aloud.</p> <p>This contains the options for the created snippet. The options 'Test' and 'Save snippet' will only be selectable once all the information is filled in.</p>
---	--

There are 2 major parts in this section of the page, specifically the snippet groups and the snippets themselves.

1. Snippet groups

	By clicking this button, the current list of available groups is displayed.
	This button creates a new group for snippets. A popup appears to input the name of the new category.
	This button alters the name of the selected group ⁽¹⁾ .
	This button removes the selected group and its snippets ⁽¹⁾ .

⁽¹⁾: These buttons only become active once a group has been selected.

2. Snippets

A snippet *must* contain the following information:


Snippet group	To display the snippet in the steering tab, a category is needed.
Name	To have Pepper read the snippet out, a title is needed.
Animation type	A type of animation must be defined. Emotion animation is not active in this version of Pepper. (see Type of animation). If the option 'Contextual Animation' has been selected, the animations can be specified. For more information, see the Chapter Using Animations in speech-blocks .
Text	The text to be spoken.

3. Operations

When creating a new snippet, 3 operations are available:

Close	By clicking this button (or the cross in the top right corner of the popup), the created snippet will NOT be saved
Test	By clicking this button, the snippet will be spoken by Pepper, but small changes can be made (e.g. adding a comma for emphasis or a ... for pauses) before actually saving it.
Save Snippet	This button saves the new snippet in the selected category.

3.4.5.2 [Editing Snippets](#)

By clicking the  button, the editing mode is enabled. By clicking on a snippet, the previous window will appear with all the data of the selected snippet already filled in.



By clicking the 'Save snippet'-button, the snippet will contain the new information.

Note:

If a snippet group doesn't have any snippets in it, it will not be visible in the steering page.

3.4.6 Compositions

If there are no compositions available on the robot in the selected system language, this section will not appear in the steering page.

	The menu opens or closes the list of compositions that are present on Pepper by clicking the arrow to the right.
	This list contains the current compositions in the system language that has been selected. By clicking the name, the composition will start.

Note: From the steering page in older versions, it is not possible to stop a running composition with a behavior in it.

3.4.7 Head movement, point at something, eye colouring.

The bottom right of the page contains the following items:



Head movement

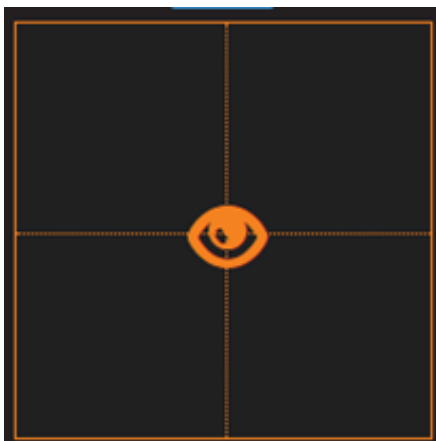
Point at something

Set eye colour.

By selecting the correct function, the pane below the selection icons will change.

The **Reset** button sets the head position to straight ahead and colours the eyes white.

3.4.7.1 Head movement

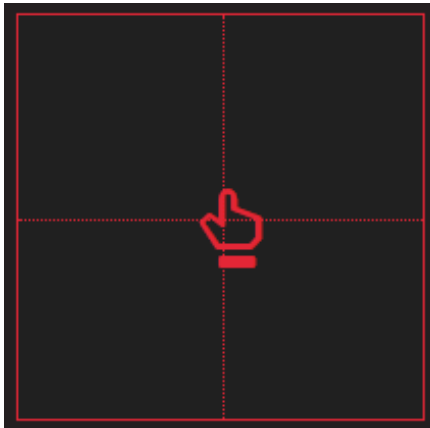


This pane shows where Pepper will look to.

The grid represents the field of vision as seen by Pepper.

By moving the eye, Pepper will look in the selected direction.

3.4.7.2 *Point at something*

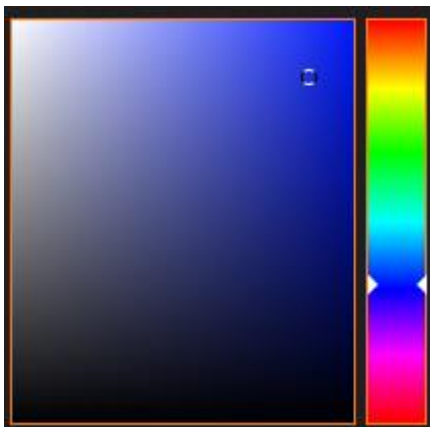


This pane sets the direction in which Pepper will look and briefly point to.

Like the previous grid, it represents Pepper's field of vision.

By moving the pointer-hand, Pepper will look in the selected direction.

3.4.7.3 *Eye colouring*



This pane sets the colour of Pepper's eyes.

By changing both the tint and colour, Pepper's eyes will change colour.

Note: The darker the selected colour, the less output the LEDs will have and the less colour will be seen. To have the best results, a bright and clear tint should be used.

3.5 Composer-tab

When selecting the tab "Composer" in Pepper-Control the following options are shown:

- **Simple composer**
- **Advanced composer**

3.5.1 *Difference(s) between Simple and Advanced*

The page of the simple composer has been designed to manually set a series of routines or gestures to make Pepper carry out a choreography or exercise. This is done by dragging the (pre-programmed) blocks in the menu into a linear timeline and playing (part of) the composition.

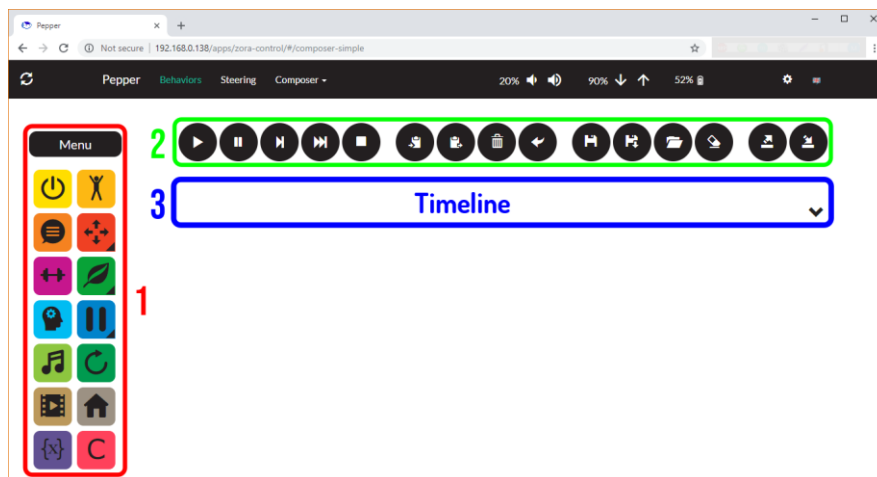
The advanced composer was designed to allow for more functionality and interactivity with the user. To provide the interactivity however, multiple timelines (or outputs) are need, which cannot be done using a linear timeline.

To that end, a workspace has been created to allow the user to create multiple outputs if needed (e.g. if 'yes' is said, use branch 1; if 'no' is said, use branch 2).

To accommodate this new functionality, every block contains new input- and output-connectors to link the blocks together. (e.g. If block A is done playing, play block B, then block C etc.)

3.5.2 *Simple Composer*















When selecting the option 'Simple composer' from the menu, the following screen appears:
















This page contains the following elements:

- 1) **Menu**
- 2) **Action-button**
- 3) **Timeline**

On the left side of the screen the menu is shown with all the possible actions that can be put into the timeline.

	Rest/Wake up This block puts Pepper in a stand-posture or puts Pepper in a rest-position.		
	Postures This block selects the posture that Pepper will take (see Postures).		
	Speech This block makes Pepper say a text in the selected language. The speech can make use of customised animations, see chapter Using Animations in speech-blocks for more information.		
	Motion ⁽¹⁾ This block makes Pepper move the head, hands and arms to a specified position. To move a body part, the sub-blocks can be dragged into the timeline.		
			
Head	Hands	Arms	Selfie (combination of the previous elements)
	Gym This block has Pepper do exercises (e.g. cycling with the arms).		
	Natural ⁽¹⁾ This block contains elements that let the robot interact more naturally with the user (e.g. facial tracking).		
			
Blinking	Facial tracking	Breathing	
	Behaviors This block enables the active behaviors to be played in the composition.		

	Wait ⁽¹⁾ This block temporarily stops the composition from playing until an input is detected or some time has passed. The list below shows when the composition will resume .		
			
Time (seconds) E.g.: 60 seconds	Time (fixed) E.g.: 12:30 PM	Sensor-input detected E.g.: Left hand is touched	
			
QR-code is detected ⁽²⁾ E.g.: 'Continue' is detected	Speech is detected ⁽²⁾ E.g.: 'Continue' is detected	Any face is recognized	
	Music This block starts or stops music from playing.		
	Loop This block creates a second timeline that can be repeated if needed.		
	Animation This block makes Pepper execute an animation.		
	Bezonion This block is only available for specified users.		
	Variables This block allows the user to create or alter the value of variables.		
	Composition This block plays an earlier stored composition in the current composition. Note: <i>The list of available compositions only contains the compositions stored in the same system-language as the composition with this block in it.</i>		

⁽¹⁾: This block is a **container-block**, the more specific options are stored in the sub-blocks. The block itself cannot be used in the timeline.






⁽²⁾: If a wrong number of inputs is detected, the composition will continue regardless.

For more info about the possible options of each block: see **Appendix 5 – Composer**.





3.5.2.2 [Actions](#)

The following actions can be taken with the created composition.








A first group of buttons cause the composition to be executed or stopped.

	Play This button plays the composition from start to finish.
	Pause This block pauses the composition until the play-button is pushed in the Control-website after the current blocks stops playing.
	Play selected This button plays only the selected block.
	Play from selected This button plays the composition from the selected block until the end. <i>Note: If the composition is set to play multiple times, the composition will restart from the beginning, NOT the selected block.</i>
	Stop This button stops the currently playing composition. Note: When a behavior is in the composition, the behavior must be stopped separately.

A second group of buttons allows you to copy, paste and delete a selected block.

	Copy to clipboard This button copies the selected block to the clipboard.
	Paste from clipboard This button adds a copy of the previously copied block at the end of the composition.
	Delete selection This button removes the selected element from the timeline.
	Undo This button undoes the last action taken by the user (e.g. deleting a block by mistake).

The last group of buttons handle the storage and management of the compositions.

	Save This button saves the currently active composition in the set system language. <i>Note: If no filename has been provided, a popup will appear, otherwise the current filename will be used.</i>
	Save as This button allows you to specify which filename should be used when saving the composition.
	Open This button opens a selection of the currently saved compositions on the robot in the system language and fills the timeline with the saved blocks. <i>Note: The current blocks in the timeline will be erased.</i>
	Clear timeline This button clears all blocks from the timeline and closes the opened composition if necessary.
	QR code ⁽¹⁾ This button generates a QR code which can be used to start the composition. To use a QR code, simply hold it in front of the forehead camera (in the correct position) while Pepper is not running behaviors or compositions.
	Export ⁽²⁾ This button is used to export the currently saved compositions to the connected device. By selecting the desired compositions from the popup-screen, a zip-file will be created and downloaded to the connected device.
	Import ⁽²⁾ This button allows the earlier exported compositions to be re-installed on Pepper. Please ensure the compositions in (z)cmp -format are used and not the zip-archive.

⁽¹⁾: This button is only available if the composition has been saved on Pepper.

⁽²⁾: When importing files from a previously exported zip-file, the compositions must be extracted from the zip-archive in (z)cmp-format when re-importing them.

Note: Importing a composition does not automatically load them into the timeline.

3.5.2.3 *Timeline*

This part is used to combine the different block into one choreography. For example:



There are endless possibilities for combining the blocks.

Note: The Gym- and Behaviors-blocks contain a large amount of data and could potentially slow down the loading and verification process.


Important:

When adding a music block, a second music block must be added to stop the music.


- **Tips and Tricks**

The following tips should help make a stable composition:


- Always start the composition with a **Wake Up**-block and a default posture.

	This combination makes sure Pepper stands up, even if an old robot (with a slightly worn battery) is used.
--	--

- If a **music**-block is used in the composition, make sure a **stop-music**-block is also in the composition.
Also, time the composition to match the duration of the song(s) by using **Wait**-blocks

	If the stop-music-block is not detected, when playing the composition again, the music may not start.
---	---

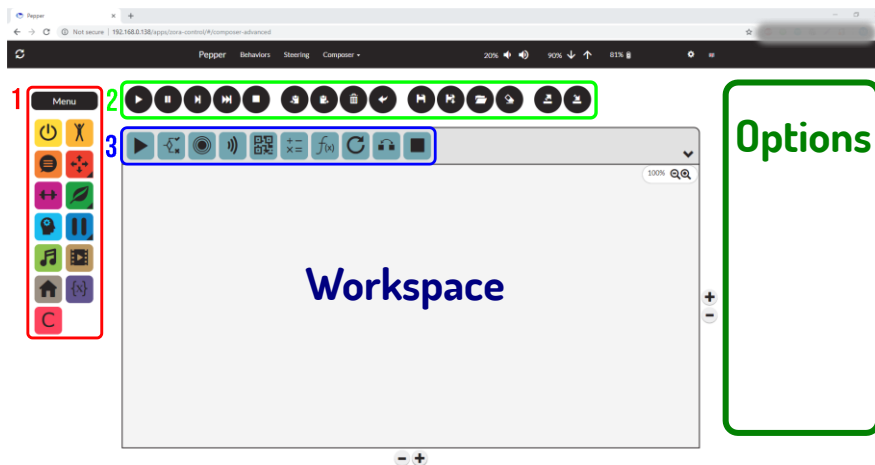
- Keep the amount of **gym**- and **behavior**-blocks to a maximum of five per composition

	These blocks contain a lot of data and may slow the loading-process of the composition
---	--

- Uncheck the 'Random movements'-option on a **music**-block IF this music block is followed by a **Gym**-block. This option may clash with the start of the exercise.
- Always add a **Stop-music**-block before a **behavior**-block
- When using a **Loop**-block, use the 'Randomize timeline' ONLY when the loop contains just **gym**-blocks or **behavior**-blocks with dances in.

3.5.3 Advanced Composer

When selecting the option 'Advanced composer', the following page is shown:



Most of the blocks and function-buttons from the simple composer are still present (loop has been removed). However, the timeline has been upgraded from a line to a workspace and a few new function-blocks are present as well. The blocks have a slightly changed look, specifically an 'Input Connector' and a 'Output connector' has been added to the blocks to create the timeline(s).

For example, the 'Speech'-block:

<u>Simple Composer</u>	<u>Advanced Composer</u>

(The black edge around the block indicates the block has been selected).

To maximize the timeline-workspace, the options for a block will now be displayed to the *right of the timeline*.

In case the number of blocks is too big for the timeline field, it can be expanded or shortened by using the \oplus / \ominus buttons at the side of the screen. The \oplus -button on the right expands the field to the right, and the \oplus on the bottom expands it to the bottom.

The Zoom-function ($\text{100\%} \text{ } \text{🔍}$) should only be used to show the general outline of the composition, and not be used when moving blocks from the menu to the timeline.

As is shown in the image above, this page contains 5 main fields, specifically:

- 1) **Menu**
- 2) **Actions**
- 3) **Functions**
- 4) **Workspace**
- 5) **Options**

3.5.3.1 [Menu](#)

The menu-bar contains the same blocks as in the simple composer.

See the section [Menu](#) of the simple composer for more information, or **Appendix 5 – Composer** for more information on the individual blocks.

3.5.3.2 [Actions](#)






These actions-blocks work in the same way as the simple composer.


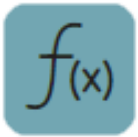



See the [Actions](#) for more information, or **Appendix 5 – Composer** for more information on the individual blocks.

3.5.3.3 [Functions](#)

Above the timeline-workspace, the new function-blocks are shown. These blocks allow for input from the robot (i.e. sensor-, speech- and QR-code-input) to be used to create a decision (e.g. 'If a QR-code contains 'Pepper', show information on 'Pepper', otherwise stop the composition).

The main component when making multiple timelines (or outputs) is the 'If/Else'-block. This block uses the programming logic of an if/else-statement. For more information on this block, see: <https://www.geeksforgeeks.org/decision-making-c-c-else-nested-else/>.

	Start Composition This block will show where the timeline of the composition begins.
	If/Else Block By using variables, this block can separate the current timeline into separate branches. E.g.: if a specific sensor is (not) pushed, path 1 will be taken, else path 2.
	Wait for input via a sensor This block works the same as the Wait for sensor option in the simple composer, but the inputted value can be used in the If/Else block.
	Wait for input via speech recognition ⁽¹⁾ This block works the same as the Wait for speech-recognition option in the simple composer, but the inputted value can be used in the If/Else- and speech-blocks.
	Wait for input via a QR code ⁽¹⁾ This block works the same as the Wait for speech-recognition option in the simple composer, but the inputted value can be used in the If/Else- and speech-blocks.

	Mathematical Operations This block allows for mathematical formulas to be used on new or existing variables, including randomly generating a number between 2 values.
	Math formula This block allows for a variable to be defined by a mathematical formula of other variables (e.g. $o = l^2 + b^2$).
	Loop This block has replaced the loop-block and is based on the for- and while-loops of programming.
	Go to This block is used to exit a loop and to go to a designated block, even if this block has already been linked in the timeline.
	Stop composition This block marks the end of a branch of the timeline .

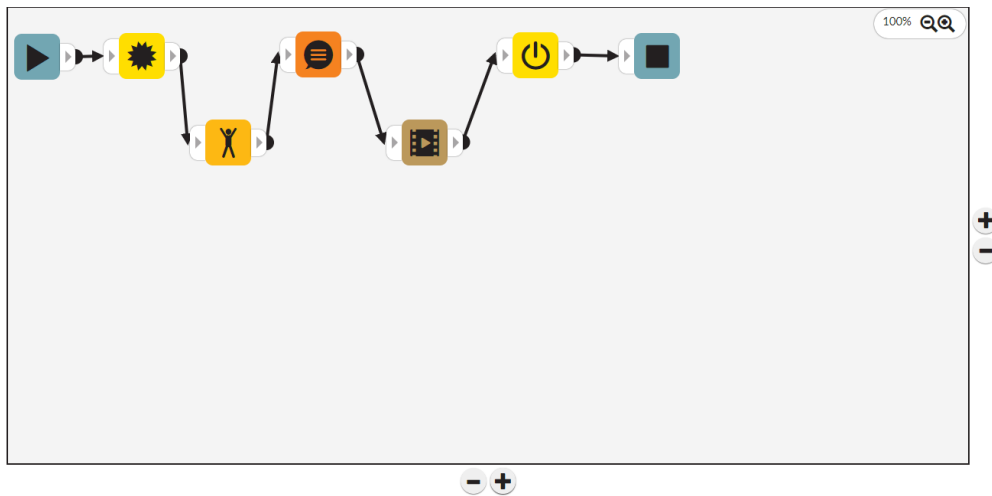
⁽¹⁾: Due to the way Pepper is built, the value to be recognised must first be entered in the options of the block. Make sure some other values are in the list of possible words as well, so the speech-recognition of the robot can detect other values.

A few examples:

- If speech = 'weather' or if speech='whether', use branch A to continue, otherwise use branch B.
- If speech = "yes" or if speech != 'maybe', use branch A to continue.

3.5.3.4 [Workspace](#)

This field replaces the linear timeline of the simple composer. To create a sequence of specific actions, drag the blocks from the menu- or the functions-section to the timeline and link the blocks together



3.5.3.5 [Options](#)

After clearing the timeline or just starting fresh, the following blocks must be used for EVERY composition: **Start timeline** (▶) and **Stop timeline(s)** (■).

3.5.3.6 [A 'simple' composition](#)

To create a composition in the timeline, the following steps must be taken:

<p>Step 1: Drag the required blocks to the timeline-field. By dragging the blocks into the field, the timeline can be created. Make sure to include Stop-blocks for every branch</p>	
<p>Step 2: Link the blocks to one another By clicking the 'Output connector' of a block and the 'Input connector' of another block, a link will be created between them and a timeline will be created like a flowchart. To remove a link, click the arrow (which will turn red when mouse is hovering over it) and the link will be removed.</p>	

Make sure no excess blocks are still present when playing the composition, a popup will remind you that all blocks present in the timeline-field need to be connected.

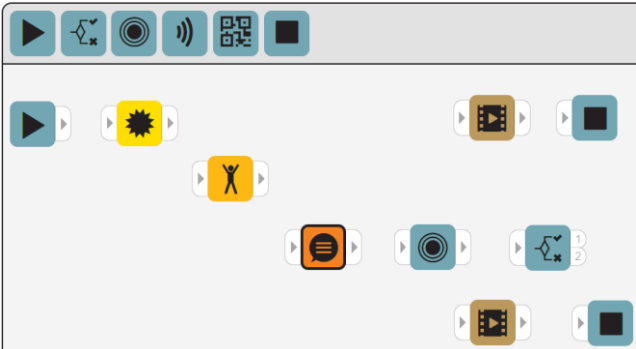

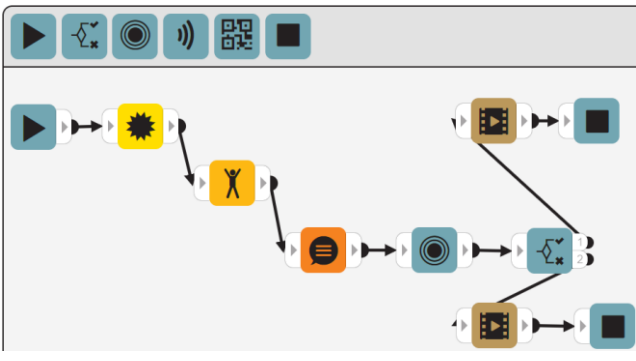
3.5.3.7 [An advanced composition](#)

So far, only the blocks from the simple composer have been used. The following example will use the advanced blocks to create a composition.

The following composition will follow the flow as follows:

- 1) Zora will wake up, stand straight, speak an introduction and ask to be touched on the front head sensor.
- 2) If the front head sensor is touched, Zora will take a bow (path 1).
If the front head sensor is not touched, Zora will be sad (path 2).


To create the composition, the same steps as before can be used:

<p>Step 1: Drag the required blocks into the timeline-field. Do not configure the If/Else-Block yet, this is best done <i>AFTER</i> the timeline has been fully established.</p>					
<p>Step 2: Link the blocks to one another in the required order by clicking the 'Output connector'-Block of one block and clicking the 'Input connector'-block of another. Take care to have the 'If/Else'-block AFTER the 'Wait for sensor (advanced)'-block. The If/Else block in more detail:</p> 					
<p>Step 3: Check the settings If the name of the sensor has been altered after the blocks have been connected, the settings of the if/else-block need to be changed so the correct sensor has been chosen.</p>	<table border="1"> <thead> <tr> <th>Sensor</th> <th>If/Else</th> </tr> </thead> <tbody> <tr> <td> <div style="background-color: black; color: white; padding: 5px; text-align: center;">Sensor</div> <p>Name:</p> <input type="text" value="Choice"/> </td> <td> <div style="background-color: black; color: white; padding: 5px; text-align: center;">If/else</div> <p>If sensor:Choice = Head front → Path 1</p> <p>Else → Path 2</p> </td> </tr> </tbody> </table>	Sensor	If/Else	<div style="background-color: black; color: white; padding: 5px; text-align: center;">Sensor</div> <p>Name:</p> <input type="text" value="Choice"/>	<div style="background-color: black; color: white; padding: 5px; text-align: center;">If/else</div> <p>If sensor:Choice = Head front → Path 1</p> <p>Else → Path 2</p>
Sensor	If/Else				
<div style="background-color: black; color: white; padding: 5px; text-align: center;">Sensor</div> <p>Name:</p> <input type="text" value="Choice"/>	<div style="background-color: black; color: white; padding: 5px; text-align: center;">If/else</div> <p>If sensor:Choice = Head front → Path 1</p> <p>Else → Path 2</p>				

Things to note in the settings of the advanced blocks:

- Every advanced block should have a name, since ALL earlier advanced blocks will be used as a reference in an If/Else-block. The name should also be unique and easy to understand. In this case, the name **choice** has been used as a simple example.
- In the If/Else block, the list for variables is updated when the block is selected and the list of variables that can be used is divided into categories (speech recognition, sensors and QR code).

3.6 Control bar

This part of the menu bar contains the settings for volume and voice pitch, shows the state of the battery, has a  button that opens the system settings for Pepper ([admin-menu](#)) and a button to change the system language settings.





Note:

The gear wheel in the top right corner changes colour depending on the status of Pepper's motors.

- When it is coloured **orange**, some motors are getting a little hot. Please ensure Pepper has sufficient air circulation for the motors to cool down.
- When it is **red**, the motors on Pepper are overheating. Pepper must be put into a rest-mode as soon as possible. Safety measures will put Pepper in a rest-position if left alone for too long. DO NOT start any behaviors or movements, because Pepper may fall and/or break something.

3.6.1 Volume-settings



The volume settings use the following symbols:

40%	Current volume in percentages.
	Decrease volume by 10% down to a minimum of 20% ⁽¹⁾ .
	Increase volume by 10% up to a maximum of 100%.

⁽¹⁾: The minimum volume is set so it is always possible to hear Pepper read out the IP address.

3.6.2 Speech speed

The speech speed settings use the following symbols:

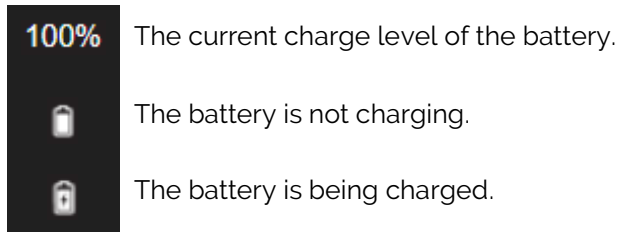
90%	Current speech speed value in percentages.
	Decrease speech speed by 5% down to a minimum of 50%.
	Increase speech speed by 5% up to a maximum of 150%.

Note: If Pepper is not fully understandable when speaking, decrease the speech speed to better suit the text. The recommended setting to fully understand Pepper's speech is approximately 80%.

Important: The settings for the volume and the speech speed can be altered **during most behaviors or compositions** to adjust the output of Pepper's speech.

3.6.3 Battery level

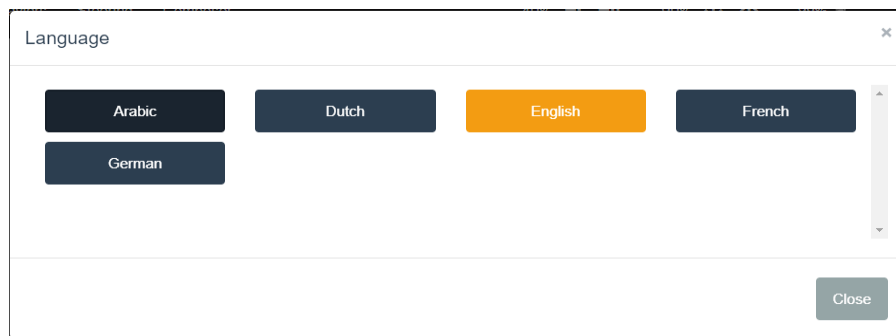
The following symbols are used to display information about the battery.



Note: If the battery drops below 20%, Pepper will inform you that the battery should be charged. If the battery drops below 5%, Pepper will need to be charged immediately or it will stop.


3.6.4 Language Selection

The icon **on the far right** shows the language settings. The current language is represented by a flag of the country. By clicking this option, a popup will appear with the installed languages. By clicking another language, the settings will be updated.:



Note: The popup must be closed manually, even if a new language has been selected.

3.6.5 Admin-menu

To the left of the language-flag, the Admin-menu can be found. By clicking the gear  in the Control bar, the menu with all of Pepper's settings is shown.

A first part of the settings deal with Pepper's settings:

Language	This option shows the available languages on Pepper. This can also be opened by clicking the flag-symbol to the right of the admin-menu.
Change Data	This option opens the data-editor page. On this page it is possible to create new datasets or edit (some of) the current datasets. See chapter Data management
General Settings	See chapter General Settings
Wifi Settings	See chapter Wifi-settings
Hardware	This option shows an overview of the motors and the currently running modules. See chapter Hardware
About	See chapter About

A second part of the settings deal with error reporting.

Feedback	This option shows the feedback form.
Download overview	This option sends an overview of the behaviors that have run since the start-up of Pepper to the connected device.
Download diagnostic	This option sends diagnostic data to the connected device. This can be used with remote help.

The final part of the settings deal with the currently running operating system on Pepper.

Stop	This option stops all running processes and puts Pepper in a rest-position.
Backup Data	This option copies the current user-data to the connected device.
Restore Data ⁽¹⁾	This option restores the previously saved user-data to Pepper.
Reboot	This option fully reboots Pepper.
Quick reboot	This option restarts most services quickly, but is not always as effective as a full reboot.
Shutdown	This option shuts Pepper down.

⁽¹⁾: This option is currently not operational.

The best practice to restart Pepper is to shut Pepper down completely, wait for 10 seconds and start Pepper up again.

3.6.5.1 *Data management*


- **Introduction**

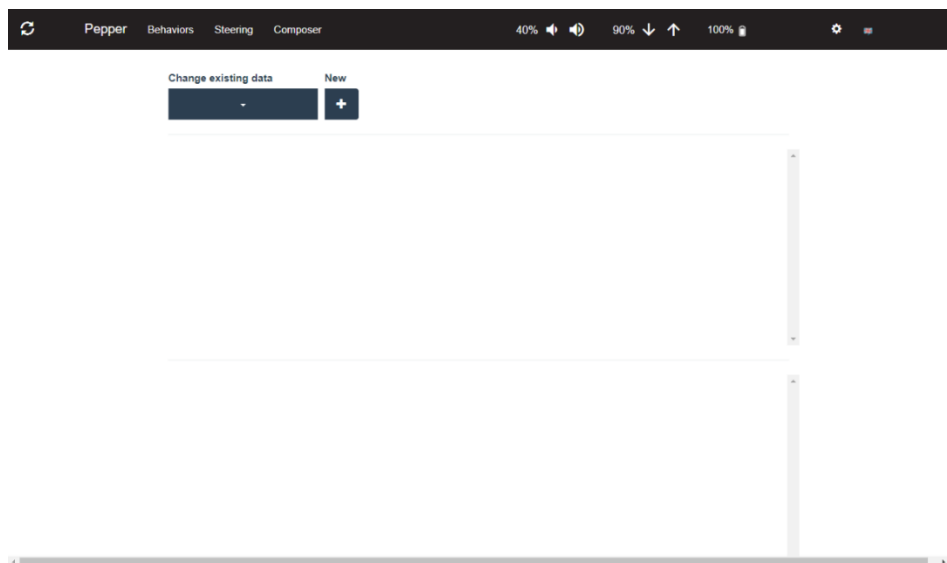
The data management page is designed to customise (most) behaviors by allowing the owner (or a proxy of the owner) of their Pepper to add sets of data to behaviors. For example, the behaviors used in a kiosk or the questions in a QR quiz or Pepper Information.

Some terminology used throughout this document:

Database	A collection of information that is organized so that it can be easily accessed, managed and updated.
Dataset	A list of data associated with a specific behavior containing rows of data, split into columns.
Row	One entry in the dataset with all columns.
Field	One column in one row of the dataset.
Record	Same as a Row.

- **Accessing data management**

To access the data set, open the menu by clicking the  icon and selecting the 'Change Data' option. The following screen appears:



This page allows the user to alter some of the data used on Pepper.

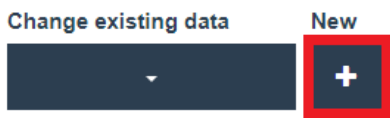
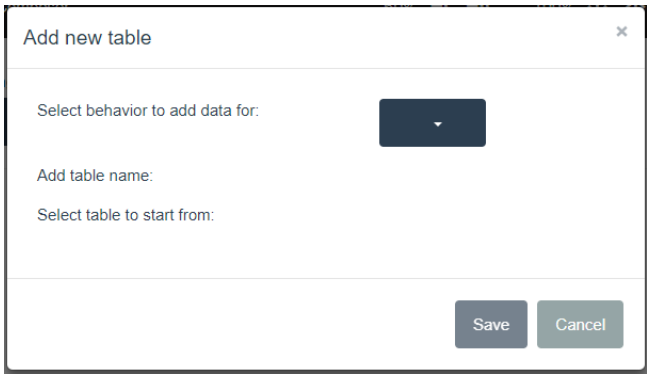
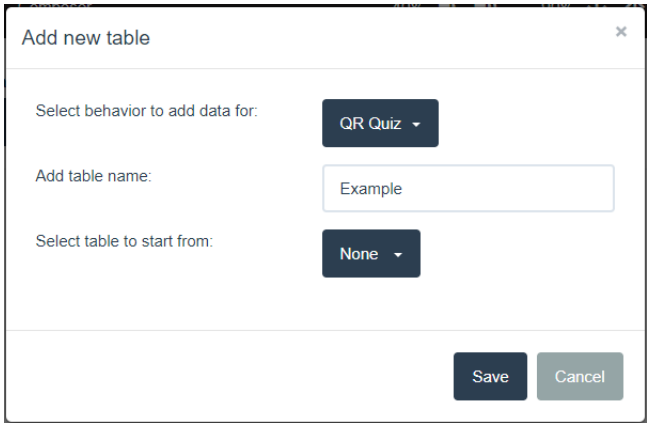
- **Creating a new dataset**

To create a dataset, the following variables are needed as identifiers:

- 1 Name of the behavior**
- 2 Name of the dataset itself**
- 3 Based on already existing data or from scratch**

Note: When starting these datasets from the behavior-tab, the name of the behavior is already filled in, so the dataset named 'Kiosk test' will be displayed as Kiosk 'Kiosk test'.

Once these are well thought out, the dataset can be created.

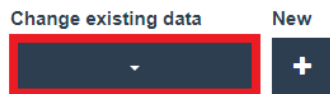
Step 1 – Click the '+'-button next to the data list							
Step 2 – A popup appears with the required identifiers:							
Step 3 – Fill in the required fields	<table border="1"> <tr> <td>Select the behavior to add data for</td><td>A drop-down list with behaviors that use a dataset</td></tr> <tr> <td>Add table name</td><td>The name of the dataset</td></tr> <tr> <td>Select table to start from ⁽¹⁾</td><td>The dataset whose records will be duplicated to start</td></tr> </table>	Select the behavior to add data for	A drop-down list with behaviors that use a dataset	Add table name	The name of the dataset	Select table to start from ⁽¹⁾	The dataset whose records will be duplicated to start
Select the behavior to add data for	A drop-down list with behaviors that use a dataset						
Add table name	The name of the dataset						
Select table to start from ⁽¹⁾	The dataset whose records will be duplicated to start						
<p>Step 4 – Doublecheck the information</p> <p>The example shows a new blank dataset for QR quiz with the name Example.</p> <p>Create the dataset by clicking the 'Save'-button.</p>							

⁽¹⁾: No previously created data can be used yet, so only the option 'None' will be available.

*Note: If the behavior-selection is still filled in, please **re-select** the desired behavior.*

- **Editing and deleting a dataset**

Once the dataset is created, it is automatically selected and active for editing. To select another dataset however, click on the drop-down list:



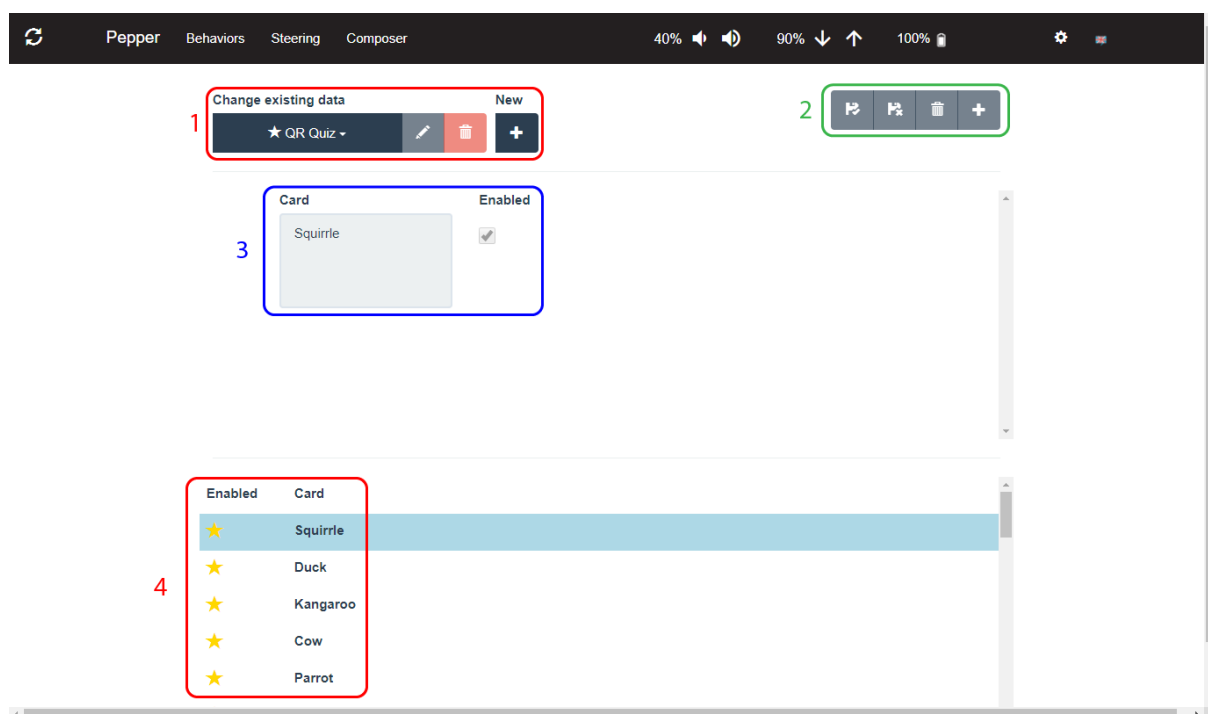
A list of all the existing datasets is shown ordered by Creation Date – from oldest to newest.

Therefore, any new dataset will be at the bottom of the list.

By selecting the dataset from the list, the layout changes considerably.

The ★ next to a name signifies a default dataset, and changes CAN'T be made to this dataset. If changes are required, a new dataset based on the default must be made.

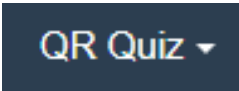







This page contains the following elements:

1. *Tools for editing the selected dataset*





The following items can be found in this collection:

	<p>Selection list of datasets This list contains all the currently available datasets. By clicking this button, the list is displayed.</p>
	<p>Edit-button This button opens a popup-screen where the name of the dataset can be altered.</p>
	<p>Delete-button This button opens a popup to confirm if the selected dataset may be deleted.</p>
	<p>New-button This button adds a new dataset to the collection.</p>

As shown in the picture above, when selecting a default dataset, the 'Edit' and 'Delete'-button are disabled. When using it on other datasets, this button will be enabled.

2. Tools for editing the rows of the dataset

The following items can be found in this collection:

	Save Changes This button saves the changes made to ALL rows of data and writes the data in the dataset to the database.
	Undo changes This button reloads the last saved data in the dataset from the database.
	Delete selected row of data Deletes the selected row of data after confirming the choice by selecting 'Yes' in the following popup screen.
	Add a new row of data Adds a new empty row of data.

Note: The buttons 'delete' and 'new' immediately create or remove records on/from the database, meaning that the undo changes will NOT alter the number of rows of data.

3. Tools to alter the rows of data

This record will contain the fields of data. In this example, two textboxes and a checkbox are present. For more information on which behavior contains which type of data fields, please refer to Appendix 2 – Behavior List.

Note: Please use the following precautions when creating data:

- *Input valid numbers in fields*
- *Fill out all data fields*

4. Selection screen

This part of the data management screen lists the existing rows of data in the dataset. By selecting the row, the background turns light blue and the data in this row can be altered if it is not a default dataset.

3.6.5.2 *General Settings*

This page contains the following categories: 'General', 'User interface', 'Logging', 'Custom Logo', 'Composer' and 'Sending Mails'.

- **Behaviors**

This category contains settings that use and are used by specific behaviors.

- **Use startup behavior**
If this option is checked, the selected 'Startup behavior' will be started when Pepper is (re-)started.
- **Startup behavior**
In this field, the behavior to launch when Pepper is started can be selected from a list. To unselect the startup-behavior, select the behavior once more.
- **Dancing with tablet expansion**
This option should be checked if Pepper has been equipped with a box (scanner or bankcard-reader) around the tablet. **This option will change the movements of the arms during dance-behaviors.**
- **Dance Volume**
This option will change the maximum value of a dance to the **percentage in this setting.**

- **General**

- **Voice pitch**
This option regulates the voice pitch of Pepper's voice.
- **Safety distance around the robot (m)**
This option determines the distance Pepper will detect obstacles in a radius around Pepper. The higher this value, the less accurate the detection becomes.
- **Safety distance looking in front of the robot (m)**
This option determines the distance Pepper will detect obstacles in front of Pepper. The higher this value, the less accurate the detection becomes.
- **Show hint of the day**
If checked, the 'hint of the day'-field will appear on the Pepper-page.
- **Show subtitles**
If this option is unchecked, no subtitles will be displayed at all.
- **Authorize BlueCherry**
By pressing this button, a popup will be shown with a code needed when support is given by BlueCherry.
- **Extension on the tablet**
This option should be checked if Pepper has been equipped with a box (scanner or bankcard-reader) around the tablet. **This option will change the movements of the animations (during speech, explanations, ...).**

- **User interface**

- **Use slide menu**
If unchecked, the slide menu on the tablet is disabled.
- **Pin code**
This setting is used to call the stop-behavior from the tablet-menu.

- **Logging**

This category contains settings related to the diagnostic data. If the option 'Enable logging to ZoraBots server' is enabled, the feedback form will send the data to the ZoraBots server, otherwise the data will only be stored locally on the Pepper.

- **Custom Logo**

These settings handle the image that appears when Pepper starts.

- **Show custom logo**
If checked, this option will show the specified image when Pepper starts.
- **Custom logo**
This field contains the image to be used on the tablet.
- **Size for the custom logo (%)**
It is possible to increase or decrease the size of the image shown on the tablet.

- **Composer**

These settings deal with the options of the composer.

- **Exercises in mirror image**
This option allows for the Exercise-blocks (the purple blocks in the composer-menu) to be executed in mirror-image (left becomes right).
- **Web address of the online composer**
To use the latest version of the online functionality, the value must be '<http://www.start2compose.be>'.

- **Sending Mails**

These settings contain the data for your mail server.

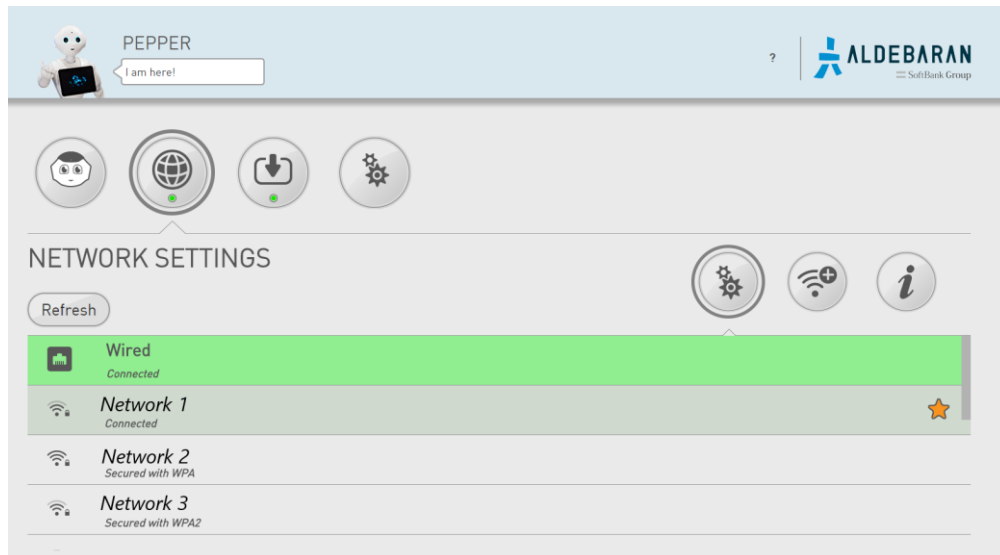
- **Sender email address**
This setting contains the e-mail address that will be used to **send** the e-mail. In most cases, this will be the user's e-mail.
- **SMTP-server**
This field contains the web address of the e-mail server, e.g.: smtp.gmail.com.
- **SMTP-server-port**
This field contains the data port used by the e-mail server, e.g.: 588.
- **Email server password**
This field contains the password data corresponding to the e-mail address and SMTP-server.
- **SMS service provider ⁽¹⁾**
This field should contain the value '@mail-sms.com'. This setting is (currently) only used by the Reception-behavior to send an SMS to the number in the dataset.

⁽¹⁾: This option can only be used if a valid account is active on the CM Telecommunications website (<http://www.cm.com>). For more information on how to use the SMS-service, see the chapter 'Reception' in Appendix 2.

3.6.5.3 Wifi-settings







After selecting this option, the following screen appears:

CAUTION: To make full use of Pepper's network capabilities, the TCP-ports 22, 80, 1025, 3000, 3001 and 5560 must not be blocked for outgoing traffic on the router or computer.



The only tab in this manual to be explained is the tab of 'network settings'. All other settings are controlled from the Pepper-Control portal.

A list is shown of all the networks in range along with a list of the following buttons:

	By pressing this button, the list of networks is refreshed to show the latest found networks.
	By pressing this button, the networks in range are scanned and shown in a list.
	By pressing this button, Pepper can connect to a hidden network after the required settings are entered correctly.
	By pressing this button, the information of the network adapters is shown.
	This icon shows the status of the wired connection ⁽¹⁾ .
	This icon shows the status of the wifi network. A star-symbol next to the network shows that the information of the network is stored on Pepper.

- ⁽¹⁾:
- A green background indicates the network connection is being used.
 - A dark grey background indicates the connection is made, but not being used.
 - A light grey background indicates the connection is not made.

Note: If there is both a wired and wireless connection, the wired connection will always take priority, with regards to both sending data or stating the IP address.

- **Connecting to the Wi-Fi network**

After clicking the name of the network, a screen appears with the details of the network containing the following elements:

SSID:	Name of the network.
Security:	Type of security of the wifi-network.
Password:	Password of the wifi-network. By default this field will replace the actual password with '•••'-symbols.
Show password:	If selected, the symbols in the Password-field change to readable characters.
Advanced options:	This option contains the settings for a proxy. It is recommended to contact your network provider when using this option.

When the data of the wifi-network is inputted correctly, by pressing the 'Connect'-button the connection to the network will be established. If a connection should not be made, or the information was not entered correctly, the 'Cancel'-button should be pressed.

After pressing the start-button, Pepper will read aloud the IP-address.

- **Connecting to a hidden network**

By selecting the corresponding button, the following settings can be entered:

After selecting the correct Country code (top left of the screenshot) (e.g. NL, BE, GB), the SSID of the hidden network and the type of security must be entered.

This information must be provided by the host of the hidden network.

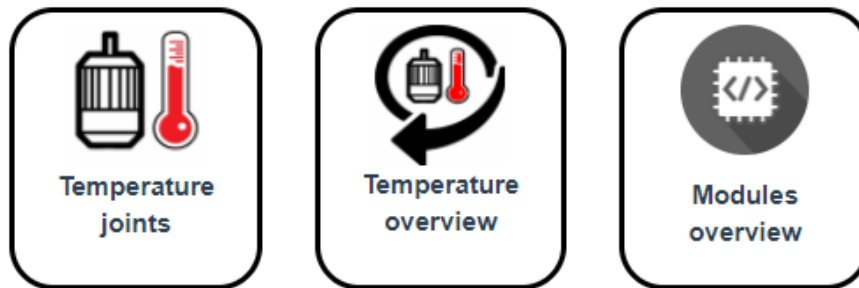
WARNING: Networks with WPA2-Enterprise security settings are NOT supported.

- **Information**

This option displays the information of the network adapters. Specifically, the MAC-addresses of the ethernet-, wifi- and tablet-wifi-adapter are shown in case a fixed IP is required in the network.

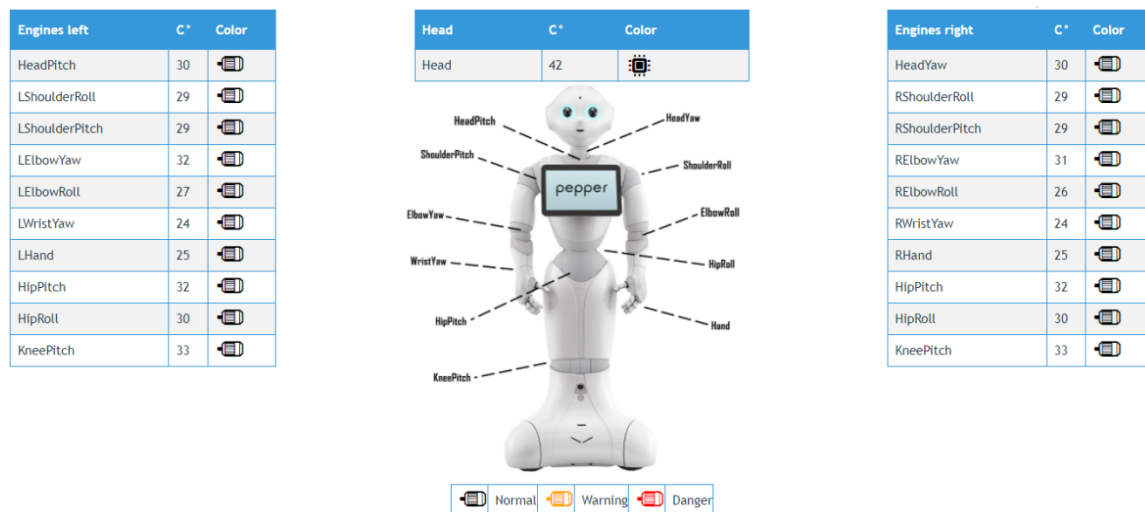
3.6.5.4 Hardware

This option displays the temperature of the motors in the joints, provides a history of overheated motors and shows a list of the installed modules.



- Temperature joints**

This option shows the current temperature of the motors. This display is regularly updated so the displayed values are current.



There are 3 major parts on this page, specifically a list of the motors in the joints with their current temperature and status, the temperature of the processor (aptly named 'Head') and a display of the location of the motors on the robot.

The list of motors contains the following fields:

Engines left	C°	Color	Engines Left	HeadPitch	Name of the motor
HeadPitch	30		C°	30	Current temperature (in °C)
LShoulderRoll	29		Color		Current condition ^(*)
LShoulderPitch	29				

^(*): The legend of the colour-status is displayed below the image of the robot.

- Temperature overview**

This page will show the history of the overheated engines. If no engine has been overheated, the following message will appear: "No history of overheated engines".

If, however, an overheated engine has been detected, the following list appears:

← Back to overview

Time
2017-09-27 15:21:25
2017-09-27 15:19:24

Engines	C°
RShoulderPitch	90.0
LShoulderPitch	103.0

Time	Actions
2017-09-26 17:00:58	rest-
2017-09-27 10:07:07	rest-
2017-09-27 13:12:47	rest-
2017-09-27 13:12:53	video-
2017-09-27 14:54:36	rest-
2017-09-27 14:54:46	rest-
2017-09-27 14:54:47	rest-
2017-09-27 15:14:16	rest-
2017-09-27 15:14:42	wakeup-
2017-09-27 15:15:27	composition-

These tables contain the following elements:

<table><tr><th>Time</th></tr><tr><td>2017-09-27 15:21:25</td></tr><tr><td>2017-09-27 15:19:24</td></tr></table>	Time	2017-09-27 15:21:25	2017-09-27 15:19:24	<p>The time an overheated motor was detected.</p>																			
Time																							
2017-09-27 15:21:25																							
2017-09-27 15:19:24																							
<table><tr><th>Engines</th><th>C°</th></tr><tr><td>RShoulderPitch</td><td>90.0</td></tr><tr><td>LShoulderPitch</td><td>103.0</td></tr></table>	Engines	C°	RShoulderPitch	90.0	LShoulderPitch	103.0	<p>The name of the overheated motor and the temperature at the time of detection.</p>																
Engines	C°																						
RShoulderPitch	90.0																						
LShoulderPitch	103.0																						
<table><tr><th>Time</th><th>Actions</th></tr><tr><td>2017-09-26 17:00:58</td><td>rest-</td></tr><tr><td>2017-09-27 10:07:07</td><td>rest-</td></tr><tr><td>2017-09-27 13:12:47</td><td>rest-</td></tr><tr><td>2017-09-27 13:12:53</td><td>video-</td></tr><tr><td>2017-09-27 14:54:36</td><td>rest-</td></tr><tr><td>2017-09-27 14:54:46</td><td>rest-</td></tr><tr><td>2017-09-27 14:54:47</td><td>rest-</td></tr><tr><td>2017-09-27 15:14:16</td><td>rest-</td></tr><tr><td>2017-09-27 15:14:42</td><td>wakeup-</td></tr><tr><td>2017-09-27 15:15:27</td><td>composition-</td></tr></table>	Time	Actions	2017-09-26 17:00:58	rest-	2017-09-27 10:07:07	rest-	2017-09-27 13:12:47	rest-	2017-09-27 13:12:53	video-	2017-09-27 14:54:36	rest-	2017-09-27 14:54:46	rest-	2017-09-27 14:54:47	rest-	2017-09-27 15:14:16	rest-	2017-09-27 15:14:42	wakeup-	2017-09-27 15:15:27	composition-	<p>A list containing the behaviors that were active since the detection of the first overheated motor.</p> <p>This list can contain up to 10 items.</p>
Time	Actions																						
2017-09-26 17:00:58	rest-																						
2017-09-27 10:07:07	rest-																						
2017-09-27 13:12:47	rest-																						
2017-09-27 13:12:53	video-																						
2017-09-27 14:54:36	rest-																						
2017-09-27 14:54:46	rest-																						
2017-09-27 14:54:47	rest-																						
2017-09-27 15:14:16	rest-																						
2017-09-27 15:14:42	wakeup-																						
2017-09-27 15:15:27	composition-																						

Note:

The history of active behaviors is NOT automatically refreshed. To obtain the latest data of the running behaviors while a motor was overheated, the website portal must be reloaded.

- **Modules overview**

This list shows the currently installed modules of Pepper and their status.

Module	Active	Activate
ZOAnimation	✓	▶
ZOBehaviorManager	✓	▶
ZOBehaviorManagerZora	✓	▶
ZOBezonla	✓	▶
ZOComposer	✓	▶
ZOBase	✓	▶
ZODrawing	✓	▶
ZOExecutor	✓	▶
ZOFeedback	✓	▶
ZOFileHandler	✓	▶
ZOFileUpload	✓	▶

Module	Active	Activate
ZOGym	✓	▶
ZOHttpServer	✓	▶
ZOInteract	✓	▶
ZOKinect	✓	▶
ZOLocalAudio	✓	▶
ZOLogger	✓	▶
ZOMasterVolume	✓	▶
ZOMotion	✓	▶
ZOMotionJpeg	✓	▶
ZOMusicPlayer	✓	▶
ZOQrManager	✓	▶

Module	Active	Activate
ZORequestsApi	✓	▶
ZOSpeechEngine	✓	▶
ZOSpeechSnippets	✓	▶
ZOSystem	✓	▶
ZOSystemManager	✓	▶
ZOTabletService	✓	▶
ZOTracker	✓	▶
ZOTranslation	✓	▶
ZOTrial	✓	▶
ZOVideoRecorder	✓	▶
ZOWeather	✓	▶

If any of the modules stop responding, a red cross will appear instead of the green check-symbol. By clicking the *enabled* 'Activate'-button next to the modules, the module will restart.

If this should not work, please try restarting Pepper. If this situation continues to persist, please contact us. Our contact details are available at the end of this document.

3.6.5.5 [About](#)

This page contains the data required by our back-office management.

A first part contains information on the installed version on Pepper.

Name	<i>This contains the name of the Pepper.</i>
Serial number body ⁽²⁾	<i>This contains the serial number of the robot.</i>
Serial number head	<i>This contains the serial number of the head of the robot.</i>
System version	<i>This contains the version of the naoqi-system.</i>
WPA supplicant	<i>This contains the installed version of the network security.</i>
Mac address wifi ⁽¹⁾	<i>This contains the hardware address of the wifi-adapter.</i>
Mac address ethernet ⁽¹⁾	<i>This contains the hardware address of the ethernet-adapter.</i>
Pepper Control version ⁽²⁾	<i>This contains the installed version of the Pepper Control.</i>
Composer version	<i>This contains the installed version of the composer.</i>

⁽¹⁾: This data might be required when fixed IP's are necessary in the network.

⁽²⁾: This data must always be given to the **support team**.

A second part contains information on the tablet:

Show tablet information	<i>This link opens a popup containing the data of the tablet.</i>
--------------------------------	---

The popup shows the following information:

Tablet browser version	<i>This contains the installed version of the tablet-browser.</i>
Tablet firmware	<i>This contains the installed firmware version of the tablet.</i>
Mac address wifi ⁽¹⁾	<i>This contains the hardware address of the tablet-wifi-adapter.</i>
Open wifi settings on tablet	<i>This link opens the settings on the tablet.</i>
Close wifi settings on tablet	<i>This link closes the settings on the tablet.</i>

⁽¹⁾: This data might be required when fixed IP's are necessary in the network.

A third part contains information on the latest installed version of the Pepper Control:

Changelog	By clicking this link, a popup is shown of the changes made to Pepper Control from the previous version.
------------------	--

The final part contains the legal documentation that has been silently approved by using Pepper-Control.




Zorabots EULA	This link shows the Zorabots agreement in a popup-screen.
Aldebaran EULA	This link shows the Aldebaran agreement in a popup-screen.

4 Tablet-screen









Besides using the tablet-screen as a touch-screen, more functionality is available, such as configuring settings through the menu or setting up the wifi on the tablet.

4.1 Menu

Pepper has a menu available on the left side of the tablet screen. To open this menu, the following steps can be taken:

By tapping the screen (preferably in the bottom left corner), an  icon appears in the top left corner of the screen. If this icon appears, the menu can be opened.	
By clicking the menu-icon or swiping on the bottom of the screen from left to right, the menu is shown.	



After opening the menu, the following settings are available *if the menu is enabled in the general settings*:

 55%	This icon shows the current battery level.
 Great	This symbol shows the wifi-signal strength if connected.
 Sound	This setting handles the volume. To alter these values, it is possible to swipe the bar or enter a numeric value by selecting the number.
 Home	This button is used by the kiosk-behavior to return to the home screen.
 Settings	By clicking this icon, the wifi-settings can be entered (see also Configuring wifi through the tablet-screen).
 Stop	This is the stop-button. After entering the PIN-code (see General Settings) the running actions stop, and Pepper goes into a resting posture.
 QR	By clicking this icon, the 'QR Starter'-behavior ⁽¹⁾ is started. By showing a QR code in the indicated frame on the tablet-screen, a composition can be started (both from the online composer and on Pepper itself).
 Skip	This option is available in certain behaviors. It shuts down the current behavior and returns to the previous screen.

⁽¹⁾: This is a separate behavior and may cause errors if pressed while a behavior is already running.

4.1.1 Configuring the wifi on the tablet-screen

By clicking the 'Settings'-icon on the tablet-menu and selecting the option 'Network Connection', a screen appears showing the networks in range. The following symbols are used:

 Wired	This icon shows the status of the wired network-connection.
	This icon indicates a wifi-network with active network security.
REFRESH	This button makes Pepper scan again for available networks.
CLOSE	This button closes the current screen and returns to the previous menu.

The following steps must be taken to connect Pepper to a network:

- **Choose the network from the list**
By selecting the network to connect to, a popup is shown where the network-security key can be entered.
- **Enter the correct password**
By entering the correct password, the status of the wifi-connection is changed to 'state – association'.
- **Have a little patience**
After some time (about 5 seconds) the status of the wifi-connection is changed to 'state ready' if the entered information is correct. This indicates the connection is successful.
- **Check the connection**
By pushing the start-button once, Pepper will say the IP address out loud. By entering this IP address in the address bar of Google Chrome, the Pepper-Control portal is shown. To confirm the connection is completely successful, have Pepper state a message or activate the camera to check the connection.

4.1.2 Configuring the wifi for the tablet

To set up the wifi-connection on the tablet of Pepper, the following steps should be used:

- Open the About-page via the Admin-menu
- Select the option 'Show tablet information'
- Select 'Open wifi settings on tablet'
- This option opens the android-settings of the tablet.
- On the tablet-screen, select the option wifi (normally in the top right of the screen)
- Enable the wifi-adapter and connect to the network.

For more information on connecting an Android-tablet to a wifi-network, see:

[How to connect android to wifi-network](#)

Notes:

- This manual only describes the setting for the wifi-connection on the android-menu. Other settings of the Android-system on the tablet should NOT be changed.
- This option should only be used if Pepper does NOT automatically connect the tablet to the same network as itself.

5 Afterword

We sincerely hope the Pepper will provide a lot of fun. In any case, a decent amount of blood, sweat and tears have been shed to create the Pepper-system as it is.

We hope you continue to keep us informed of desired new features or existing bugs that happen, so this product can continue to grow and evolve.

Our contact details are as follows:

Website	http://zorarobotics.be/index.php/nl/contact
Ticketing	https://zorabots.freshdesk.com
E-mail	Support@gbmt.be
Telephone	+32 59 20 03 11
Address	Archimedesstraat 17 8400 Oostende

APPENDIX 1: TROUBLESHOOTING

This document describes the solution to possible problems that appear very sporadic on Pepper.

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Category I. Preface

In case there should be a problem with Pepper, the following indicators may help to identify the cause of the problem:

(i) Shoulder-LEDs are blinking

The LED-lights on the shoulders have 4 possible colours. If the shoulders are blinking Yellow or Red, it is possible to listen to a system message describing the error. The possible colours for the shoulder-LEDs are:

- **White:** Normal use
- **Green:** The battery is fully charged, or an update has been installed from Aldebaran.
- **Yellow:** A system message is available
(e.g. a motor is starting to get hot or the battery is nearly empty)
- **Red:** An error has occurred
(e.g. a motor is broken and needs replacing)

By listening to the system message, sometimes the solution is already presented (e.g. the message 'Put Pepper in a resting-position' when the motors are starting to overheat).

In case a defect has been detected, please restart Pepper first. If this problem persists, please contact us. The contact information is available in the chapter [Contact](#).

(ii) Posture

If Pepper is standing on a perfectly steady surface, but is still leaning backwards or forward, this may indicate a broken inertial unit. This requires Pepper to be swapped.

(iii) Collision

Pepper has sensors to scan the environment, but they are only efficient on ground-level. This causes any objects not directly connected to the floor (e.g. tables or wires) to be left undetected.

(iv) Network connection

When booting Pepper, the internet-connection has to be checked. Not just on Pepper itself, but the tablet also needs connection to the internet. To set up the wifi-connection: see the Manual.

If only the tablet has internet-connection, some functions may be unavailable (e.g. the tablet-screen is irresponsive (briefly)).

Category II. Known Solutions

The issues in this category deal with wear and tear on the robot of temporary glitches of the network connection. Due to the nature of the issues, it is impossible to solve these problems permanently and they may occur very occasionally.

Issue 01 **Pepper Control is irresponsive**

Step 1 Check the IP address of the robot

By pressing the chest button once, the IP address of the robot can be heard. It is possible a new IP address has been given to the robot.

Step 2 Reloading the website

By using the key-combination **CTRL+F5** in Google Chrome, the website can be reloaded.

Step 3 Restarting the browser

Closing Google Chrome and restarting Chrome may cause the website to respond again.

Step 4 Restarting the robot

By using the start-button (hold for about 3 seconds) it is possible to shut Pepper down. After shutting Pepper down and waiting for about 5 seconds, Pepper may be safely rebooted.

Issue 02 **Website/Composer-control/Module-control keeps loading**

The following actions may solve this issue:

Step 1 Reloading the website

By using the key-combination CTRL+F5 in Google Chrome, the website can be reloaded.

Step 2 Adjusting the address in the address-bar of Chrome

By removing the '/#/composer'-section of the web-address, the Pepper-control is reset to the starting page.

(e.g.: change from 192.168.0.101/apps/zora-control/#/composer to 192.168.0.101/apps/zora-control/)

Issue 03 **Pepper Control does not display the correct information**

This section handles issues with language settings or compositions and datasets that are not visible. The following actions may solve this issue:

Step 1 Reloading the website and reselecting the language

By using the key-combination CTRL+F5 in Google Chrome, the website can be reloaded. By re-selecting the language by using the flag-symbol in the top right corner of Pepper-Control, the data may become available.

Step 2 Check the English language for the missing data

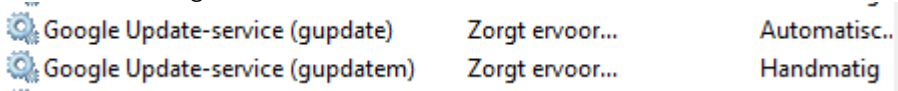
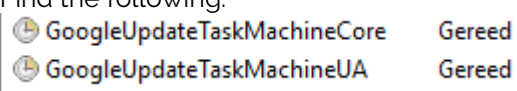
If the looked-for composition is not available, it might have been stored in the English dataset. Due to communication between the tablet and the Android support website (which happens automatically and cannot be disabled) it occasionally happens the system language is set to English.

It is possible to load the composition, change the system language and save the composition in the desired language.

Issue 04 Microphone is not accessible.

The latest version of Google Chrome has improved security. This means that the microphone of the connected device is not accessible on Pepper-Control through Google Chrome.

If access to the microphone is required, an older version of Chrome can be installed with the automatic updates turned off.

Step 0: Uninstall the current version of Google Chrome	If necessary, uninstall the current version of Google Chrome and reboot if asked.
Step 1: Download version 59 from the website:	https://www.slimjet.com/chrome/google-chrome-old-version.php Select the version (32-bit or 64-bit) from the list of shown versions.
Step 2: Install Chrome version 59 BUT DO NOT START THIS YET	
Step 3: Disable the Google update services.	<p>Open the services by entering "services.msc" in the Run-field of Windows</p> <p>Find the following services:</p>  <p>Right-click the gupdate services, and select Properties Change the Start-up-type to disable Stop the service (if it is already running)</p>
Step 4: Disable the update task in the Task Scheduler	<p>Open the Task Scheduler by entering "taskschd.msc" in the Run field of Windows.</p> <p>Find the following:</p>  <p>Right click the task and select disable.</p>
Step 5: Check if the updates are disabled.	<p>Open Google Chrome.</p> <p>Enter 'chrome://chrome' in the address bar.</p> <p>If Windows asks to start the service 'Google Update', select NO. This means the automatic updates are disabled.</p>

NOTE: This is an option of last resort and should only be used on a computer/laptop that has been properly secured or will only be used to connect to Pepper-Control.

Issue 05 Tablet-screen is irresponsive during active behavior (Kiosk)

The following actions may solve this issue:

Step 1 Check the USB-tether

By selecting the option 'Show Tablet information' in the 'About'-section of the Admin-menu of Pepper-Control, the information of the tablet is displayed. If nothing is shown, Pepper may need to be rebooted.

Before rebooting, try refreshing the website first to see if this is not a performance issue of the network.

Step 2 Disabled the wifi of the tablet (briefly)

By selecting the option 'Show Tablet information' in the 'About'-section of the Admin-menu of Pepper-Control, the information of the tablet is displayed. By selecting the link 'Open Wifi-settings on the tablet' it is possible to select the Wifi-icon on the tablet. By disabling the Wifi for a few minutes and re-activating it.

A second means of disabling the Wifi on the tablet is by using the behavior "Tablet Wifi OFF" if no other behaviors are running.

If this problem persists, it is not possible to use the wifi on the Pepper tablet.

Issue 06 The volume changes suddenly while playing compositions.

The following actions may solve this issue:

Step 1 Check the volume-settings of the speech-blocks.

Keep in mind that the volume settings of the speech-blocks are independent of the volume-settings of Pepper-Control. If these values are too far apart, the output may be distorted.

Step 2 Check the music-file

If the music-file suddenly changes volume when playing the file on the computer, this has nothing to do with the composition. A different version of the music-file without the big volume-changes should be used.

Issue 07 Traffic or website viewer display a white screen

These behaviors require internet access on the tablet. If this connection is not established, the behaviors cannot load the necessary data.

The following actions may solve this issue:

Step 1 Enable the wifi on the tablet

The behavior "Tablet Wifi ON" enables the wifi on the tablet, but the settings are not set yet.

By selecting the option 'Show Tablet information' in the 'About'-section of the Admin-menu of Pepper-Control, the information of the tablet is displayed. By selecting the link 'Open Wifi-settings on the tablet' it is possible to select the Wifi-icon on the tablet. By selecting the wifi-network with internet connection and filling in the required security password (if necessary), the connection can be made and the behaviors can retrieve the necessary data.

Issue 08 **A black edge is at the bottom of the tablet.**

The following actions may solve this issue:

Step 1 Open the Android keyboard

To open the android keyboard, it is possible to use the menu on the left side of the tablet-screen. By opening the screen and selecting the **numbers** of the volume-setting, the keyboard is opened. By closing this again, the black edge should have disappeared. This will not occur in a new version of the system software provided by Aldebaran, which is not (yet) available.

Issue 09 **Pepper doesn't pronounce words correctly.**

The following actions may solve this issue:

Step 1 Check the language settings

Reload the page by using the key-combination CTRL+F5 in Google Chrome. If the language settings are incorrect, change them to the correct setting.

Step 2 Check the speech speed and volume-setting.

If the speech speed is too high, it is possible some words are mispronounced or even skipped. Similarly, if the volume is set too low, some words may not be heard.

Step 3 Spell words phonetically

Sometimes, the TTS-engine cannot comprehend certain words. It will try to read the words according to the rules set by the language. If the word is not pronounced correctly, try spelling it more phonetically.

Issue 10 **Pepper recognises speech incorrectly.**

The microphones are very sensitive to speech-input and may cause some minor inconveniences. The following actions may help to resolve this issue:

Step 1 Check the user's position in relation to the microphones

The microphones are at the top of Pepper's head and they are optimized to listen to the front. For more information on this optimization, see the 'Tutorial'-behavior.

Step 2 Move Pepper to a less noisy location

Sometimes Pepper can detect the smallest whispers as a voice-input or a sneeze as an 'OK'. This is built into Pepper and cannot be altered, which is why it is important to put Pepper somewhere without (or at least very little) background-noise.

Step 3 (KIOSK ONLY) Disable the speech recognition

It is possible to disable the voice recognition in the settings of the kiosk-behavior if this issue persists.

Issue 11 Others

If the above actions haven't provided a solution to the issue, please use the following steps:

Step 1 Shut down Pepper completely and reboot

Shut down Pepper completely, wait for about 10 seconds and boot Pepper again.

Step 2 Consult the support website

The support website can be contacted via the following link: <https://zorabots.freshdesk.com/>.

Category III. Known Problems

Due to a conflict between the Operating System provided by Aldebaran and Pepper Control, some issues are not easy to solve. Below are known problems that are currently being researched and will be processed in the next updates.

Please do NOT contact us for these issues, we are aware of them and are fixing them as soon as possible.

Issue 01 When selecting 'Home' from in a sub-kiosk, this sub-kiosk is set as the main kiosk.

Issue 02 Translations are not 100% correct

Issue 03 Non-Unicode symbols are not spoken or recognized correctly

Issue 04 Eye-colour sometimes doesn't change when stopping a behavior

Issue 05 Language Settings sometimes change to English.

Issue 06 Animations are not displayed alphabetically (by category)

Issue 07 QR-starter behavior cannot be used while other behaviors are running.



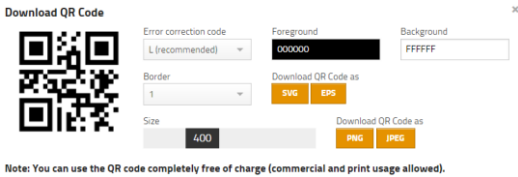
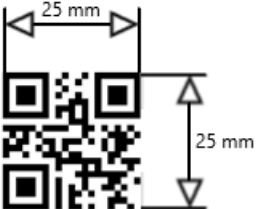
Issue 08 Uploading images or other media-files containing special characters.

Category IV. QR codes

This article will show how to use and create QR cards. A selection of system QR codes and QR cards for the animal card game are available in this chapter as well.

Issue 01 Create QR code

To create the required QR Code manually, the following steps can be used:

http://goqr.me/	Surf to the following website
1. Type text 	Select the text-type QR Code
2. Contents Text 	Input the required text For example: Elephant This will create the QR code.
 <p>Note: You can use the QR code completely free of charge (commercial and print usage allowed).</p>	Download the QR code to your device in L-format .
	When printing this code on a card, please make sure the dimensions of the QR code itself (not including the borders) are at least 25mm x 25mm.

Issue 02 Showing QR codes to Pepper

The front head camera is used to detect the QR-code (both during behaviors and while idle).

Step 1 – Create the QR code	See Chapter 01
Step 2 – Hold the card to the robot's front head camera.	The position of the card can be checked by the reference frame on the tablet-screen. If the card has been detected, a beep ⁽¹⁾ will be sounded from the robot.

⁽¹⁾: The volume of the 'beep' is regulated by the system volume. To be able to hear the beep, the system volume should be at least 30% in a quiet room.

The distance the QR should be shown is dependent on the lighting of the room, the type of material used to print (glossy paper does NOT work) and of course the size of the QR code.

Category V.Contact

If the above solutions haven't provided relief or an explanation, it is possible to contact us using the following contact information:

Website	http://zorarobotics.be/index.php/nl/contact
Ticketing	https://zorabots.freshdesk.com/
E-mail	Support@qbmt.be
Telephone	+32 59 20 03 11
Address	Archimedesstraat 17 8400 Oostende

APPENDIX 2: BEHAVIOR LIST













This document contains the list of every active behavior on in the build 0.13 of the Pepper Control.

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Category I. Base of Operations

This category contains the behaviors responsible for the basic functionality of Pepper.

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Behavior 1.01 QR starter

This behavior enables the user to start a **composition** by scanning a QR-code. This composition can be made and stored in the online composer if the system-settings are entered and Pepper has internet connection. This behavior can also be run from the tablet-menu by selecting the 'QR'-icon.

- Process

Step 1 – Generate the QR-code	After saving the composition, it is possible to generate the QR-code by using the button QR code. This opens a window with the QR-code that can be saved to a mobile device or printed. To create a QR-code in the online composer, the share-function can be used.
Step 2 – Start the behavior	This behavior starts the scan-function and displays a rectangle on the tablet-screen with the current input, so the QR-code can more easily be placed in the correct position.
Step 3 – Launching the composition	After placing the QR code in the shown rectangle, Pepper will make a 'beep'-noise. If the windows containing the scanner is no longer shown, Pepper is downloading the composition and will play the composition.

Notes:

- When starting an online composition, this composition must first be downloaded at least once to Pepper before it will be run by the robot.
- If the online composition has been changed but saved with the same filename, the temporary files on the Pepper for the composition must be erased before the composition will be downloaded again. To clear the online cache, use the following steps:
 - o Open a composition-tab of Pepper-Control
 - o Select the option 'Open' and select the tab 'Online compositions'.
 - o Click the -icon on the right of the composition(s).

Behavior 1.02 Charging station

This behavior makes the robot look around for a charging station and assume a position fit for charging.

WARNING: Pepper needs to be able to 'see' the charging station with its sensors before it will move into a position to charge itself up.

- **Process**

Step 1 – Make sure the route between Pepper and the charging station is clear	Ensure no obstacles can be detected between the charging station and Pepper (including light-sources on a reflective surface).
Step 2 – Launch the behavior	Pepper will now go back to its charging station.

Behavior 1.03 Custom logo

This behavior displays a custom defined background image (e.g. company logo) on the screen of the tablet. The icon of this behavior changes to a thumbnail of the image.

Note: The recommended resolution for the background-logo is 1280x800.

- **Process**

Step 1 – Upload the file.	<i>Upload the file to the General Settings. (see General Settings of the manual)</i>
Step 2 – Run the behavior.	<i>The uploaded file is displayed as a background-image on the tablet of Pepper.</i>

Behavior 1.04 Follow Me

This behavior has Pepper follow a specific marking.

- Process

Step 1 – Create the marking

The following guide can be used to make a simple guide for Pepper.

Note: By clicking the image to the right, the webpage containing the image will be shown.

ZORA SOLUTION MAKING A SIGN FOR FOLLOW ME IN ZORABOTS

THIS DOCUMENT ILLUSTRATES HOW TO MAKE A SIGN THAT CAN BE USED WITH THE PEPPER-BEHAVIOR "FOLLOW ME". THIS BEHAVIOR WILL BE AVAILABLE IN THE VERSION 0.1.33. BY STARTING THE BEHAVIOR (BY SHOWING THE QR-CODE) THE SIGN (MARKING CODE) CAN BE USED TO HAVE PEPPER FOLLOW IT**.

THE FOLLOWING ITEMS ARE NECESSARY:

- GLUE
- TABLE TENNIS RACKET
- MARKING CODE
THIS CAN BE FOUND ON THE FORUM BY FOLLOWING THIS LINK:
<https://zorabots.freshdesk.com/en/support/solutions/articles/22000228098-behavior-follow-me-symbol>
- QR-CODE
THIS WILL ONLY WORK ON PEPPERS VERSION 0.1.33 OR LATER.

THE MARKING- AND QR-CODES NEED TO BE CUT OUT IN THE SHAPE OF THE BLADE OF THE RACKET.

AFTER GLUING THE MARKING CODE ON ONE SIDE OF THE BLADE OF THE RACKET, AND THE QR-CODE ON THE OTHER, THE INSTRUMENT IS READY TO BE USED BY THE BEHAVIOR.

THE END RESULT LOOKS LIKE THIS:

SHOW THE QR-CODE TO PEPPER TO START THE "FOLLOW ME" BEHAVIOR.

SHOW THE MARKING-CODE TO MAKE PEPPER FOLLOW IT.

** IF THE CONTACT HAS BEEN LOST, PEPPER WILL STOP MOVING. TO HAVE PEPPER CONTINUE TO MOVE, THE MARKING CODE NEEDS TO BE SHOWN AGAIN.

FOR SUPPORT, PLEASE LOGIN ON OUR FORUM ZORABOTS.FRESHDESK.COM - EMAIL SUPPORT@ZORABOTS.COM OR CALL +32 59 20 03 11

Step 2 – Start the behavior by showing the QR-code or using Pepper-Control

The robot will start to look around for the symbol

Step 3 – Show the symbol to Pepper

By showing the symbol to the front head camera of the robot, it will start to follow it at a safe distance.

Behavior 1.05 General Demo

This behavior teaches the basic rules to interact with Pepper.

- **Process**

Step 1 – Position Pepper	Make sure Pepper has enough room to move around and make gestures.
Step 2 – Start Behavior	Start the behavior to learn how to interact with Pepper.

Behavior 1.06 Leave charging station

This behavior is used to have Pepper leave the charging station.

Warning: Make sure the area in front of the charging station is unobstructed before starting the behavior.

- **Process**

Step 1 – Position Pepper	Make sure Pepper is stationed on the charging station, and the area is unobstructed (including reflecting light on the surface of the floor).
Step 2 – Start Behavior	Pepper will now leave the charging station and assume a standing position at a safe distance away from the charging station.

Behavior 1.07 Logo

This behavior displays the ZoraBots logo on the tablet-screen.

- **Process**

Starting this behavior displays the logo on the tablet-screen.

Behavior 1.08 Stop

This behavior stops the currently running behavior and puts Pepper in a safe resting-posture.

- **Process**

This behavior can be launched in 3 ways:

- 1) By using the icon in the 'Base of Operation'
- 2) By using the 'Stop' in the admin-menu
- 3) By using the icon 'Stop' in the menu of the tablet-screen (after entering the correct PIN-code)

Behavior 1.09 Tablet Wifi OFF

This behavior turns the Wifi of the **tablet** off.

- **Process**

By starting this behavior, the Wifi is turned off.

Note: This behavior (and its functionality) may cause behaviors requiring internet connection to not behave correctly (e.g. Traffic, Short Weather and website viewer).

Behavior 1.10 Tablet Wifi ON

This behavior turns the Wifi of the **tablet** on.

- **Process**

By starting this behavior, the Wifi on the tablet is turned ON

Note: This behavior does NOT set up the information for the wifi network, the behavior only turns the wifi-adapter on the tablet on. To alter the network information, use the Tablet-settings in the 'About'-page of the Admin-menu to open the settings of the tablet and enter the required information.

Behavior 1.11 Tutorial

This behavior shows users how to interact with Pepper. The basics of interacting with robots is explained.

- **Process**

By starting this behavior, the introduction to interacting with robots (Pepper in particular) is started.

Behavior 1.12 Website QR starter

By starting this behavior, Pepper will use the website browser on the tablet to show the website contained in the QR-code.

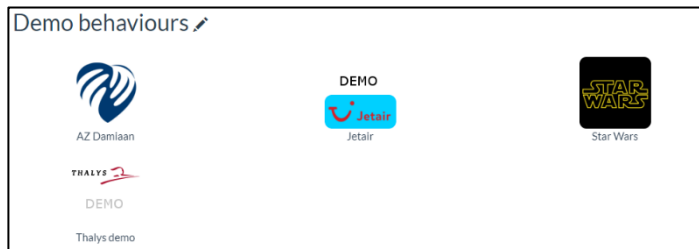
- **Settings**

Set the time out ⁽¹⁾ for the kiosk	This field states how long the behavior will show the website on the tablet (even after clicking on sub-links). Note: If the value is zero, the website will have a time-out.
--	---

⁽¹⁾: The behavior can be stopped manually at any time by touching the middle head sensor of Pepper.

Category II. Demo behaviors

This category only contains behaviors used for demonstration. These behaviors were designed to give a taste of the functionality of Pepper.



Behavior 2.01 AZ Damiaan

This behavior shows how Pepper can be used to guide visitors around the hospital.

Behavior 2.02 JetAir

This behavior shows how Pepper could be used to book tickets.

Behavior 2.03 Star Wars

This behavior demonstrates how Pepper can be used to entertain a crowd by telling stories.

Behavior 2.04 Thalys Demo












This behavior shows how Pepper could be used to check information on destinations.

Category III. Dances

This category contains only dancing behaviors. These behaviors have no settings and can be played by clicking them. The title of the behavior is also the title of the song.

Note:

Zorabots cannot be held accountable for any copyright infringement or royalty fees (i.e. SABAM-rights in Belgium). For the specific laws regarding these, consult with the copyright laws in your country. When playing these behaviors, make sure a valid copy of the song is in your possession. If playing these dances in a public place, check the local law if an extra fee for royalties are needed.

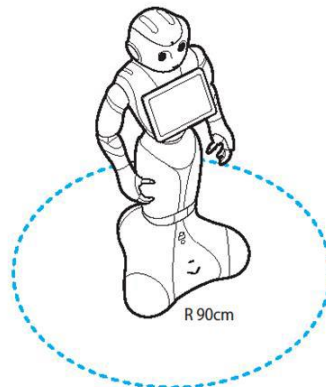
Page 1	Page 2
<p>Dances ✎</p> <div>  <p>Ann Christy - Dag Vreemde man (Demo)</p>  <p>Arcadia</p>  <p>Freestyle</p>  <p>Frozen - Laat het los (Demo)</p>  <p>Frozen - Let it go (Demo)</p>  <p>Jingle Bells</p>  <p>K3 - 10000 Luchtballonnen (Demo)</p>  <p>K3 - Airlines (Demo)</p>  <p>Le petit vin blanc (Demo)</p> </div>	<p>Dances ✎</p> <div>  <p>Mika - Elle m'a dit (Demo)</p>  <p>The Motors - Airport (Demo)</p> </div>

Notes:

- During the execution of the behavior, some of the choreography may be lost due to detecting obstacles. Please ensure that Pepper has enough room to freely move around when executing these behaviors.
- Ensure that if an extension has been set on the tablet, the option 'Wider dance movements' is checked in the General Settings before starting a dance-behavior.

The minimum safety distance around the Pepper is 90 cm.

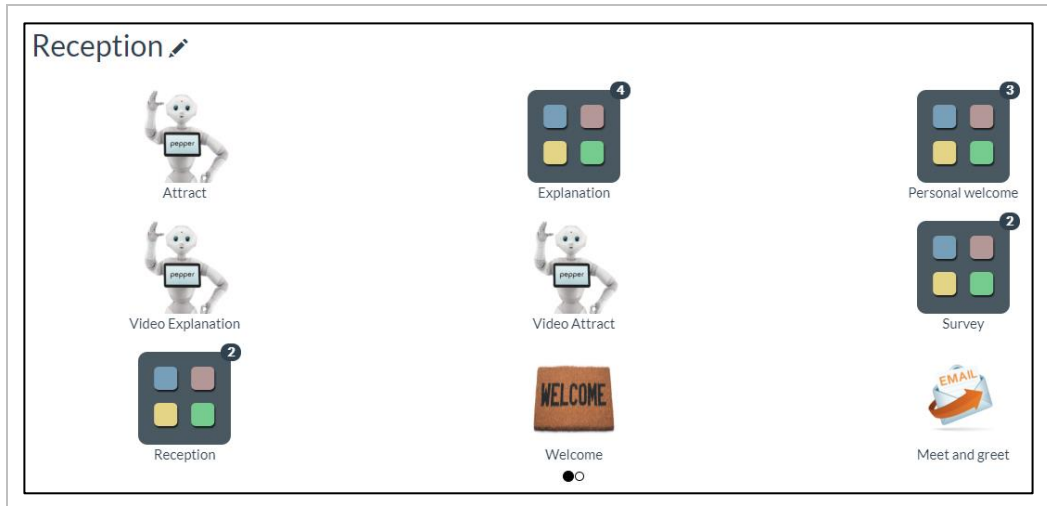
Make sure at least this distance is clear of any obstacles.



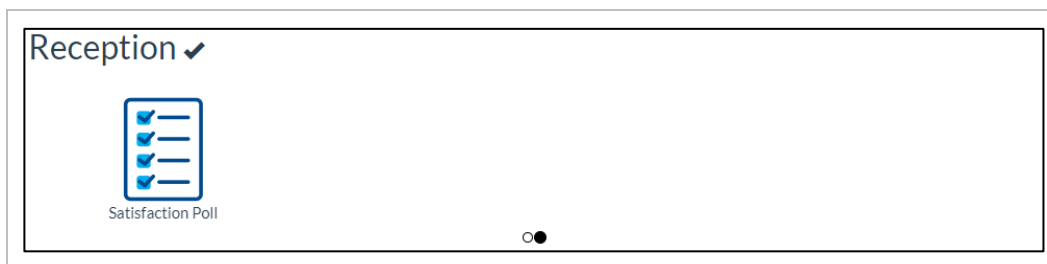
Category IV. Reception

This category contains behaviors designed to interact with the users. Most of these behaviors were developed to be used in combination with the Kiosk-behavior (see separate appendix)

Page 1:



Page 2:



Behavior 4.01 Attract

This behavior shows information on the tablet-screen (images + subtitles + speech) until a person is detected. When this happens, Pepper will wave and introduce itself ("Hello, I am Pepper"), after which this behavior exits.

This behavior is designed to be used in conjunction with the Kiosk-behavior (in particular the setting 'Behavior to launch when the kiosk is started').

- Dataset

Use animations	<i>This checkbox determines if Pepper may move the arms while speaking.</i>
Enable	<i>This checkbox determines if the record can be used in the behavior(s).</i>
Text for speech	<i>This textbox contains the text to be spoken aloud.</i>
Text for display on the tablet	<i>This textbox contains the text to be displayed on the tablet.</i>
Media	<i>This media field contains the background-image to be used during the speech.</i>
Language	<i>This drop-down list contains the language in which the record can be used and spoken.</i>
Delay	<i>This input field determines how long after speaking the background-image (and text) is to remain on the screen ⁽¹⁾.</i>

⁽¹⁾: This field is required to be filled in (a value of 0 is valid).

- Settings

Pepper's welcome sentence	<i>This field contains the introduction Pepper will say when a human face has been detected and the animations is stopped.</i>
----------------------------------	--

Note: This will also appear on the tablet-screen of Pepper.

- Process

Step 1 – Set up the Dataset	<i>Add the data (background-images, speech and subtitles) in the order to be displayed to the dataset.</i>
Step 2 – Fill in the Settings	<i>Alter the settings to best accommodate the behavior.</i>
Step 3 – Execute the behavior	<i>To check if all the required information is available (or to double-check the values of the delays), start this behavior when Pepper is in a place where it is not possible to see human faces.</i>

Behavior 4.02 Explanation

This behavior displays information on the tablet-screen (images + subtitles + speech). After all the data is displayed in the order of the dataset, this behavior shuts itself down.

This behavior was designed to be used as a value in the dataset of the kiosk.

- Dataset

Use animations	<i>This checkbox determines if Pepper may move the arms while speaking.</i>
Enable	<i>This checkbox determines if the record can be used in the behavior(s).</i>
Text for speech	<i>This textbox contains the text to be spoken aloud.</i>
Text for display on the tablet	<i>This textbox contains the text to be displayed on the tablet.</i>
Media	<i>This media field contains the background-image to be used during the speech.</i>
Language	<i>This drop-down list contains the language in which the record can be used and spoken.</i>
Delay	<i>This input field determines how long after speaking the background-image (and text) is to remain on the screen ⁽¹⁾.</i>

⁽¹⁾: This field is required to be filled in (a value of 0 works as well).

- Process

Step 1 – Set up the Dataset	<i>Add the data (background-images, speech and subtitles) in the order to be displayed to the dataset.</i>
Step 2 – Execute the behavior	<i>To check if all the required information is available (or to double-check the values of the delays), start this behavior.</i>

Behavior 4.03 Personal Welcome

This behavior greets the user when a customized QR-code is shown. A lot of data is needed about the person,

- Dataset

Enable	<i>This checkbox determines if the record can be used in the behavior(s).</i>
Person name	<i>This input field contains the last name of the person.</i>
Person first name	<i>This input field contains the first name of the person.</i>
Age	<i>This input field contains the age of the person.</i>
Gender	<i>This input field contains the gender of the person.</i>
Language	<i>This selection-field contains the installed system language to be used while the 'Personal Welcome text' is spoken out loud.</i>
Personal welcome text	<i>This input field contains the personal welcome to be spoken when the QR code is scanned.</i>
QR code number	<i>This number is used to create the QR code (see Process).</i>

- Settings

Welcome event text	<i>This input field contains the text to be spoken before the QR code is scanned.</i>
Outro text	<i>This input field contains the text to be spoken after the greeting-sentence in the dataset has been spoken.</i>
Subtitles on or off	<i>If checked, subtitles will be displayed on the tablet during the behavior.</i>
Background image	<i>This media field contains the background-image to be used during the introduction.</i>

- Process

Step 1 – Set up the Dataset	<i>Fill in the dataset with the required questions for the users.</i>
Step 2 – Fill in the Settings	<i>Fill in the settings as required.</i>
Step 3 – Generate QR-code	<i>Create a QR code using the following text-format: person <QR-code number> (e.g. person 1)</i>
Step 4 – Give the QR-code to the specified person	<i>Give the QR code to the person who will be using it.</i>
Step 5 – Start behavior	<i>Starting this behavior will state the personal welcome in the following order:</i> <ul style="list-style-type: none">- Welcome text (setting)- Personal Welcome Text (dataset)- Outro text (setting)

Note: A new QR code scan (and thus a new personal welcome) is only possible if the person before the camera has not been detected anymore.

Behavior 4.04 Video explanation

This behavior displays information on the tablet-screen (videos + subtitles + speech). After all the data is displayed in the order in the dataset, this behavior shuts itself down. This behavior was designed to be used as a value in the dataset of the kiosk.

- **Dataset**

Use animations	<i>This checkbox determines if Pepper may move the arms while speaking</i>
Enable	<i>This checkbox determines if the record can be used in the behavior(s).</i>
Text for speech	<i>This textbox contains the text to be spoken aloud.</i>
Text for display on the tablet	<i>This textbox contains the text to be displayed on the tablet.</i>
Media	<i>This media field contains the MP4-video-file to be used during the speech. (Optimal resolution: 640x480 at 20 fps)</i>
Language	<i>This drop-down list contains the language in which the record can be used and spoken.</i>
Delay	<i>This input field determines how long after playing the movie the robot will wait before closing the behavior⁽¹⁾.</i>

⁽¹⁾: This field is required to be filled in (a value of 0 works as well).

Note: Should there be issues with playing or stopping the movie, the format of the uploaded movie can be changed using the following software and command in command line:

- Ffmpeg -i <input.mp4> -vf scale=640x480 -r 20 <output.mp4>

Download link for the required software: <https://www.ffmpeg.org>

Install guide: https://github.com/adaptlearning/adapt_authoring/wiki/Installing-FFmpeg

- **Process**

Step 1 – Set up the Dataset	<i>Add the data (background-images, speech and subtitles) in the order to be displayed to the dataset.</i>
Step 2 – Execute the behavior	<i>To check if all the required information is available (or to double-check the values of the delays), start this behavior.</i>

Behavior 4.05 Video Attract

This behavior shows information on the tablet-screen (videos + subtitles + speech) until a person is detected. When this happens, Pepper will wave and introduce itself ("Hello, I am Pepper"), after which this behavior exits. This behavior is designed to be used in conjunction with the Kiosk-behavior (in particular the setting 'Behavior to launch when the kiosk is started' and/or 'Behavior to launch after timeout').

- Dataset

Use animations	<i>This checkbox determines if Pepper may move the arms while speaking.</i>
Enable	<i>This checkbox determines if the record can be used in the behavior(s).</i>
Text for speech	<i>This textbox contains the text to be spoken aloud.</i>
Text for display	<i>This textbox contains the text to be displayed on the tablet.</i>
Media	<i>This media field contains the MP4-video-file to be used during the speech. (Optimal resolution: 640x480 at 20 fps)</i>
Language	<i>This drop-down list contains the language in which the record can be used and spoken.</i>
Delay	<i>This input field determines how long after speaking the background-image (and text) is to remain on the screen ⁽¹⁾.</i>

⁽¹⁾: This field is required to be filled in (a value of 0 works as well).

Note: Should there be issues with playing or stopping the movie, the format of the uploaded movie can be changed using the following software and command in command line:

- Ffmpeg -i <input.mp4> -vf scale=640x480 -r 20 <output.mp4>

Download link for the required software: <https://www.ffmpeg.org>

Install guide: https://github.com/adaptlearning/adapt_authoring/wiki/Installing-FFmpeg

- Settings

Pepper's welcome sentence	<i>This field contains the introduction Pepper will say when a human face has been detected.</i>
----------------------------------	--

- Process

Step 1 – Set up the Dataset	<i>Add the data (video, speech and subtitles) in the order to be displayed to the dataset.</i>
Step 2 – Fill in the Settings	<i>Choose the nickname to be used when Pepper is introducing itself.</i>
Step 3 – Execute the behavior	<i>To check if all the required information is available (or to double-check the values of the delays), start this behavior when Pepper is in a place where it is not possible to see human faces.</i>

Behavior 4.06 Survey

This behavior displays a questionnaire (for customers) based on values in the dataset. The results are stored on Pepper in a CSV-file. This behavior contains an e-mail function that informs either the customer or the creator of the behavior if the questionnaire was completed. This behavior was designed to be used in combination with the Kiosk-behavior (specifically in the setting 'Next Behavior').

- Dataset

Enable	<i>This checkbox determines if the record can be used in the behavior(s).</i>
Use animations	<i>This checkbox determines if Pepper may move the arms while speaking.</i>
Text for speech	<i>This textbox contains the text to be spoken aloud.</i>
Text for display on the tablet	<i>This textbox contains the text to be displayed on the tablet.</i>
Type of question	<p><i>This dropdown-list contains the following possibilities:</i></p> <ul style="list-style-type: none"> - Yes/No: The user may choose between yes and no. - Text input: The user may fill in any value in the text-box on the tablet screen. - Multiple Choice 1: The user must choose between the options "Yes"/"No"/"Maybe"/"What event?" - Multiple Choice 2: The user must choose between the options "Yes, I would love to take part in sessions for beginners"/"I am interested in sessions for experienced"/"No, I'm not interested – I'd rather stick to my own" - Multiple Choice 3: The user must choose between the options "Never, and I do not plan to so in the near future"/"None for the moment but would love to"/"1 or 2"/"Between 3 and 5"/"Definitely more than 5" - Numeric: The user must enter a numerical value (percentages for example). - Rating: The user may give a rating from 0-5. - Custom: The owner of the dataset can enter the options into the field marked 'Answers' in the dataset, separated by ';'. E.g. answer 1; answer 2; ...
Order of question ⁽¹⁾	<i>This input-field contains the order in which the questions will be asked.</i>
Language	<i>This dropdown-list contains the installed languages on Pepper.</i>
Delay	<i>This input field determines how long after speaking the background-image (and text) is to remain on the screen ⁽²⁾.</i>
Time-out (sec)	<i>The time in which an option must be selected from the survey during the question before the survey-behavior stops.</i>
Answers	<i>This field contains the possible answers the customer may give IF the option 'Custom' is set for the type of question. These values are separated by ';' (e.g. answer 1; answer 2; ...).</i>

⁽¹⁾: Only numbers may be used in this field.

⁽²⁾: This field is required to be filled in (a value of 0 works as well).

Note: The symbol '&' may NOT be used in any of the fields.

- **Settings**

Email encouragement (speech)	<i>This input field contains the text to be spoken when before asking for an e-mail address.</i>
Email encouragement (tablet)	<i>This input field contains the text to be shown on the tablet before asking for an e-mail address.</i>
Survey/Voucher question (speech)	<i>This input field contains the text to be spoken at the start of the questionnaire.</i>
Survey/Voucher question (tablet)	<i>This input field contains the text to be shown on the tablet at the start of the questionnaire.</i>
Send mail to customer ⁽¹⁾	<i>If checked, the customer will receive an e-mail stating the participation in the survey. DO NOT CHECK this option if the option 'Ask email' is unchecked.</i>
Internal email ⁽¹⁾	<i>This field contains the e-mail to be used should the option 'Send mail to customer' be unchecked. This e-mail address will receive a message stating that the questionnaire has been completed. This option is only used if the option 'Ask email' is checked.</i>
Say something between the questions	<i>This input field contains the text to be spoken between the questions.</i>
Display email information	<i>This field contains the information shown during the request for an e-mail address. (as an information- popup).</i>
Ask email ⁽²⁾	<i>If checked, the behavior will ask for an e-mail address at the end of the survey before sending an e-mail to either the internal e-mail address or to the e-mail address filled in by the survey-taker.</i>
Download CSV File with survey data ⁽³⁾	<i>By clicking this button, the CSV-file containing the results of the questionnaire is downloaded to the connected device.</i>
Clear Survey Data ⁽³⁾	<i>By clicking this button, the CSV-file is erased from the hard drive.</i>
Loop behavior	<i>If checked, the behavior will run endlessly. WARNING: Do NOT check this setting if this dataset is used in the kiosk.</i>

⁽¹⁾: One of the two options must be set correctly IF the option 'Ask email' has been checked.

⁽²⁾: If this option is not checked, no e-mail will be sent (neither internally nor to the survey-taker).

⁽³⁾: When altering the dataset, the CSV-file must be remade to create the new headings to accommodate for the new format of the data. This does **not** happen automatically, so the data must be manually deleted in order to correctly remake the headers. If this is not done, the values in the CSV-file can be entered in a different format.

Note: The CSV-file can easily be converted to columns. Use the following link for more information: <https://www.extendoffice.com/documents/excel/3341-excel-split-comma-separated-values.html>. MAKE SURE the option 'semicolon' is set as well.

- **Process**

Step 1 – Set up the Dataset	<i>Fill in the dataset with the required questions for the users.</i>
Step 2 – Fill in the Settings	<i>Fill in the settings as required.</i>
Step 3 – Execute the behavior	<i>When starting the behavior, the questionnaire is displayed. Fill in the questionnaire.</i>
Step 4 – Download the CSV-file	<i>Retrieve the data from Pepper and check the results of the survey.</i>
Step 5 – Erase the CSV-file	<i>Erase the CSV-file from Pepper and have the behavior recreate the headers for the csv-file.</i>
Step 6 – Start behavior	<i>Show the questionnaire to the users.</i>

Note: Repeat Step 1-5 until the desired output has been reached.

Behavior 4.07 Reception

This behavior acts as a reception desk for people entering a company. An employee can be selected who will be contacted to serve as contact. The dataset contains the possible employees that can be contacted.

- Dataset

Enable	<i>This checkbox determines if the record can be used in the behavior(s).</i>
Person name	<i>This input field contains the name of the person.</i>
Email ⁽¹⁾	<i>This input field contains the e-mail address of the employee.</i>
Phone number	<i>This field contains the international phone number of the employee. (e.g. 0032471234567)</i>
Picture	<i>This field contains the image to be displayed as icon for the employee.</i>

⁽¹⁾: Only this option is used at this time to contact the employee. This option only works if the General Settings contain valid information for the mail-server (SMTP).

- Settings

Company name	<i>This input field contains the name of the company.</i>
Welcome text	<i>This input field contains the introduction that will be spoken if a person has been detected.</i>
Introduction text with question for personnel choice.	<i>This input field contains the text to be spoken when the list of employees is shown on the tablet screen.</i>
Ask for the person's name	<i>This input field contains the text to be spoken when asking whom is speaking.</i>
Closing text	<i>This input field contains the text to be spoken once the employee has been contacted.</i>
Infinite loop	<i>If checked, the behavior will continue to run endlessly. WARNING: Do NOT check this setting if this dataset is used in the kiosk.</i>
Background image	<i>This media field contains the background-image to be used.</i>
Send e-mail	<i>If this option is checked, Pepper will use the e-mail settings of the dataset.</i>
Send SMS	<i>If this option is checked, Pepper will send an SMS to the entered number.</i>

- Process

Step 1 – Create the Dataset	<i>Create a new dataset with the information of the employees.</i>
Step 2 – Fill in the Settings	<i>Fill in the settings as required.</i>
Step 3 – Start behavior	<i>Once a person has been detected, Pepper will ask which employee has contacted them. Once this employee has been selected, an e-mail will be sent to the employee and the closing text will be spoken.</i>

(a) Setting up an account for using e-mail and sms-services

(i) Setting up e-mail configuration

In the general settings, the e-mail settings for the mail-server can be entered in the following fields:

Sender email address:	<i>This field contains the e-mail address that will be used for ALL outbound e-mail-messages (including those used for SMS).</i>
SMTP server	<i>This field contains the server-address for the SMTP-server.</i>
SMTP server port	<i>This field must contain the port-number for LTS-encrypted verification.</i>
Email server password	<i>This field contains the password that will be used when sending an e-mail address.</i>
SMS service provider:	<i>This field MUST contain the value '@mail-sms.com'.</i>

IMPORTANT: Make sure the security settings are applied correctly for the domain, and that **Pepper can send e-mails to the SMTP-server**. If a Gmail-account is being used, this can be changed by changing the setting at the following case of a Google-account, the option in the following link must be set ON: <https://myaccount.google.com/lesssecureapps> ⁽¹⁾

(1): It may require signing in to the Google-account if this is not already the case.

(ii) Using SMS-services

IMPORTANT: This service is not guaranteed and may have some delay in sending the message(s).

To send an SMS-message, Pepper will send an e-mail to a service hosted by CM Telecommunication. This service will translate the sent e-mail to a text-message. If the sent e-mail is too long to send in one text-message, it will be split into several more.

- Create an account

To use the SMS-service, an account needs to be created on the website <https://www.cm.com/>.

The First name, Last name, E-mail, mobile phone number (of the ACCOUNT-HOLDER, NOT the contact-person in the Reception-behavior) and (optionally) the Company name.

- Setting up payment options

Further information is needed to fully activate the account, specifically a Billing Address and a reason for using the platform.

- Making a first payment

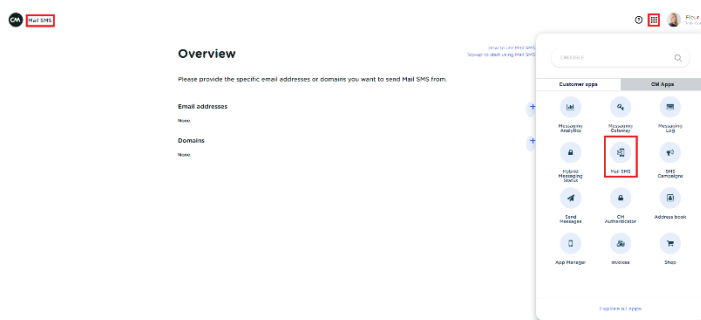
Once the first payment has been made to the account, the payment options will be shown.

In the Netherlands you can use IDEAL, Paypal or Creditcard (VISA, Mastercard, Discover).

In Belgium you can use Bancontact, Bank Transfer, MasterCard or VISA)

- Registering e-mail accounts

Go to **My Apps** in the top right corner and select the option 'Mail SMS'.



Here you can add specific e-mail addresses or an entire domain (e.g. qbmt.be) that can be used to send the mails that will be converted to SMS.

Overview

Please provide the specific email addresses or domains you want to send Mail SMS from.

Email addresses

None.

Domains

None.



Click + to add addresses or Domains (e.g. qbmt.be).

Please fill in the email address or domain and add a sender ID.

Note: The sender ID has a maximum length of 14 digits or 11 characters. Attention! Only the following characters are possible: A to Z, a to z and 0 to 9. No spaces or any other symbols and characters are possible. For more information please read the related article about "setting my own sender name / sender id" on the cm.com website.

For information on setting up an account and linking both e-mail-addresses and telephone numbers, use the following link:

<https://help.cmtelecom.com/en/text/getting-started/how-can-i-send-sms-messages-using-my-email-application>

Behavior 4.08 Welcome

This behavior reads aloud a random entry from the dataset.

- Dataset

Enable	<i>This checkbox determines if the record can be used in the behavior(s).</i>
Text for speech	<i>This textbox contains the text to be spoken aloud.</i>
Text on tablet	<i>This textbox contains the text to be displayed on the tablet.</i>
Language	<i>This drop-down list contains the list of available language in which the sentence will be spoken ^(a).</i>

^(a): To use the record as set in the language, the behavior must be launched in the same language. When using a kiosk, it is possible to change the system-language and use the multi-lingual records.

- Settings

Background image	<i>This media field contains the background-image to be used.</i>
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- Process

Step 1 – Set up the Dataset	<i>Add a list of introductions Pepper may choose from in the dataset.</i>
Step 2 – Fill in the Settings	<i>Choose the background-image to be used during the behavior and fill in the setting.</i>
Step 3 – Execute the behavior	<i>By starting this behavior, Pepper will state the random messages until the behavior is stopped.</i>

Caution: This behavior will not end by itself. It must be stopped from Pepper-Control. DO NOT USE THIS BEHAVIOR IN THE KIOSK!

Behavior 4.09 Meet and greet

This behavior gives the option between taking a picture and sending a picture to an e-mail address of the user's choice. It is possible to take multiple pictures before sending the last one.

- Process

Step 1 – Start the behavior	
Step 2 – Take a picture	<i>Select this option to take a photo.</i>
Step 3 – Send the picture	<i>Select this option to fill in the e-mail address to send the picture to. Once this has been filled in, the picture will be sent.</i>

Note: To send a picture, the settings for the e-mail server (in the General Settings) must be filled in correctly.

Behavior 4.10 Satisfaction Poll

This behavior has the user answer a question of how satisfied the user was with the service or explanation. When a person has been detected, a small entry-speech will be spoken. This behavior was designed to be used in a kiosk, and is *best used, in the field 'Next behavior' in the dataset of the kiosk*.

The creator of the behavior can receive the results from the survey from the settings in a CSV-file from Pepper-Control.

- Settings

Show total score	<i>If checked, the number of times an answer was given will be shown below the options.</i>
Using animated speech	<i>If checked, Pepper will attract the attention of people by using animations if nobody has been detected for a certain time.</i>
Kiosk compatible	<i>If this option is checked, the behavior will run only once. Otherwise, the behavior will run endlessly.</i>
Name of the corporation	<i>The name of the corporation that will be spoken during the introduction.</i>
Download CSV file with survey data	<i>By clicking this button, a CSV-file with the entered results will be downloaded to the connected device.</i>
Clear survey data	<i>By clicking this button, the stored CSV-file will be deleted.</i>
Background	<i>This field contains the image to be used as background by the behavior. If no image is selected, a white background will be used.</i>

Note: The total scores are only kept in memory WHILE the behavior is running. In other words, every time the behavior is started, the total scores are reset to '0'.

This also means that when running the behavior with the option 'kiosk compatible' and 'Show total score' checked, this will show the option '0-0-0' every time the behavior is launched (whether it is launched in the kiosk or not).

- Process

Step 1 – Fill in the Settings	<i>Fill in the settings as required. If this behavior is needed in the kiosk, make sure to check the 'Run only once option'.</i>
Step 2 – Execute the behavior	<i>Check if the settings are set properly (background-image in particular).</i>
Step 3 – Download the CSV-file	<i>Retrieve the data from Pepper and check the values.</i>
Step 4– Erase the CSV-file	<i>Erase the CSV-file from Pepper and start with blank numbers.</i>
Step 5 – Start behavior	<i>Show the behavior to the users and have them provide the necessary feedback of the corporation (from the kiosk).</i>

Category V.Games



Behavior 5.01 QR Quiz

This behavior asks for a QR code by description or name

- **Dataset**

Enable	<i>If checked, the record will be used in the behavior.</i>
Card	<i>The QR code to be shown during the behavior.</i>

- **Settings**

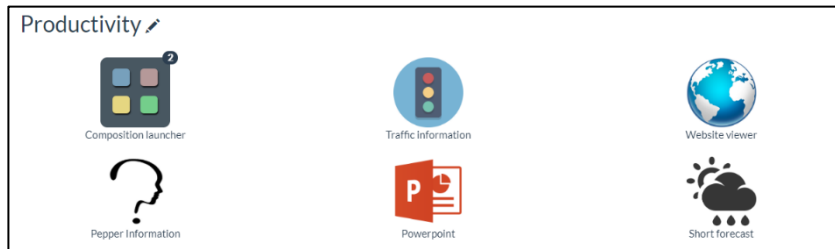
Time for reflection (sec):	<i>This input field contains the time for the user to think about the answer.</i>
Tune during thinking	<i>If checked, Pepper will play a tune during the 'time for reflection'.</i>
Sound if not correct	<i>If checked, Pepper will play a sound if the answer wasn't correct.</i>
Sound if correct	<i>If checked, Pepper will play a sound if the answer was correct.</i>
Evaluation at the end	<i>If checked, Pepper will state the final score at the end of the game.</i>

- **Process**

Step 1 – Create the Dataset	<i>Create a list of possible answers and enter them into the dataset.</i>
Step 2 – Adjust settings	<i>Adjust the settings as needed.</i>
Step 3 – Generate the QR codes	<i>By using the website http://goqr.me/ the QR codes can be generated in L-Format so Pepper can detect the codes.</i>
Step 4 – Print the QR codes on non-glossy paper.	<i>The most effective way to play the game is to use paper cards with images on top. The QR code itself must measure at least 25x25mm.</i>
Step 5 – Play the game	<i>Try to play the game flawlessly. Good luck.</i>

⁽¹⁾: If the QR code is not detected, see the Chapter IV of the troubleshooting appendix for more information.

Category VI. Productivity



Behavior 6.01 Composition launcher

This behavior launches existing compositions in the order entered in the dataset. The possible compositions to choose from in the dataset are limited to those in the **system language**.

- Dataset

Enable	<i>If checked, the record will be used in the behavior.</i>
Name	<i>This dropdown list contains the names of the saved compositions in the system language.</i>

Note: For each enabled record, a UNIQUE valid value MUST be entered.

- Process

Step 1 – Create the dataset	<i>Select the definitions to be played in sequence.</i>
Step 2 – Start behavior	<i>The compositions will be played according to the order in the dataset.</i>

Behavior 6.02 Traffic Information

This behavior shows the traffic situation around the entered map coordinates.

Note: This behavior needs access to the internet on the tablet.

- Settings

Google Maps Latitude	<i>This input field contains the coordinates of the latitude of the location.</i>
Google Maps Longitude	<i>This input field contains the coordinates of the longitude of the location.</i>
Timeout	<i>This field shows how long the local map is shown on the tablet-screen before the behavior stops.</i>

Note: For more information on how to obtain the coordinates from Google Maps, see [this link](#).

- Process

Step 1 – Adjust the settings	<i>Set up the coordinates of the town to check the traffic of.</i>
Step 2 – Ensure the tablet is connected to the internet	<i>Check the wifi-settings of the tablet to see if the wifi is enabled and connected.</i>
Step 3 – Start the behavior	<i>Start the behavior to see the traffic information on the coordinates.</i>

Behavior 6.03 Website Viewer

This behavior opens a specified website on a browser on the tablet. To make accessing multiple websites from the kiosk possible, a dataset is used containing the address(es) of the website(s).

Note: This behavior needs internet-access on the tablet.

- Dataset

Enable	<i>If checked, the record will be used in the behavior.</i>
Website address	<i>This input-field contains the starting page of the web-browser on the tablet.</i>
Timeout ⁽¹⁾	<i>This field contains time within which interaction is required with the website before the next entry in the dataset will open. If a value of 0 is entered, no timeout will occur and the behavior can only be stopped by touching the middle head sensor.</i>

⁽¹⁾: The behavior can always be stopped by touching the middle head sensor.

- Process

Step 1 – Fill in the settings	<i>Enter the web-address in the settings ⁽¹⁾.</i>
Step 2 – Make sure the tablet on Pepper is connected to the internet	<i>Check the wifi-settings of the tablet to see if the wifi is enabled and connected.</i>
Step 3 – Start the behavior	<i>Start the behavior to see the website.</i>
Step 4 – Stop the behavior	<i>Stop the behavior by holding the hand on Pepper's head.</i>

⁽¹⁾: Currently, websites containing iframes are not viewable on the tablet.

Behavior 6.04 Pepper Information

This behavior emulates a Question and Answer session from a list of questions in the dataset.

- **Dataset**

Enable	<i>If checked, the record will be used in the behavior.</i>
Question to listen to	<i>This input field contains the question to listen to.</i>
Answer to respond	<i>This input field contains the answer to be given to the question.</i>
Language	<i>This dropdown list contains the language in which the question will be interpreted.</i>

- **Settings**

Background image	<i>This media field contains the background-image to be used.</i>
-------------------------	---

- **Process**

Step 1 – Create the dataset	<i>Create the list of questions and answers in the dataset.</i>
Step 2 – Enter the settings	<i>Choose the background-image to be displayed on the tablet.</i>
Step 3 – Start the behavior	<i>If a question is heard correctly, the answer will be given.</i>

WARNING: This behavior is NOT compatible with the Kiosk.

Behavior 6.05 Powerpoint

Pepper will read aloud the comments of a Powerpoint when using the corresponding plugin.

- Settings

Background image	<i>This setting contains the background-image that will be displayed while the behavior is running.</i>
-------------------------	---

- Process

Step 1 – Create the Powerpoint on pc	<i>Create the presentation with the necessary comments that Pepper will speak out loud.</i>
Step 2 – Install the plugin on pc	<i>The file is executable in Windows (not on MAC) and is Office 2010 compatible.</i>
Step 3 – Fill in the settings for the behavior	<i>Choose the background-image that will be used during the presentation.</i>
Step 3 – Start the behavior on Pepper	
Step 4 – Start the plugin and connect the plugin to Pepper	<i>Fill in the correct network address.</i>
Step 5 – Start the Powerpoint presentation	<i>Pepper will read the comments out loud in the selected language in the plugin.</i>

Behavior 6.06 Short Forecast

This behavior shows the weather in a city for the day from the OpenWeatherServices service.

Note: This behavior requires internet-access **on the tablet**.

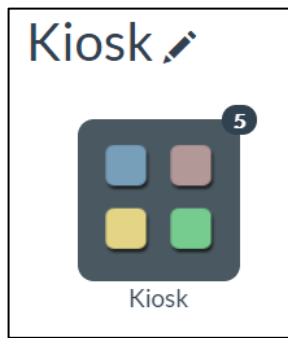
- Settings

Country (weather)	<i>This input-field contains the 2-letter code of the country of the city.</i>
City (weather)	<i>This input-field contains the name of the city.</i>

- Process

Step 1 – Enter the Settings	<i>Enter the city to be checked in the settings.</i>
Step 2 – Make sure the tablet on Pepper is connected to the internet	<i>Check the wifi-settings of the tablet to see if the wifi is enabled and connected.</i>
Step 3 – Start the behavior	<i>Start the behavior to hear the weather forecast.</i>

Category VII. Kiosk



Behavior 7.01 Kiosk

This behavior is explained in a separate appendix.

APPENDIX 3 - CHANGELOG

Version 0.1.33

Behavior

- Added a new timeout setting to the traffic behavior
- Add breathing to the kiosk (as a setting)
- Different way of processing language change in the Kiosk behavior
- Added 3 new dances (Let it Go-English,FreeStyle and Arcadia)
- Added the QR website starter
- Added the behaviors charging station and Leave charging station
- New Follow me behavior
- Reception behavior will work with SMS
- Possible to define custom answers in the Survey behavior
- Removed Crossword behavior
- Changed website viewer to use datasets instead of settings

Composer

1. Updated the composer to 0.4 version, with all the features like on Zora
2. Introduced the Advanced composer on Pepper (merged from Zora)
3. Created 6 new selfie motions
4. Created 3 new hug motions

Steering

- Possible to set the camera full screen

Pepper-Control

- Added new general settings (Sending SMS)
- Created new category for settings

General

- Created default kiosk datasets
- Created default (video)explanation datasets
- Created default (video)attract datasets
- Created default composition launcher datasets

Bug fixes

- Possible to use PowerPoint behavior
- Stability issues fixed in the Kiosk behavior
- Fix crash on startup tutorial behavior
- General stability fix on all behaviors

APPENDIX 4 – KIOSK

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Introduction

The kiosk-behavior was designed to provide the user with information or to have the user start the desired behavior without needing to connect to the robot via wifi.

The provided information must be customized depending on the situation or location of the Pepper robot. For example, information needed to navigate around a hospital will be different to the information needed to navigate an airport or hotel.

To allow the user to interact in a natural way, the **links to behaviors** (containing explanations, dances, sub-kiosks, ...) are shown as icons on the tablet-screen, similar to the icons on an Android-based device.

To allow the owner(s) of the Pepper-robot to modify the information Pepper will provide, the Kiosk-behavior is heavily dependent on datasets stored in the database.

To provide the user with as much of a view on the situation as possible, a tree structure (similar to the file system used by Windows Explorer or MacOS's Finder) could be used when designing a custom kiosk.

When Pepper is received, a kiosk behavior is pre-programmed and available for use to better understand the features and functionality of the kiosk-behavior.

Purpose of a kiosk

The purpose of a kiosk is to interact with users in front of the robot. These interactions could be (amongst others):

- Providing information (such as information about the company, products, traffic or the weather)
- Entertain the crowd (by dancing or playing a composition or playing a quiz with QR-codes)

Other than the end-users, the owner can also use Pepper in the following situations:

- Showing surveys or satisfaction polls
- Showing promotional videos

1. Principle behind the kiosk

A kiosk-behavior uses the following principle to display the information to the customer:

- Show a **selection screen with icons** that contain behaviors.
- Show an **introduction of the behavior** (i.e. a background-image and an introduction-text).
- Running the behavior.

All the steps above can be customized to suit the requirements of the customer.

2. Sample Kiosk

A sample kiosk-behavior has been provided to the owner showcasing several functions of the kiosk for ZoraBots, such as:

- Showing a promotional video
- Providing information
- Providing support (to the owner of the robot) on how to build compositions or how to build a kiosk for themselves

3. Default datasets

In order to accommodate these simple, basic behaviors, some datasets for basic behaviors have also been provided, specifically for the behaviors:

- **Attract**
- **Video-attract**
- **Explanation**
- **Video-Explanation**
- **Survey**

Preparations

A kiosk is best built using a blueprint with:

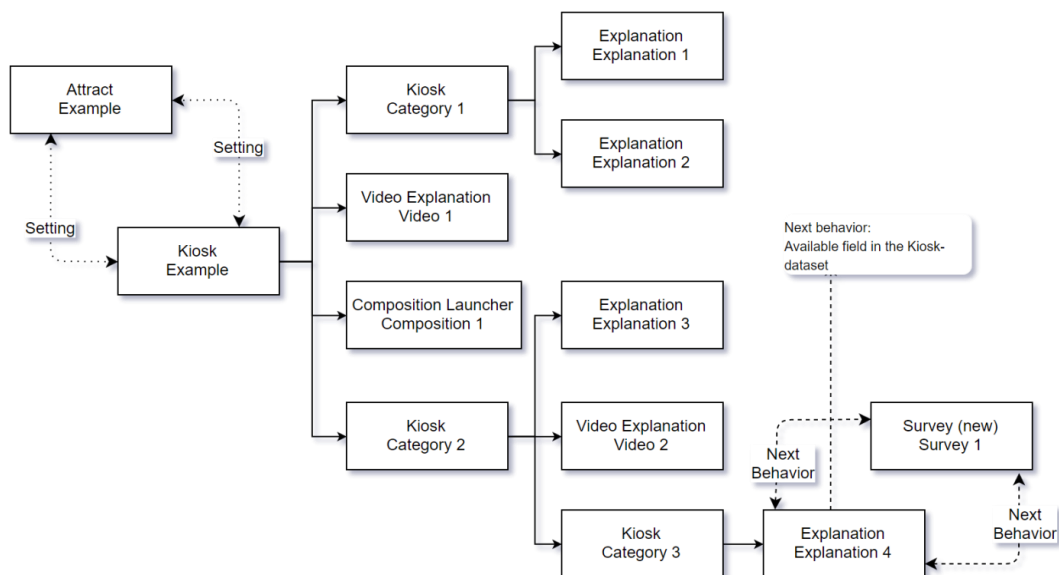
- Clearly defined behaviors and/or kiosks
- Clear links between the different datasets with images to display
- **Unique names for dataset** (e.g. Attract_FR, Video_Attract_FR, ...)

Notes:

- The app 'Draw.io' is quite convenient for drawing this type of diagram.
- The reason for the unique naming sense is because in this version of the kiosk, all dataset, including the ones NOT created in the system-language can now be selected. Therefore, if similar behaviors are used in different languages, it's good practice to refer to the language in the name of the dataset. (e.g. for explanations about the establishment in Dutch, English and French, the name of the datasets could be Establishment_NL, Establishment_EN and Establishment_FR).

1. Creating the blueprint of the kiosk

The following example of a blueprint can be used to create a simple kiosk:



2. List of behaviors and their use in the kiosk

For creating a kiosk, the following behaviors have been created:

Behavior	Function	Implementation ⁽¹⁾
Attract	To attract attention with images and speech and greet the customer	<i>At Kiosk timeout or start-up</i>
Video attract	To attract attention with images and speech and greet the customer	<i>At Kiosk timeout or start-up</i>
Explanation	To provide information by showing images and talking	<i>As main behavior in the kiosk</i>
Video explanation	To provide information by showing a video and talking	<i>As main behavior in the kiosk</i>
Reception	To have a customer call for a person in the company	<i>As the MAIN Kiosk timeout or start-up</i>
Personal Welcome	To provide a personal welcome after scanning a QR-code	<i>At the MAIN Kiosk timeout or start-up</i>
Survey	To have the customer take a survey	<i>After a behavior ends</i>
Short weather forecast	To have Pepper read out the weather	<i>As main behavior in the kiosk</i>
Traffic information	To have Pepper display the traffic-density at the location	<i>As main behavior in the kiosk</i>
Composition Launcher	To have customers launch custom made compositions	<i>As main behavior in the kiosk</i>
Website QR starter	To have a customer scan a code after which a website (with information of a product) is shown.	<i>As main behavior in the kiosk</i>

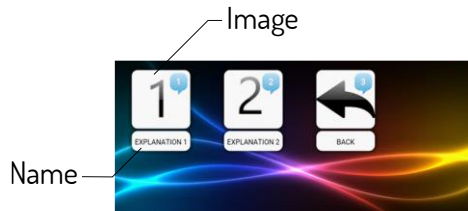
⁽¹⁾: Primary means of implementation in the kiosk-dataset or the settings of the Kiosk. Every behavior can also be directly linked as an icon in the kiosk.

Note: For more information on the settings, see Appendix 2 – Behavior list.

3. Dataset of the kiosk

The Kiosk-behavior itself has been designed to create links between the previous list of behaviors and to display these behaviors as icons on the main screen.

For example:






Use animations	If checked, Pepper will move the arms when starting the behavior.
Enable	If checked, Pepper will display the icon on the tablet-screen.
Name	This field contains the name Pepper will display below the icon on the tablet-screen.
Behavior	This field contains the behavior that will be launched if the icon in the selection-screen is selected.
Image	This field contains the image that will be displayed in the selection-screen .
Launch Image	This field contains the image that will be shown during the introduction of the behavior .
Text to say on behavior launch	This field contains the text Pepper will say during the introduction of the behavior . Otherwise, Pepper will say 'I will launch the behavior'.
Text to show on behavior launch	This field contains the text that will be displayed on the tablet during the introduction of the behavior . Otherwise, Pepper will say 'I will launch the behavior'.
Synonyms to launch the app	This field contains a list of words Pepper will use to start the linked behavior if the voice recognition is active . This list must be formatted like so: <term 1>;<term 2>;... For example: traffic;transit;jams;...
Next behavior	This field contains the behavior to launch after the linked behavior has ended and before returning to the selection-screen . Note: This field is particularly useful when linking surveys and/or satisfaction polls.
Language	This field contains the language in which the icon will be shown. Note: Only the installed languages on Pepper will be shown in this list.

4. Additional settings of the kiosk

Besides linking the behaviors, some additional settings are also available for the datasets:

To display the settings for the kiosk, use the following steps:

- Open the Behavior-page of Pepper-Control.
- Open the behavior-category 'Kiosk' on the right side of the screen.
- Select the -icon in the center of the screen.
- Select the Kiosk for which the settings need to be altered.
- Change the settings and save them to return to the main screen.

When done, click the -icon where the -icon used to be.

The following settings are available:

Behavior to launch after time out	<i>This field contains the behavior that will be launched once the kiosk experiences a 'time-out' period in which nobody has been detected.</i>
Behavior to launch at startup	<i>This field contains the behavior that will be launched before the main kiosk-screen will be shown.</i>
Set the time-out for the kiosk	<i>This field contains the duration of the time out. In other words, once the time set in this field has expired and no human face has been detected in the meantime, the main kiosk or the specified 'Behavior to launch after time out' will be shown.</i>
Enable voice commands	<i>If this field is not checked, Pepper will not respond to voice commands.</i>
Background ⁽¹⁾	<i>This field contains the background-image that will be used by the kiosk.</i>


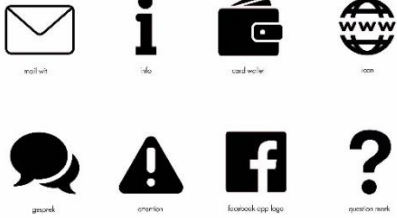






⁽¹⁾: This setting is only valid for one kiosk. It is recommended to use the same background-image for all kiosks in the entire tree structure.

Notes:

- *The maximum resolution of the tablet-screen is 1280x800. Images with a higher resolution may cause longer loading-times. Also, if the aspect ratio doesn't match this resolution, then black lines may appear on the edges of the tablet-screen or the image may not be displayed fully.*
- *DO NOT fill in the field 'Behavior to launch after time-out' for ANY Sub-Kiosks.*

Building a kiosk

Once the blueprint has been completed, the content for the kiosk must be gathered (i.e. background-images, icons for the kiosk, ...).

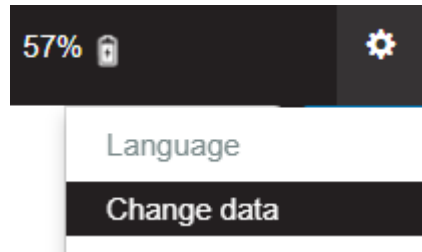
<p>Step 1 – Choose a background-image to be used by the tree structure.</p> <p>Note: Do not use a bright image, it may cause the subtitles to not be (completely) visible.</p>					
<p>Step 2 – Choose the icons to be displayed in the kiosk-menus.</p> <p>Note: Do not use icons that are too complex. These may not be displayed properly when made into a thumbnail for the kiosk-menu.</p>	<p>A website with a lot of icons to download: https://www.flaticon.com/ Example:</p> <div data-bbox="842 779 1241 996">  </div>				
<p>Step 3: Choose images for the explanation behaviors.</p> <p>Note: Do not use a resolution that is too high for these images. The recommended maximum-size is 1280x800.</p> <p>Note: The subtitles do not have a black background, these must be added to the image manually if the subtitles are poorly displayed.</p>	<p>Example of images in the explanations:</p> <table border="1"> <thead> <tr> <th data-bbox="810 1093 1114 1160">Without subtitles</th><th data-bbox="1114 1093 1385 1160">With subtitles</th></tr> </thead> <tbody> <tr> <td data-bbox="810 1160 1114 1361">  </td><td data-bbox="1114 1160 1385 1361">  </td></tr> </tbody> </table>	Without subtitles	With subtitles		
Without subtitles	With subtitles				
					

a. Creating the Explanations

The first step would be to create the 'Explanation'-behaviors according to the blueprint.

Step 1: Open the Data Management page if necessary.

By selecting the option '**Change Data**' from the admin-menu, the data management page is shown on Pepper-Control.



Step 2: Create a new dataset for the explanation behavior.

By selecting the **+** symbol in the **middle of the screen** a new dataset is created.

See the manual chapter 3.6.4.1 – Data management for more information.

For the dataset for Explanation, the popup should be filled in as shown in the image on the right. When all the data has been entered ⁽¹⁾, by clicking the '**Save**'-button the dataset is created.

Change existing data

New



Add new table

Select behavior to add data for:

Explanation

Add table name:

Explanation 1

Select table to start from:

None

Save

Cancel

Step 3: Repeat step 2 for the Explanation 'Explanation 2'.

Add new table

Select behavior to add data for:

Explanation

Add table name:

Explanation 2

Select table to start from:

None

Save

Cancel

⁽¹⁾: Please re-select the behavior if the previous value is still selected.

b. Adding data to Explanations

The explanation-behavior is designed to provide images (with subtitles) and speech to the user. The following steps should be taken to add data to the explanations:

Selecting a dataset

A first step is to select the dataset:

<p>Change existing data</p> <p>Explanation ▾</p>	<p>In the middle of the screen, the list of the currently selected behavior is shown. By using this dropdown-list^(*), the dataset can be selected. This list is sorted by date of creation, with the latest behaviors at the bottom of the list.</p>
<p>Composition launcher - Compositions</p> <p>Personal welcome - Welcome</p> <p>Explanation - Explanation 1</p> <p>Explanation - Explanation 2</p>	<p>Select the behavior for which data should be added.</p> <p>In this example, the Explanation-behavior with the name 'Explanation 1' will be selected.</p>

(^{*}): If no dataset has been selected, only the arrow will be seen. If not, the name of the **behavior** (not the dataset) will be shown before the arrow.

Altering the data in the dataset

After selecting the dataset, the currently available data will be shown. If no data is available (yet), the list will be empty.

- Adding Data

	<p>By clicking the + symbol in the top right corner, a new row with no data is added to the dataset.</p>
--	---

- Altering the Data

o Selecting a row of data

At the bottom of the screen a display is visible with the available rows of data. By clicking on the row to be altered, the selected row will be shown with a blue background.

Use animations	Enable	Text for speech	Text for display on the tablet	Media	Language	Delay
☆	★	Zora is the first robot launched by ZoraBots	First robot	zorafeature.jpg	English	1
☆	★	a Zora is mostly deployed in healthcare for younger patients	Helping children	onthaal.jpg	English	1
☆	★	but can also be used as a receptionist in a hotel	Receptionist	hotel.jpg	English	1

- *Altering a row of data*

When the row has been selected, the available fields containing the data are shown in the middle of the screen.

Text for speech <div></div>	Text for display on the tablet <div></div>	Media <div> </div>
Language <div>English ▼</div>	Enable <div><input checked="" type="checkbox"/></div>	Use animations <div><input type="checkbox"/></div>
		Delay <div></div>

For more information on the possible types of data-field, see Appendix 2 – Behavior-list.

For example, Explanation 1 could contain the following data:

Text for speech <div>Enter the text for the explanation here</div>	Text for display on the tablet <div>Enter the text for the explanation here</div>	Media <div> </div>
Language <div>English ▼</div>	Enable <div><input checked="" type="checkbox"/></div>	Use animations <div><input type="checkbox"/></div>
		Delay <div>1</div>

Note: The data field of 'Delay' **must be filled in**.

- *Removing obsolete or unnecessary data*

<div> </div>	<p>After selecting the row of data to be removed, by clicking the icon, the row of data is deleted.</p>
--------------	--

- Saving or undoing the changes to the dataset

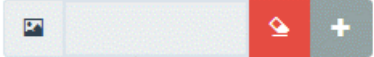
If the data has been entered correctly, the new values can be saved by clicking the icon. To undo the changes, the icon can be used.

Note: The number of rows is NOT affected by the 'undo changes'-button, the newly added rows will be emptied instead.

Create the rest of the non-Kiosk-behaviors

Repeat the previous steps for the rest of the explanation-behaviors. Should other behaviors require datasets or separate settings, these should also be created or altered before the Kiosk-behaviors themselves are made.

In the example, the data used for 'Explanation 2' is the following:

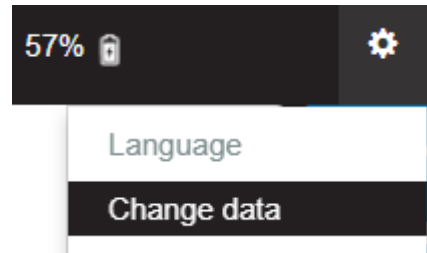
Text for speech <div>Enter the text Pepper will say for explanation 2 here</div>	Text for display on the tablet <div>Enter the text that will be displayed on the tablet for explanation 2 here</div>	Media <div></div>
Language <div>English ▼</div>	Enable <div><input checked="" type="checkbox"/></div>	Use animations <div><input type="checkbox"/></div>
		Delay <div>1</div>

c. Creating the Kiosks

Once all the non-Kiosk-behaviors have been created and filled in with the necessary data, the datasets for the Kiosk-behaviors can be created.

Step 1: Open the Data Management page

By selecting the option 'Change Data' from the admin-menu, the data management page is shown on Pepper-Control.



Step 2: Create a new dataset for the kiosk behavior.

By selecting the **+** symbol in the **middle of the screen** a new dataset is created.

See the manual chapter 3.6.4.1 – Data management for more information.

A popup is opened with the necessary information to create a new dataset:

- A dropdown list of behaviors ⁽¹⁾ which use datasets.
- An input field for the name of the dataset.
- A dataset to start from (currently, only the option 'None' is available).

For the dataset for Kiosk, the popup should be filled in as shown in the image on the right.

When all the data has been entered ⁽¹⁾, by clicking the **'Save'**-button the dataset is created.

Change existing data

New

A screenshot of the 'Add new table' popup form. It has a title bar with a close button (x). The form contains three fields: 'Select behavior to add data for:' with a dropdown menu showing 'Kiosk', 'Add table name:' with a text input field containing 'Example', and 'Select table to start from:' with a dropdown menu showing 'None'. At the bottom right, there are 'Save' and 'Cancel' buttons.

Step 3: Repeat step 2 for the Kiosk 'Category 1'.

A screenshot of the 'Add new table' popup form, similar to the one above, but with the text input field for 'Add table name:' containing 'Category 1'.

⁽¹⁾: Take care to re-select the behavior if the previous value is still selected.

d. Linking the behaviors to the sub-kiosk

After creating the data, the Explanations must be linked to the kiosk 'Category 1'.

Selecting a dataset

Explanation - Explanation 2

Kiosk - Category 1

Kiosk - Example

Like the previous chapter, the dataset for the kiosk 'Category 1' must be selected.

Altering the data

To **create** a link to the behaviors, the following steps should be taken:

By clicking the **+** icon in the top right corner, a new row of data is added, and the following options are available:

The screenshot shows the 'Change existing data' form. At the top right, there is a toolbar with icons for undo, redo, and a plus sign. A red arrow points to the plus sign icon. The form contains several input fields: 'Name', 'Behavior', 'Image', 'Launch image', 'Text to say on behavior launch', 'Text to show on behavior launch', 'Use animations', and 'Synonyms to launch the app (example: synonym 1, synonym 2, synonym 3)'. At the bottom, there is a table with columns: 'Use animations', 'Enable', 'Name', 'Behavior', 'Image', 'Launch image', 'Text to say on behavior launch', 'Text to show on behavior launch', 'Synonyms to launch the app (example: synonym 1, synonym 2, synonym 3)', 'Next behavior', and 'Language'. The first row of the table is highlighted in blue and contains the following values: a star icon, a star icon, 'Explanation 1', 'qpark/qpark', 'This launches Explanation 1', 'Explanation 1', and 'English'.

The function of these settings as well as the more detailed explanation of these settings are available at the start of this appendix, specifically [chapter 2.2 – Dataset](#).

When creating the link to the dataset 'Explanation 1', the data could look like this:

The screenshot shows the 'Change existing data' form with the following values: 'Name' is 'Explanation 1', 'Behavior' is 'Explanation - Explanation 1', 'Image' is 'zorafeature.jpg', 'Launch image' is 'zorafeature.jpg', 'Text to say on behavior launch' is 'This launches Explanation 1', 'Text to show on behavior launch' is 'Explanation 1', 'Use animations' is checked, and 'Synonyms to launch the app (example: synonym 1, synonym 2, synonym 3)' is empty. The bottom table is the same as in the previous screenshot, but the 'Name' column now contains 'Explanation 1' and the 'Behavior' column contains 'qpark/qpark'.


Note: Check in the list if the value of the 'image' is filled in correctly in the dataset. The name used in the field of 'Behavior' in the bottom of the screen contains the link used by the system, not the name of the behavior itself.

Create the other behaviors in the sub-kiosk

In the example used, only an entry for 'Explanation 2' remains for the kiosk 'Category 1'. Once this is added, the completed 'Category 1' looks like this:

The screenshot shows the configuration interface for a sub-kiosk. It includes fields for Name, Behavior, Image, Launch image, Text to say on behavior launch, Text to show on behavior launch, Use animations, and Synonyms to launch the app. Below these fields is a table with columns: Use animations, Enable, Name, Behavior, Image, Launch image, Text to say on behavior launch, Text to show on behavior launch, Synonyms to launch the app (example: synonym 1;synonym 2;synonym 3), Next behavior, and Language.

Use animations	Enable	Name	Behavior	Image	Launch image	Text to say on behavior launch	Text to show on behavior launch	Synonyms to launch the app (example: synonym 1;synonym 2;synonym 3)	Next behavior	Language
☆	★	Explanation 1	qpark/qpark			This launches Explanation 1	Explanation 1			English
☆	★	Explanation 2	qpark/qpark			This launches Explanation 2	Explanation 2			English

Note: Remember to save the data by clicking the  icon.

e. Linking the Sub-kiosk to the main kiosk

Like the previous chapter, a link to the sub-kiosk should be added to the main kiosk.

By selecting the kiosk 'Example' and adding a new row of data (if necessary), the following options become available:

The screenshot shows the configuration interface for a sub-kiosk. It includes fields for Name, Behavior, Image, Launch image, Text to say on behavior launch, Text to show on behavior launch, Use animations, and Synonyms to launch the app. Below these fields is a table with columns: Use animations, Enable, Name, Behavior, Image, Launch image, Text to say on behavior launch, Text to show on behavior launch, Synonyms to launch the app (example: synonym 1;synonym 2;synonym 3), Next behavior, and Language.

Use animations	Enable	Name	Behavior	Image	Launch image	Text to say on behavior launch	Text to show on behavior launch	Synonyms to launch the app (example: synonym 1;synonym 2;synonym 3)	Next behavior	Language
☆	☆									English

By entering the data in the example, the completed version is shown:


Name


Category 1


Behavior

Kiosk - Category 1 ▾


Image









Launch image







Text to say on behavior launch

Would you like to know more about Category 1

Text to show on behavior launch

Category 1

Use animations

☐

Synonyms to launch the app (example: synonym 1;synonym 2;synonym 3)

Use animations	Enable	Name	Behavior	Image	Launch image	Text to say on behavior launch	Text to show on behavior launch	Synonyms to launch the app (example: synonym 1;synonym 2;synonym 3)	Next behavior	Language
☆	★	Category 1	kiosk/kiosk			Would you like to know more about Category 1	Category 1			English

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Finishing touches

Once all the behaviors have been linked, a few additional or optional steps can be taken, to better suit Pepper to the environment.

1. Selecting alternate spelling

A new feature in the dataset is the 'synonyms'-field. This field contains a list of possible terms that Pepper will listen to, that can start the behavior.

The values of this field can be useful in the following cases:

- If certain terms are not understood when spelled out (e.g. weather;whether;wether;wetter;...)
- If certain terms are not particularly indicative or simply too long.
For example: if the name in the dataset is 'The Church of Saint Paul and Saint Peter', the values "church;saint paul;saint peter;saint petrus;..." could be used to give the users easier access to the behavior using the voice commands.

2. Disabling voice commands

In case Pepper is placed in a loud or busy environment where a lot of background-noise can be heard, the voice-recognition may not work properly.

In this case, disable the option 'Enable voice commands' of **all the kiosks-behaviors used in the kiosk**. This includes all the sub-kiosks as well.

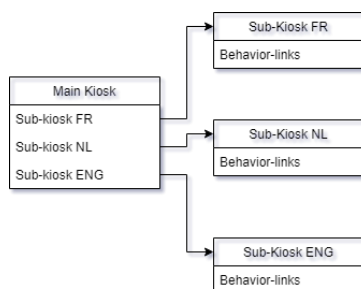
3. Updating the images

Take care that it is **not** possible to alter the color of the subtitles. Therefore, the image used when launching the behavior (or during the introduction) may need to be altered to contain a darker bar on the bottom of the background.

4. Multilingual support

In the current version of the Pepper-kiosk-software, the sub-kiosks will always be **launched in the language they have been created**. For example, an Explanation Dataset created in English will always start in English.

It is therefore necessary to use multiple tables to link to the set language, for example:



The following restrictions apply to the datasets above:

- Sub-Kiosk FR MUST be made while the system-language was set to French (FR). Likewise for Sub-Kiosk NL (must be set in Dutch) and Sub-Kiosk ENG (must be set in ENG).
- In the Main Kiosk, datasets from ALL languages can be selected. Be careful therefore, when altering settings of the behaviors that the language has been set correctly.

Recommended strategy for creating multilingual kiosks

When a multilingual kiosk should be made, the following strategy is best used:



- Create a main kiosk with just the language selection screens.
Warning: This kiosk will always start in the language in which it has been created. Choose the most common language used where Pepper is located.
- Create the sub-kiosks for the languages while the system-language of Pepper-Control is set to the language.
(For example, create the English main kiosk while Pepper-Control is displayed in English).
- If more sub-kiosks are needed, continue to create them only in the set language, and ONLY link to them from a kiosk in that language.
(For example, links to Subkiosk_EN should only be added to the Main_EN kiosk).
- For the language selection screen, use the following tags to have Pepper temporarily speak in a different language:
<p lang="language">Text to say when launching the behavior</p>
Change the term "**language**" and "**text to say when launching the behavior**" as needed.
For example: **<p lang="English">I will now continue in English</p>**

Summary of the new strategy behind the kiosk-behavior

The table below showcases the (dis-)advantages of the new principle behind the kiosk:

Advantages	Disadvantages
Easier to figure out for the customers in front of Pepper (more intuitive)	Takes longer to create a custom dataset in multiple languages
Structured datasets (one dataset, one language)	More separate datasets
Easier to make small changes to text or display	No switching languages in a sub-kiosk (must happen from the main kiosk)

Note: It is still possible to add records in other languages to datasets, but they will not be displayed in the kiosk.

APPENDIX 5 – COMPOSER

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1 Introduction

The composer has 2 modes of making compositions, specifically:

- **Simple Composer**
- **Advanced Composer**

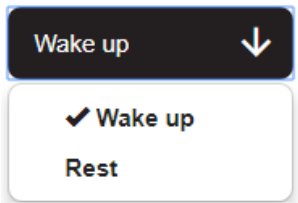
In this manual, both will be explained after explaining the types of settings that can be used by certain blocks and the actions that can be taken on a composition.

2 Types of settings

The following types of settings are used in the composer-blocks:

2.1 Dropdown lists

These fields contain a list of possible options. For example:

	<p>By clicking the top bar, the list of possible options appears.</p> <p>The currently active setting is marked by the ✓ This choice is filled in on the top bar.</p>
---	---




2.2 Media files

This field is used to input music files which will play at the level set by the system volume.

For example:

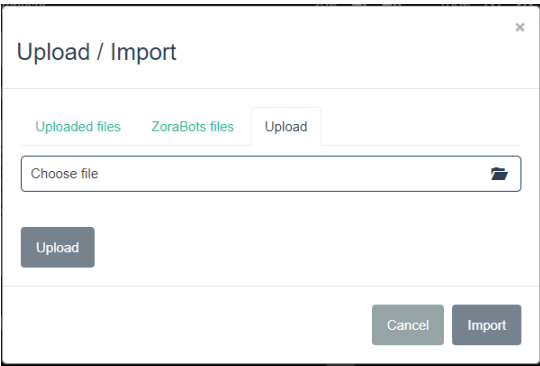


This field contains the following defining options:

	This icon shows the type of file that can be used. The acceptable formats are MP3 or MP4 , depending on whether an audio- or a video-file is used.
test1.mp3	The name of the file
	Erase the setting This erases the name of the file from the box and makes a new selection possible
	Add a file This button adds a new file that will be used as setting of the block ⁽¹⁾ .
Song lasts: 00:00:37	The duration of the song This shows how long the selected file will play for. This option is only available for music-files in the music-block.



⁽¹⁾: This button shows a popup which contains the option of using previously used files or upload a new file to the robot. This button is only selectable if no file has been selected.

When selecting a media-file (audio in this example) file, the following popup appears:

	<table border="1"> <tr> <td>Uploaded files</td> <td>This folder contains all previously entered files</td> </tr> <tr> <td>QBMT files</td> <td>This folder contains the supplied files from Pepper</td> </tr> </table>	Uploaded files	This folder contains all previously entered files	QBMT files	This folder contains the supplied files from Pepper
Uploaded files	This folder contains all previously entered files				
QBMT files	This folder contains the supplied files from Pepper				
<p>Upload</p> <p>By clicking the field containing 'Choose file', a window appears to select the file from the hard drive of the connected device. After uploading the file by clicking the upload button (which may take a while, especially over Wi-Fi), by clicking the import button the file will be linked to the composition</p>					



2.3 Sound settings

These settings only appear in the speech-block.

	<p><i>This is an example of a volume setting.</i></p> <p><i>By clicking the left icon, the volume is lowered by 5%.</i></p> <p><i>By clicking the right icon, the volume is raised by 5%.</i></p>
	<p><i>This is an example of the voice speed setting.</i></p> <p><i>By clicking the left icon, Pepper will speak 5% slower.</i></p> <p><i>By clicking the right icon, Pepper will speak 5% faster.</i></p>


2.4 Checkbox

The check in the checkbox will determine if the setting will be applied or not. The following example is from a music block:

	<p><i>The song will only play once or until the next music-block with the setting 'Stop'.</i></p>
	<p><i>The song will be repeated until the next music-block with the setting 'Stop' or until the composition ends.</i></p>

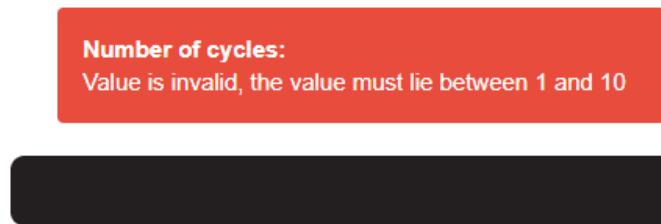
2.5 Input field

This type of settings is generally used by gym-blocks.

<p>Number of cycles</p> 	<p><i>This type of setting has 2 possibilities to enter data.</i></p> <ul style="list-style-type: none">- <i>A first method is to select the value and enter it manually⁽¹⁾;</i>- <i>A second method is to use the arrows to increase or decrease the value by one. By using these arrows, the allowed range cannot be exceeded.</i>
--	--

⁽¹⁾: This value can surpass the range set by the block. If an invalid entry is given, an error occurs, and a warning-field is shown.

An example of an invalid input:








Number of cycles:
Value is invalid, the value must lie between 1 and 10

3 Actions of the composers

This section describes the actions that can be taken on the compositions. These functions sometimes have some minor changes depending on the version of composer used.





A first group of buttons cause the composition to be executed or stopped.

	Play ⁽¹⁾ This button plays the full composition from start to finish.
	Pause This button will pause the composition AFTER the current block finishes playing. This will NOT stop the robot from playing the music.
	Play selected This button plays only the selected block.
	Play from selected This button plays the composition from the selected block until the end.
	Stop ⁽²⁾ This button stops the currently playing composition. Note: <i>When a behavior is in the composition, the behavior must be stopped separately.</i>

⁽¹⁾: When playing an advanced composition, if the block that is being played is outside the workspace, the workspace will move to show the playing block.

⁽²⁾: In the advanced composer, it will stop the composition **after the current composition has stopped running**.

A second group of buttons allows you to copy, paste and delete a selected block.

	Copy to clipboard This button copies the selected block to the clipboard.
	Paste from clipboard This button adds a copy of the previously copied block at the end of the composition in the simple composer. In the advanced composer, the block will be added in the top left side of the screen.
	Delete selection This button removes the selected element from the timeline.
	Undo the last action This button undoes <u>the last action</u> taken by the user, in case a block has been accidentally deleted. Note: Only one action can be undone!


The last group of buttons handles the storage and management of the compositions.

	<p>Save</p> <p>This button saves the currently active composition in the set system language. <i>Note: If no filename has been provided, a popup will appear asking for a name, otherwise the current filename will be used.</i></p> <p>This icon will turn yellow if changes have been made to a composition, but the composition has not been saved.</p>
	<p>Save as</p> <p>This button allows you to specify which filename should be used when saving the composition.</p>
	<p>Open ⁽¹⁾</p> <p>This button opens a selection of the currently saved compositions on the robot in the system language and fills the timeline with the saved blocks. <i>Note: The current blocks in the timeline will be erased. A warning popup will be shown IF the current composition has not yet been saved.</i></p>
	<p>Clear timeline ⁽¹⁾</p> <p>This button clears all blocks from the timeline and closes the opened composition if necessary.</p>
	<p>QR code ⁽²⁾</p> <p>This button generates a QR code which can be used to start the composition. To use a QR code, simply hold it in front of the forehead camera (in the correct position) while Pepper is not running behaviors or compositions.</p>
	<p>Export ⁽³⁾</p> <p>This button is used to export the currently saved compositions to the connected device. By selecting the desired compositions from the popup-screen, a zip-file will be created and downloaded to the connected device.</p>
	<p>Import ⁽³⁾</p> <p>This button allows the earlier exported compositions to be re-installed on Pepper. Please ensure the compositions in z(a)cmp-format are uploaded to the robot and NOT the zip-archive.</p>

⁽¹⁾: If unsaved changes have been made to the composition, a warning-popup will appear to confirm erasing the current composition from the timeline.

⁽²⁾: This button is only available if the composition has been saved on Pepper.

⁽³⁾: When importing files from a previously exported zip-file, the compositions must be extracted from the zip-archive in **(z)cmp**-format when re-importing them.

It is possible to run a composition for several times (even infinitely) instead of just once. To show this, the following options are shown when the mouse-pointer is over the  icon in the timeline:

<div><div>Number of cycles</div><div><div>Infinite</div><div><div>Number of times</div><div>1</div><div><div>↓</div><div>↑</div></div></div></div><div><input type="checkbox"/></div></div>	<div>Number of cycles</div> <div>In both versions of the composer, the timeline has an option to repeat the timeline a number of times.</div> <div>Note: If Infinite is selected, only by using the stop-button from the composer itself can the composition be stopped.</div>
<div>Convert to advanced</div>	<div>Convert to advanced</div> <div>This option is only available in the simple composer and will convert a simple composition to an advanced composition, after confirming that the present composition in the advanced composer may be erased.</div>















Notes:














1. *Importing a composition does not automatically load them into the timeline.*
2. ***A simple composition will open the simple composer; an advanced composition will open the advanced composer. The same principle is valid when saving a composition.***
3. *When playing a composition, the number of times the composition still has to be played will be displayed in the bottom right of the timeline.*

4 Simple composer

4.1 Blocks

Below is a summary of every available block in the composer-tab:

	Rest/Wake up This block puts Pepper in a stand-posture or puts Pepper in a rest-position.			
	Postures This block selects the posture that Pepper will take (see Postures).			
	Speech This block makes Pepper say a text in the selected language. The speech can make use of customised animations, see chapter Using Animations in speech-blocks for more information.			
	Motion ⁽¹⁾ This block makes Pepper move the head, hands and arms to a specified position. To move a body part, the sub-blocks can be dragged into the timeline.			
 Head	 Hands	 Arms	 Selfie (combination of the previous elements)	
	Gym This block has Pepper do exercises (e.g. cycling with the arms).			
	Natural ⁽¹⁾ This block contains elements that let the robot interact more naturally with the user (e.g. facial tracking).			
 Blinking	 Facial tracking	 Breathing		
	Behaviors This block enables the active behaviors to be played in the composition.			

	Wait ⁽¹⁾ This block temporarily stops the composition from playing until an input is detected or some time has passed. The list below shows when the composition will resume .		
	Time (seconds) E.g.: 60 seconds		Time (fixed) E.g.: 12:30 PM
			Sensor-input detected E.g.: Left hand is touched
	QR-code is detected ⁽²⁾ E.g.: 'Continue' is detected		Speech is detected ⁽²⁾ E.g.: 'Continue' is detected
			Any face is recognized
	Music This block starts or stops music from playing.		
	Loop This block creates a second timeline that can be repeated if needed.		
	Animation This block makes Pepper execute an animation.		
	Bezonian This block is only available for specified users.		
	Variables This block allows the user to create or alter the value of variables.		
	Composition This block plays an earlier stored composition in the current composition. Note: The list of available compositions only contains the compositions stored in the same system-language as the composition with this block in it.		

⁽¹⁾: This block is a **container-block**, the more specific options are stored in the sub-blocks. The block itself cannot be used in the timeline.


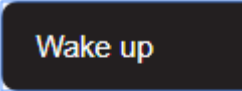
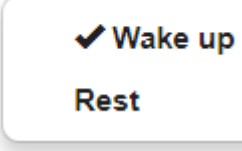


⁽²⁾: If a wrong number of inputs is detected, the composition will continue regardless.

4.2 Settings

This chapter will detail the possible settings for the blocks.

4.2.1 [Rest/Wake up](#)

This block (dis)engages the motors of Pepper.


  	<p>After dragging this block from the menu to the timeline, the only available setting appears with 2 options:</p> <ul style="list-style-type: none">- Rest <i>This setting will put Pepper in a stable position ('crouch'-posture is used if Pepper is standing) and turn the motors off.</i>- Wake up <i>This setting will turn the motors on ⁽¹⁾.</i> <p>The icon of this block changes according to the selected setting.</p>	
	<p>Wake up</p> 	<p>Rest</p> 

⁽¹⁾: This option just turns the motor on, it does NOT put Pepper in a standing position.

4.2.2 [Postures](#)

This block defines the posture used by Pepper.

This block only has 1 setting that can be configured, namely the posture.

 Stand Crouch ✓ Stand Stand zero	By dragging this block from the menu into the timeline, the following options appear:	
	Crouch	Crouch is used as a resting-posture (bent forward, with the head down)
	Stand	Stand is the posture usually used when starting a behavior.
	Stand Zero	Stand Zero briefly lifts the arms forwards.

4.2.3 [Speech](#)

This block has Pepper speak a text and display an image or video on the tablet-screen (with subtitles).

The screenshot shows the Speech block interface. At the top is a Pepper icon in a rounded rectangle. Below it are two buttons: 'Not Animated' (black) and 'Contextually Animated' (grey), with a red box and the number '1' around them. Under these are two text input fields: 'Text' (containing 'Hello') and 'Subtitles' (empty), with a red box and the number '2' around them. Below the text fields are three buttons: 'Show image' (black), 'Show video' (grey), and 'Clear image' (grey). Under these are two sections: 'Image' with a slider and a red box with the number '3' around it, and 'Image size' with a dropdown menu. At the bottom are two volume controls: one for audio (60% and speaker icons) and one for video (90% and up/down arrows).

Three discernible parts are shown: type of animation, the text and the output-settings.

4.2.3.1 [Type of animation](#)

	If this option has been selected, Pepper will not use any gesticulation.		If this option has been selected, Pepper will move the arms around.
--	--	--	---

If the option has been selected (and is therefore active), the background will change to black.

4.2.3.2 [Text](#)

These text-fields contain the text Pepper will say or display as subtitles.

Note: a value must always be inputted in the 'Text'-field to display the subtitles.

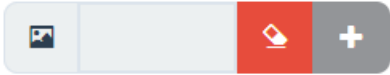
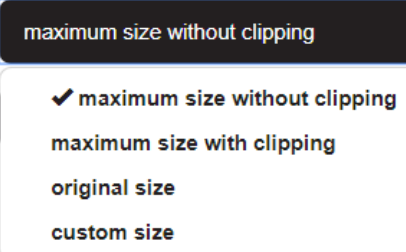
If the option 'Contextually Animated' is selected, the used animations during the speech can be specified. For more information, see [Using Animations in speech-blocks](#) in the manual.

4.2.3.3 [Output-settings](#)

These components have to do with the output-settings of the media, in particular the output on the tablet-screen (image or video) and the volume-settings of the spoken text.

- **Show image**

If this option is selected, the following options are adjustable:

<p>Image</p> 	<p>This field contains the media-file to be used as the background image on the tablet.</p>
<p>Image size</p> 	<p>This dropdown-list contains the display options for the image:</p> <ul style="list-style-type: none"> - Maximum size without clipping This option may display edges around the image. - Maximum size with clipping This option may cut some of the image. - Original size This option displays the image in the original size. - Custom size This option allows the size to be adjusted (in %)

Note:

The selected image is shown on the screen until a new image is shown by using a behavior or another speech-block (e.g. gym-exercises have the image stay on screen).

- **Show video**

If this option is selected, the following options are adjustable:

<p>Video</p> 	<p>This media-input-field contains the video-file to be used.</p>
---	---

Note: *The following restrictions should be taken into account when uploading a video:*

- *The maximum framerate cannot be more than 25 fps.*
- *The aspect ratio must be 16:9 (e.g. Resolution of 640x360)*
- *The subtitles will remain on the tablet-screen while the video is playing.*

- **Clear image**

This option erases the screen and display a pure white background. If the previous image must remain on the tablet-screen, select the option 'Show image' without filling in an image.

4.2.3.4 [Volume- and speech speed-settings](#)


The last options for this block contain the value of the volume and speech speed.

Note:



These options replace the system settings, so it is advisable to check the volume settings where the composition is to be used if the settings are valid.

4.2.4


Motion

	<p>The motion-block in the menu contains a list of the possible motions, separated by category. By clicking the button in the menu, the list is shown or hidden.</p> <p>It is also possible to show this menu by hovering the mouse over it. However, without clicking the block the menu will be hidden if the mouse hovers outside the menu.</p>
---	--


- **Head**

	<p>By dragging this block into the timeline, a grid is shown along with a view from the forehead camera of Pepper.</p>
	<p>The grid represents the range of motion for the head from Pepper's point of view. By dragging the eye from the centre-position of the grid to another position, the head of Pepper will move to that position when this block is used in the timeline.</p>

- **Hand(s)**

	<p>By dragging this block into the timeline, the hands of Pepper will open, close or stay in their current position according to the setting that has been filled in.</p>
---	--

- **Arm(s)**

	<p>By dragging this block into the timeline and selecting it, the arms of Pepper can be moved. The arms have a lot more range of movement, therefore a lot more settings compared to the previous options.</p>
---	--

This list contains the current positions the arms can take:

✓ Stay	<i>This option has Pepper stay in the same position.</i>
Left side up	<i>This option has Pepper move the left arm up.</i>
Right side up	<i>This option has Pepper move the right arm up.</i>
Both sides up	<i>This option has Pepper move both the left arm and right arms up.</i>
Left side down	<i>This option has Pepper move the left arm down.</i>
Right side down	<i>This option has Pepper move the right arm down.</i>
Both sides down	<i>This option has Pepper move the both the left and right arms down.</i>
Left side wide horizontal	<i>This option has Pepper move the left arm to the side of the body.</i>
Right side wide horizontal	<i>This option has Pepper move the right arm to the side of the body.</i>

Note: If Pepper already has the arms in the assigned position, the movement will just keep them there.

Both sides wide horizontal	<i>This option has Pepper move both arms to the side of the body.</i>
Left side close horizontal	<i>This option has Pepper move the left arm in front of the chest⁽¹⁾.</i>
Right side close horizontal	<i>This option has Pepper move the right arm in front of the chest⁽¹⁾.</i>
Both sides close horizontal	<i>This option has Pepper move both arms in front of the chest.</i>
Left side in front	<i>This option has Pepper stretch the left arm in front of the body.</i>
Right side in front	<i>This option has Pepper stretch the right arm in front of the body.</i>
Both sides in front	<i>This option has Pepper stretch both arms in front of the body.</i>
Hands behind the head	<i>This option has Pepper lift both arms on top of the head.</i>

⁽¹⁾: Make sure not to use both at the same time, the hands will entangle.

Boxing with left arm	<i>This option has Pepper move the left arm in a 90° angle to the torso at midriff-height ⁽²⁾.</i>
Boxing with right arm	<i>This option has Pepper move the right arm in a 90° angle to the torso at midriff-height ⁽²⁾.</i>
Boxing with both arms	<i>This option has Pepper move the left arm to the 'Boxing with left arm'-position and the right arm straight ahead.</i>
Waving hello with left arm	<i>This option has Pepper wave hello with the left arm.</i>
Waving hello with right arm	<i>This option has Pepper wave hello with the right arm.</i>

⁽²⁾: To have Pepper actually box, the following combination is needed:
Boxing with left arm, left side in front, boxing with both arms.

- **Selfie**



By dragging this block into the timeline, Pepper will assume a pose, so the user can take a selfie with Pepper in the background.

The list below contains the poses Pepper can take:

Selfie 1 Selfie 2 Selfie 3 Selfie 4 Selfie 5 Selfie 6	<p><i>There are six poses available for selfies.</i></p> <ul style="list-style-type: none"> - Selfie 1 <i>Superman-pose</i> - Selfie 2 <i>Bodybuilder-pose</i> - Selfie 3 <i>Thinking-pose</i> - Selfie 4 <i>Arms wide-pose</i> - Selfie 5 <i>Waving-pose</i> - Selfie 6 <i>Surprise-pose</i>
Hug 1 Hug 2 Hug 3	<p><i>Pepper can also be made to hug the user at various heights.</i></p> <ul style="list-style-type: none"> - Hug 1 <i>Pepper will hug a person smaller than itself.</i> - Hug 2 <i>Pepper will hug a person about as tall as itself.</i> - Hug 3 <i>Pepper will hug a person taller than itself.</i>

IMPORTANT: When using this block in a composition, Pepper will keep maintaining the pose while this block is active. This could damage the motors if the pose is held for too long.

4.2.5 Gym

This block contains the data that emulates different types of exercises or sports. When dragging the block into the timeline, this appears:

Waving with the arms ↓

Speed in (Seconds) ★

2
↓ ↑

Speed out (Seconds) ★

2
↓ ↑

Duty (Seconds) ★

1
↓ ↑

Wait (Seconds) ★

1
↓ ↑

Number of cycles

1
↓ ↑

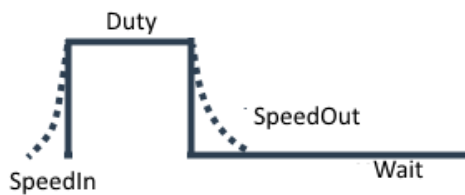
Sub exercises

Both
↓

Zora will count ☐

★ = The lower the value, the faster the movement

These options are based on the following principle:



SpeedIn	<i>This is the time needed to move Pepper from the previous position to the start-position of the main motion.</i>
Duty	<i>This is the time where the main motion is held in place.</i>
SpeedOut	<i>This is the time needed to move Pepper from the main motion to the ending-position.</i>
Wait	<i>This is the time between repeats of the motions.</i>

Beside these 4 options, the following settings are also available:

Number of cycles	<i>The number of times the motion must be executed.</i>
Sub exercises	<i>Which part of the exercise Pepper should do (i.e. only the left side).</i>
Pepper will count	<i>Pepper counts out loud the number of times the motion has been done.</i>

Important:

With each exercise, make sure Pepper has enough **room** to move around to complete the motions.

When selecting the option for this block, a search field is provided to find the desired exercise quickly. The exercises are divided into several categories:

4.2.5.1 [Miscellaneous exercises](#)

- **Turning**

This option has Pepper turn to the left (anti-clockwise) or to the right (clockwise).

☰ **Settings**

Degrees (1-180°)	<i>The number of degrees Pepper will move from the starting position.</i>
Sub exercises	<ul style="list-style-type: none">- Left <i>Pepper will turn anti-clockwise.</i>- Right <i>Pepper will turn clockwise.</i>

- **Giving a hand**

This option will have Pepper give a handshake.

- **High five**

This option will have Pepper perform a high five with the right arm.

- **Walking**

This option will have Pepper 'walk' a certain distance (in meter) in a direction.

☰ **Settings**

Sub exercises	<i>This setting contains the directions in which Pepper can move in. (Forwards, Backwards, to the Right or Left).</i>
Distance	<i>This setting contains the distance Pepper will move (in meters).</i>

4.2.5.2 Exercises with the head

This category contains exercises where the movement emphasizes Pepper's head.

- **Head going up and down with hands on the head**

This option makes Pepper put the hands on top of the head and move both up and down.

- **Turning head from left to right**

This option makes Pepper move the head from the middle to the left to the right to the middle.

- **Moving head**

This option has Pepper move the head around in several possible directions.

☰ **Settings**

Sub exercises	<ul style="list-style-type: none">- Down <i>This option moves the head downwards.</i>- Up and down <i>This option moves the head down and up.</i>- Right <i>This option turns the head to the right.</i>- Up <i>This option moves the head upwards.</i>- Left <i>This option turns the head to the left.</i>
----------------------	---

- **Touch head with arms**

This option makes Pepper touch the head with the arm(s).

☰ **Settings**

Sub exercises	<ul style="list-style-type: none">- Both sides <i>This option moves both arms.</i>- Right <i>This option moves the right arm.</i>- Left <i>This option moves the left arm.</i>
----------------------	---

- **Turning head**

This option makes Pepper move the head in a circular fashion.

Exercises with the arm

4.2.5.3 [Exercises with the arms](#)

This category contains motions that move the arms about.

- **Touching shoulders**

This option will have Pepper use one arm to touch the **opposite** shoulder.
(e.g. Left arm will touch the right shoulder).

☰ **Settings**

Sub exercise	<i>This option determines which arm will move (Left OR Right).</i>
---------------------	---

- **Turning with the arms**

This option will have Pepper move the arms in a circular fashion from the inside to the outside.

☰ **Settings**

Sub exercise	<i>This option determines which arm will move (Left AND/OR Right).</i>
---------------------	---

Note: In the online composer the arms move through the tablet-screen. On an actual Pepper this does not happen.

- **Moving wrists**

This exercise will move the wrist(s).

☰ **Settings**

Sub exercise	<i>This option determines which wrist will move (Left AND/OR Right).</i>
---------------------	---

- **Arms up sideways (half)**

This option will have Pepper move the arm(s) up sideways until shoulder-height.

☰ **Settings**

Sub exercise	<i>This option determines which arm will move (Left AND/OR Right).</i>
---------------------	---

- **Arms up sideways**

This exercise will have Pepper move the arm(s) up sideways until they are straight up.

☰ **Settings**

Sub exercise	<i>This option determines which arm will move (Left AND/OR Right).</i>
---------------------	---

- **Moving with the arms**

This option will have Pepper move both the arms up and down.

☰ **Settings**

Sub exercise	<ul style="list-style-type: none"> - High-middle <i>This option moves the arms from the chest upwards.</i> - High-middle-low <i>This option moves the arms from the toes to straight up.</i> - Low-middle <i>This option moves the arms from the toes to the chest.</i>
---------------------	---

- **Moving fingers**

This option will have Pepper open and close the fingers of the hand(s).

☰ **Settings**

Sub exercise	<i>This option determines which hand will move (Left AND/OR Right).</i>
---------------------	--

- **Biking**

This option will have Pepper move the arms like riding a bicycle.

- **Waving with the arms**

This option will have Pepper move the arms up and (halfway) to the side, like a small wave with the hands.

☰ **Settings**

Sub exercise	<i>This option determines which arm will move (Left AND/OR Right).</i>
---------------------	---

- **Arm(s) up**

This option will have Pepper move the arm(s) straight up and back down again.

☰ **Settings**

Sub exercise	<i>This option determines which arm will move (Left AND/OR Right).</i>
---------------------	---

- **Folding arms**

This option will have Pepper move the arm(s) to the front of the chest, and open and close them.

☰ **Settings**

Sub exercise	<i>This option determines which arm will move (Left AND/OR Right).</i>
---------------------	---

4.2.5.4 [Sport exercises](#)

- **Boxing**


This option will have Pepper box with the arm(s).

Settings


Sub exercise	<i>This option determines which arm will move (Left AND/OR Right).</i>
---------------------	---

4.2.6


Natural

	<p>These blocks contain movements that emulate human traits (e.g. breathing and blinking the eyes). Each block has the following settings:</p> <ul style="list-style-type: none"> • Enable • Disable <p>These settings are best used when Pepper is resting for a while, speaking aloud a long text or is idling.</p>
---	---


- Blink Eyes

	<p>By dragging this block into the timeline, Pepper will start or stop blinking the eyes.</p>
---	---


- Follow head

	<p>By dragging this block into the timeline, Pepper will start or stop following a human face if one has been detected.</p>
---	---

- Breathing

	<p>By dragging this block into the timeline, Pepper will start or stop moving around a little.</p>
---	--

Note: It is recommended to enable the 'Breathing'-mode whenever the robot could to remain idle for quite some time (e.g. during the 'Wait'-block-family).










Base of operations	>
Demo behaviours	>
Dances	>
Reception	>
Games	>
Productivity	>
Kiosk	>

This block shows all the available behaviors that can be used in the composer.


For more information about the behaviors and the behavior-categories, see the manual.

Notes:


- This block contains a lot of data and may cause the integrity-check to take some time when loading the composition.
- The dance-behaviors stop automatically and can be safely used in a composition. Keep in mind to use the 'bench'-position when using the dances in the 'choirmaster'-category.
- Keep in mind that some behaviors do not stop automatically. If these blocks are used in the composition, the composition may not only not continue, but the composition may not be stopped. Use these behaviors with caution.
- Keep in mind to use the 'bench'-position when using the dances in the 'choirmaster'-category.

      	<p>These blocks were designed to provide interaction with the user.</p> <p>By clicking the main wait-button (with the black triangle in the bottom right corner), the list of available options is shown. To close this sub-menu, the main wait-button must be clicked again.</p> <p>By having the robot listen to commands, or wait for some time to pass, Pepper can interact with the user before continuing with the composition.</p> <p>Note: <i>If simple decisions need to be made based on the input (such as deciding if the answer was correct), the input-blocks of the advanced composer are needed.</i></p>
--	---

- **Wait for a period of time**

	<p>This block has Pepper wait for a specific period of time (between 0 and 3600 seconds). If the robot needs to wait for a long time, activating 'Breathing' is recommended to something keep the motors from overheating.</p> <p>- Settings:</p> <table border="1" data-bbox="373 1344 1353 1438"> <tr> <td data-bbox="373 1344 625 1438">Time (seconds)</td> <td data-bbox="625 1344 1353 1438">The time Pepper will remain idle.</td> </tr> </table>	Time (seconds)	The time Pepper will remain idle.
Time (seconds)	The time Pepper will remain idle.		

- **Wait until a specific time**




This block has Pepper wait until a specific time (e.g. 2 PM).

Warning: The set time is based on the time of the robot. To check the current time, the 'About'-page of the General Settings can be used.

- **Settings:**

Format	This option selects the hour-format (12/24 hours)
Hours	The hours of the time when the robot must resume with playing the composition.
Minutes	The minutes of the time when the robot must resume with playing the composition.
AM/PM	If the 12 hour-format has been selected, this box is shown to set the option for AM/PM.

- **Wait for sensor**



This block has Pepper wait until a specific sensor is pushed.

- **Settings:**

Left foot

Head rear

Head middle

Head front

Left hand

Right hand

✓ Left foot

Right foot

Left or right foot


Left or right hand

When selecting this drop-down list, all possible sensors are shown.


The selected sensor is shown at the top of the list and is indicated with a ✓-icon in the list.

It is possible to select a foot or a hand with the last options.


- **Wait for QR-code**

	<p>This option pauses the composition until a specific QR-code has been shown.</p> <p>Warning: This code is case-sensitive (meaning a capital letter must be entered as a capital letter, spaces must be spaces and so on and so forth).</p> <p>- Settings:</p> <table border="1"> <tr> <td data-bbox="375 443 550 571">QR code</td><td data-bbox="550 443 1369 571">The QR-code that must be matched for the composition to continue immediately.</td></tr> <tr> <td data-bbox="375 571 550 694">How many retries</td><td data-bbox="550 571 1369 694">The number of times a wrong QR-code can be scanned before the composition will continue.</td></tr> </table>	QR code	The QR-code that must be matched for the composition to continue immediately.	How many retries	The number of times a wrong QR-code can be scanned before the composition will continue.
QR code	The QR-code that must be matched for the composition to continue immediately.				
How many retries	The number of times a wrong QR-code can be scanned before the composition will continue.				

- **Wait for speech-recognition**


	<p>This option pauses the composition until a specific word has been recognized.</p> <p>This word must be recognizable in the set system-language.</p> <p>- Settings:</p> <table border="1"> <tr> <td data-bbox="375 938 646 1066">Word</td><td data-bbox="646 938 1369 1066">The word the user must speak for the composition to continue immediately.</td></tr> <tr> <td data-bbox="375 1066 646 1189">How many retries</td><td data-bbox="646 1066 1369 1189">The number of times a wrong entry can be spoken before the composition will continue.</td></tr> </table>	Word	The word the user must speak for the composition to continue immediately.	How many retries	The number of times a wrong entry can be spoken before the composition will continue.
Word	The word the user must speak for the composition to continue immediately.				
How many retries	The number of times a wrong entry can be spoken before the composition will continue.				

- **Wait for face recognition**

	<p>This option pauses the composition until a human face has been detected by the front head camera.</p>
---	--

4.2.9 Music

After dragging this block to the timeline, the following options are available:



Play/Stop

Play
↓

Repeat
☐

Songs

🎵

🗑️

+

Dance on the music
☐

<p>Play</p> <div style="background-color: #333; color: white; padding: 5px; display: flex; justify-content: space-between; align-items: center;"> Play ↓ </div>	<p>Stop ⁽¹⁾</p> <div style="background-color: #333; color: white; padding: 5px; display: flex; justify-content: space-between; align-items: center;"> Stop ↓ </div>	<ul style="list-style-type: none"> Play <i>This option starts a new song ⁽²⁾.</i> Stop <i>This option will stop the playing songs.</i>
--	---	--

Songs

🎵

Relax1.mp3

🗑️

+

Song lasts: 00:06:17

If a song has been selected, the duration of the song is shown below this field.

*This field contains the selected song. By clicking the + button, a new song can be selected **if** the field is empty.*

When selecting a song, you can choose from:

- Imported songs**
This list contains earlier imported files from other compositions.
- Zorabots files**
This list contains the default files supplied by ZoraBots.
- Upload**
This option opens a popup to select a file from the connected device.

<div style="background-color: #333; color: white; padding: 10px; display: flex; justify-content: space-between; align-items: center;"> Repeat <input type="checkbox"/> </div>	<p><i>If checked, the song will be repeated until the next music block is found in the timeline or until the end of the composition.</i></p>
<div style="background-color: #333; color: white; padding: 10px; display: flex; justify-content: space-between; align-items: center;"> Dance on the music <input type="checkbox"/> </div>	<p><i>If checked, Pepper will dance (randomly) while the music is playing. Note: if an animated speech block or any other block that has movement in it is detected in the timeline, Pepper will stop dancing.</i></p>

⁽¹⁾: If this option is selected, the other options are unavailable.


⁽²⁾: The previously playing song will be stopped, and a new song will start (even if it is the same song).

Note: There must always be a 'Stop'-music-block in a composition if the 'play'-music-block is present in the composition.

4.2.10 [Loop](#)

This block is only available in the simple composer, in the advanced composer, this has been replaced by a different function-block. The reason for this is simple, specifically it is not possible to create a new timeline in the work field.

After dragging this block from the menu to the timeline, the following options become available:



Number of times

1

↓ ↑

Name of the loop

Loop

Pepper will count

☐

Randomize timeline

☐

Timeline

A second timeline that can be repeated and randomized appears. This timeline cannot run concurrent to the primary timeline. This block was designed to execute a number of blocks multiple times (in a random order).


Notes:

1. *It is not possible to drag a music-, rest/wakeup-, natural-, loop- or composer-block into a loop-block.*
2. *It is not possible to drag items to the primary timeline from the loop-timeline (or vice versa). The block(s) will be removed from the composition instead*
3. *The option 'Randomize timeline' should ONLY be used in a loop with Gym- and Behavior-blocks (specifically dances).*

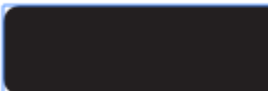
4.2.11

Animations

This block has Pepper perform animations.



This block has a lot of possible animations that can be performed, so a search-field to quickly find a fitting animation was added.



Search...


BodyTalk

- Listening 1
- Listening 2
- Listening 3
- Listening 4
- Listening 5
- Listening 6

IMPORTANT: If an extension is needed on Pepper, **DO NOT USE** these animations. It is possible the arms may get entangled with the extension-box.




4.2.12 [Bezonia](#)

When this block is dragged into the timeline, the following options appear:

 <input type="text"/> Web address : <input type="text"/> Username : <input type="text"/> Password : <input type="text"/> Element name : <input type="text"/> Enable/Disable <input checked="" type="checkbox"/>	<p>This block is used to enable/disable elements available on a webserver.</p> <p>This block should only be used by certified personnel in the correct environment.</p>
---	---

4.2.13 [Variables](#)


When this block is dragged into the timeline, the following options appear:

 <input type="text"/> Name Value <input type="text"/> <input type="text"/> <input type="button" value="+"/> Name Value <input type="text"/> <input type="text"/> <input type="button" value="X"/>	<p>By entering the name and the value for a variable and clicking on the -icon, the variable is added to the list of variables.</p> <p>To delete a variable from the list, select the -icon next to the name.</p> <p>IMPORTANT: The name of the variable can only contain the character a-Z and the number 0-9. (e.g. Example02orsomething).</p>
---	---

Note: Only numerical values should be used for variables that will be used in the 'mathematical operations'-block in the advanced composer.

4.2.14 [Composer-in-Composer](#)

When this block is dragged into the timeline, the following options appear:

 <input type="text"/> Select composition <input type="text"/> Composition contains 30 blocks	<p>To select the composition to be used, the dropdown-list contains the compositions in the system-language on the robot.</p> <p>Below the selected composition, the number of blocks to be used will be shown.</p> <p><i>Note:</i> It is not possible to manually enter the name of a composition that must be made.</p>
---	---

Warning: Do not have the block select the composition it is used in, otherwise this creates an endless loop.

4.3 Creating a simple composition

By dragging a block from the menu to the timeline, a composition is created. A possible configuration for a composition would be:



4.3.1 [Tips and tricks](#)

The following tips should help make a stable composition:

- Always start the composition with a **Wake Up**-block and a default posture

	<p>This combination makes sure Pepper stands up. If Pepper is already standing up, these blocks will not have any impact on the robot.</p>
--	--

- If a **music**-block is used in the composition, make sure a **stop-music**-block is also in the composition.
Also, time the composition to match the duration of the song(s) by using **Wait**-blocks

	<p>If the stop-music-block is not detected, when playing the composition again, the music may not start.</p>
--	--

- Keep the amount of **gym**- and **behavior**-blocks to a minimum of five per composition

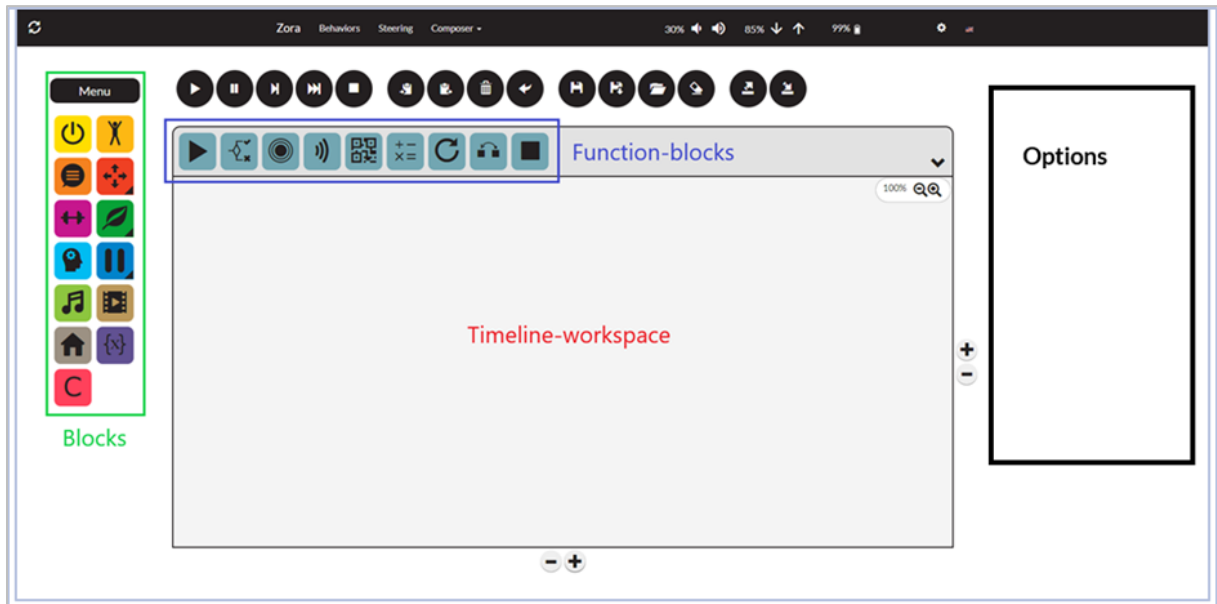
	<p>These blocks contain a lot of data and may slow the loading-process of the composition</p>
--	---

- Uncheck the 'Random movements'-option on a **music**-block IF this music block is followed by a **Gym**-block. This option may clash with the start of the exercise.
- Always add a **Stop-music**-block before a **behavior**-block
- Animation-block has 2 Settings **standing** or **sitting**, so make sure Pepper can safely transition to these postures when using the specified animation-block.
- When using a **Loop**-block, use the 'Randomize timeline' ONLY when the loop contains just **gym**-blocks or **behavior**-blocks with dances in.

5 Advanced Composer



Besides the simple composer, an advanced composer is also included in this version of Pepper. The advanced composer allows for a timeline to be split in branches. To accommodate this feature, the timeline is no longer linear, but must be made manually by connecting blocks together.

When selecting this option from the menu, the following screen is shown:



Most of the blocks and function-buttons from the simple composer are still present (loop has been removed). However, the timeline has been upgraded from a line to a workspace and a few new function-blocks are present as well. The blocks have a slightly changed look, specifically an 'Input Connector' and a 'Output connector' has been added to the blocks to create the timeline(s).

For example, the 'Speech'-block:

<u>Simple Composer</u>	<u>Advanced Composer</u>
	

(The black edge around the block indicates the block has been selected).






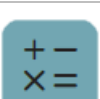
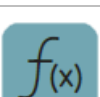



To maximize the timeline-workspace, the options for a block will now be displayed to the *right of the timeline*.

In case the number of blocks is too big for the timeline field, it can be expanded or shortened by using the \oplus / \ominus buttons at the side of the screen. The \oplus -button on the right expands the field to the right, and the \oplus on the bottom expands it to the bottom.

The Zoom-function ($\times 100\%$ \mathbb{Q}) should only be used to show the general outline of the composition, and not be used when moving blocks from the menu to the timeline.

5.1 Advanced Blocks

Above the timeline-workspace, the new function-blocks are shown.

	<p>Start Composition</p> <p>This block will show where the timeline of the composition begins.</p>
	<p>If/Else Block</p> <p>By using variables, this block can separate the current timeline into separate branches. E.g.: if a specific sensor is (not) pushed, path 1 will be taken, else path 2.</p>
	<p>Wait for input via a sensor</p> <p>This block works the same as the Wait for sensor option in the simple composer, but the inputted value can be used in the If/Else block.</p>
	<p>Wait for input via speech recognition ⁽¹⁾</p> <p>This block works the same as the Wait for speech-recognition option in the simple composer, but the inputted value can be used in the If/Else- and speech-blocks.</p>
	<p>Wait for input via a QR code ⁽¹⁾</p> <p>This block works the same as the Wait for speech-recognition option in the simple composer, but the inputted value can be used in the If/Else- and speech-blocks.</p>
	<p>Mathematical Operations</p> <p>This block allows for mathematical formulas to be used on new or existing variables, including randomly generating a number between 2 values.</p>
	<p>Math formula</p> <p>This block allows for a variable to be defined by a mathematical formula of other variables (e.g. $o = l^2 + b^2$).</p>
	<p>Loop</p> <p>This block has replaced the loop-block and is based on the for- and while-loops of programming.</p>
	<p>Go to</p> <p>This block is used to exit a loop and to go to a designated block.</p>
	<p>Stop composition</p> <p>This block marks the end of a branch of the timeline.</p>


⁽¹⁾: Due to the way Pepper is built, the value to be recognised must first be inputted manually in the block. Make sure some other values are in the list of possible words as well, in case a wrong answer is given.

5.2 Settings

This chapter will detail the possible settings for the new blocks:


5.2.1 [Start Composition](#)

When dragging this block to the timeline-workspace, the following appears:

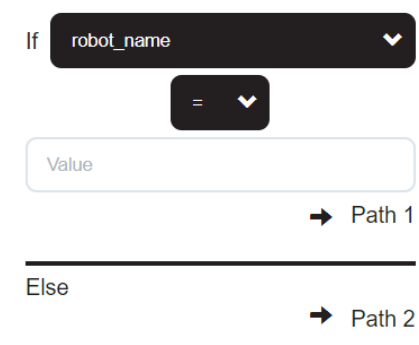
	This button has no settings and is used solely to indicate the start of the timeline. This block does not contain a 'Previous Element'-component, as there is no need for it.
---	---

5.2.2 [If/Else](#)

When dragging this block to the timeline-workspace, the following appears:

	As is shown from the image, the If/Else block can branch a timeline. To branch the timeline, a question must be formulated in the block. Using the principle of the If/Else statement from programming languages, an equation must be met to take path 1, otherwise path 2 will be taken.
---	---

The following options are available for this block:

	<p>To make the equation, the following fields are available:</p> <ul style="list-style-type: none">• Variable ⁽¹⁾• Operator ⁽²⁾• Value ⁽³⁾ <p>A few examples of possible combinations are:</p> <ul style="list-style-type: none">• If robot_name = 'Pepper'• If sensor ≠ 'Head front'• If speech = 'OK'
--	---

⁽¹⁾: The list of variables is dynamically generated and includes all the prior options from the advanced blocks in the timeline.

⁽²⁾: Depending on the type of variable selected, the possible operator will vary (e.g. if a sensor is selected, = and ≠ are the options, when a pre-defined variable is selected, other operators can also be used like: ≤, <, > and ≥).

⁽³⁾: Depending on the type of variable used, the value can be inputted as a text-string or as an option from a list. The selected option will be marked with a ✓-symbol.

5.2.3 [Wait for Sensor \(advanced\)](#)

When dragging this block to the timeline-field, the following appears:

	This block has Pepper wait for input by pushing a sensor, and the selected sensor can be used in the following If/Else-blocks.
--	--

To prevent confusion if multiple 'sensor'-blocks are used, each block can be given a name.

5.2.4 [Wait for speech-recognition](#)

When dragging this block to the timeline-workspace, the following appears:

	This block has Pepper wait for input by microphone. As stated before, the words to be recognised must be entered manually into a list ⁽¹⁾ .
--	--

⁽¹⁾: Only one of the items in the list can be used in the if/else statement.

The following options are available for this block:

<div>Speech recognition</div> <p>Name:</p> <input type="text" value="Enter here name"/>

How many retries:


2 ↓ ↑


Word:

+

5.2.5 [Wait for QR code](#)


When dragging this block to the timeline-field, the following appears:


	<p>This block has Pepper wait until a QR-code has been scanned. Like the 'Wait for speech-recognition'-block, the possible options to listen to have to be entered into the list of known answers.</p>
---	--

<div data-bbox="204 568 619 1057"><p>QR code</p><p>Name:</p><input data-bbox="220 667 603 712" type="text" value="Enter here name"/></div> <div data-bbox="204 725 619 815"><p>How many retries:</p><div data-bbox="220 757 603 815">0↓↑</div></div> <div data-bbox="204 824 619 1057"><p>QR code:</p><div data-bbox="220 855 603 913"><input data-bbox="220 855 523 913" type="text" value="Type here"/>+</div><hr/><div data-bbox="229 945 593 990"><input data-bbox="229 945 593 990" type="text" value="sample"/></div><div data-bbox="229 1003 593 1057">🗑</div></div>	<p>The first option allows the block to have a name, to prevent confusion is the next If/Else-block.</p>
	<p>The number of retries for this setting can be adjusted to 0 if needed and increased if more explanation is needed about why the answer was wrong.</p>
	<p>Like with the speech-recognition, to add a new QR code to be recognised, fill in the provided field and click the +-button.</p> <p>To remove a QR code from the list, the -icon below the word must be clicked.</p> <p>Make sure the terms in the list do not contain special characters such as é,ç,è,etc.</p>

5.2.6 [Math](#)

When dragging this block to the timeline-field, the following appears:

	<p>This block can perform basic mathematical operations on known variables or can be used to create a new variable that can be used throughout the rest of the composition.</p>
---	---

<p>Name</p> <div data-bbox="217 607 652 672">Variables ▼</div> <div data-bbox="217 683 652 748"></div> <div data-bbox="424 768 443 790">=</div>	<p>This field contains the name of the variable to which the resulting value will be assigned. By clicking the option 'Variables', a list of known variables ⁽¹⁾ will be shown along with a search-field.</p>
<p>The button  can be activated to generate a random number between 2 values. The minimum and maximum-values can then be entered in the 2 fields below.</p>	
<div data-bbox="205 981 655 1046"> <div data-bbox="205 981 604 1046">▼</div> <div data-bbox="624 994 655 1032">■</div> </div> <p>Or</p> <div data-bbox="205 1122 655 1187"> <div data-bbox="205 1122 604 1187">0 ▼ ▲</div> <div data-bbox="624 1135 655 1173">□</div> </div>	<p>If the box to the right of a value-field is coloured black, the value of a known variable must be used from the drop-down list.</p> <p>If the box to the right of a value-field is coloured white, a numerical value must be entered.</p> <p>By clicking the box to the right, the 2 types can be switched.</p>
<div data-bbox="212 1279 379 1375"> <div data-bbox="212 1279 379 1375">+ ▼</div> </div> <div data-bbox="205 1397 403 1789"> <div data-bbox="240 1420 301 1453">✓ +</div> <div data-bbox="240 1487 256 1509">-</div> <div data-bbox="240 1543 256 1576">/</div> <div data-bbox="240 1610 256 1632">*</div> <div data-bbox="240 1666 256 1688">^</div> <div data-bbox="240 1733 304 1767">mod</div> </div>	<p>The mathematical operator determines the type of operation to be used on the 2 values.</p> <p>The possible options are:</p> <ul style="list-style-type: none"> - Add - Subtract - Divide - Multiply - Exponentiation - Modular arithmetic

⁽¹⁾: The variable-blocks must be made and connected PRIOR to this block.

Examples of Mathematical operations:

- Generating a new variable containing a random number between 0 and 10.

Name

Variables

new

=



Random number between

0

↓

↑

☐

and

10

↓

↑

☐

- Modifying a known variable as the sum of two other variables.

Name

Variables

result

=



variable1

↓

☐

+



variable2

↓

☐

- Defining a new variable as a random number between two known variables.

Name

Variables

new

=



Random number between

variable1

↓

☐

and

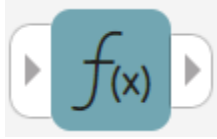
variable2

↓

☐

5.2.7 Mathematical operations

WARNING: This field implies functionality that only advanced users may use. ZoraBots takes no responsibility if the entered formula causes a system crash. **Use at your own risk.**



This block can be used to perform more advanced mathematical procedures on numerical variables.

Note: All the variables used in the formula **must be created** before being used by the block.

Math formulas

Variables

circumference

=

Formula

Variables

{pi}*{radius}*2

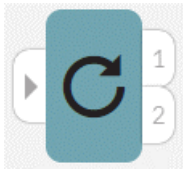
The block assigns a value ⁽¹⁾ to a variable (which can be selected from the list) based upon a formula. The formula must be entered manually, and the variables may be chosen from the dropdown-list in the block or entered manually.

The formula's and operators that can be used by this block can be found here:
https://www.tutorialspoint.com/python/python_basic_operators.htm in the chapter 'Arithmetic Operators'.

Note: To use a variable into the formula, the brackets {} must be used when entering the value manually.

⁽¹⁾: The resulted value is only calculated until 10 decimal places.

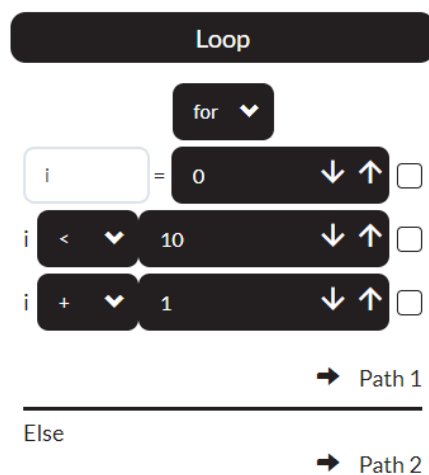
5.2.8 Loop



This block is used to repeat the blocks connected to the output-connector 1 using a for- or while-loop.

For more information on for- and while-loops, see the following website:
https://en.wikipedia.org/wiki/For_loop and
https://en.wikipedia.org/wiki/While_loop

• For-loop



Like with the mathematical operations-block, it is possible to use both numerical values and variables.

If the box to the right of a value-field is coloured black, the value of a known variable must be used from the drop-down list.

If the box to the right of a value-field is coloured white, a numerical value must be entered. It is possible to enter the value directly into the text-field or to use the arrows up or down to increase or decrease the value by one.

There are 3 statements for a for-loop, specifically:

- Initial value of the variable

<variable> = <start-value>

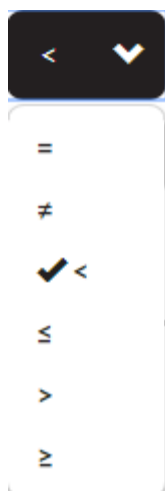
- Conditional value of the variable

<variable> = value? If so, path 1 will be taken, otherwise the loop will be stopped and path 2 will be taken.

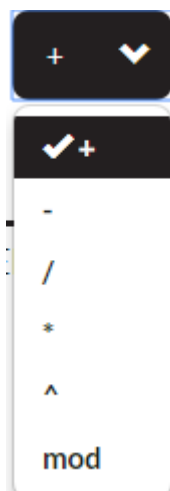
- Operational change to the variable

<variable> increase/decrease after each loop

Operators for the conditional value

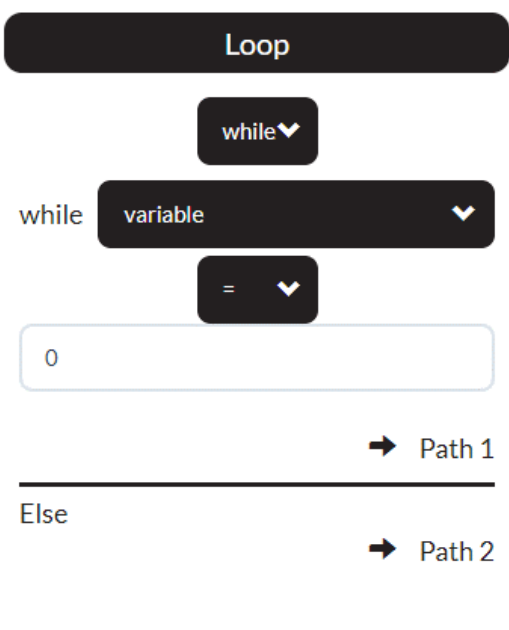
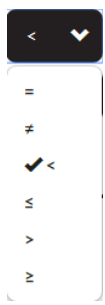


Operators for the operational change to the value



Note: If the variable entered in the loop is used outside the loop, the value is the last known value assigned to it.


- **While-loop**

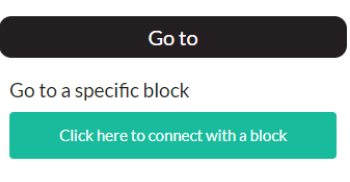
	<p>In comparison to the for-loop, the while-loop is much easier to understand.</p> <p>The only parameter here is the conditional value, and as long as it is met, Path 1 will be taken.</p> <p>Otherwise, the loop will be broken, and Path 2 will be taken.</p> <p>Operators for the conditional value</p> 
---	---

Note: If the variable entered in the loop is used outside the loop, the value is the last known value assigned to it.

5.2.9

[Go To](#)

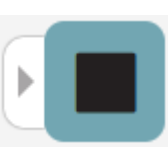
	<p>This block is used to exit from a loop if certain conditions are met or to go to a block that is already connected in the timeline.</p>
---	--

	<p>By clicking on the option 'Click here to connect with a block', any block in the timeline can be selected, from where the timeline will continue.</p> <p>Unlike the normal connection, this connection is shown in a green dashed line.</p>
---	--

5.2.10

[Stop Composition](#)

When dragging this block to the timeline-field, the following appears:

	<p>This block has Pepper stop the current behavior and restart the current composition if needed.</p> <p>Every branch of the advanced composition needs to have a Stop-block at the end.</p>
---	--

5.3 Creating an advanced composition

To create an advanced composition, there are 2 possibilities:

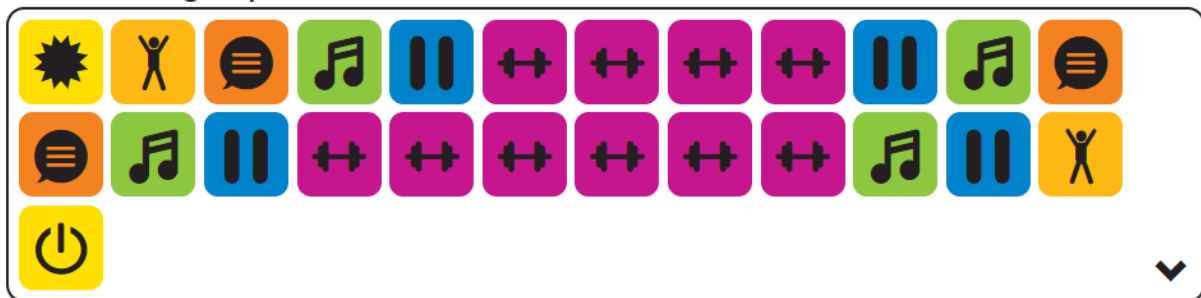
- Converting a simple composition
- Creating an advanced composition from scratch.

5.3.1 [Converting a simple composition](#)

The following composition is to be used as an example, and available as a default composition.

After loading the 'Demo dancing.cmp' in the simple composer, the following timeline will appear:

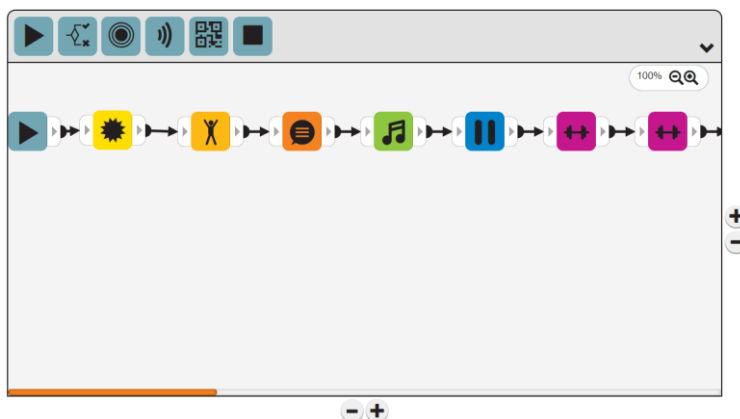
Demo dancing.cmp



By hovering the mouse on the 'arrow down'-icon in the bottom right of the timeline, the following options appear below the timeline:

<div>Convert to advanced</div> <div>Number of cycles</div> <div>Infinite <input type="checkbox"/></div> <div>Number of times 1 <input type="text"/> ↓ ↑</div>	<p>By clicking the 'Convert to advanced'-button, the timeline will be converted to an advanced composition IF there is no composition in the advanced composer at the time.</p> <p>Otherwise, permission will be asked to overwrite the existing advanced composition.</p>
---	--

Once the conversion is completed, the advanced composition page will be shown, and the composition will be loaded in the timeline in the new format. The example looks like this:



Warning: The current 'Simple' Composition will be **cleared** from the simple composer.

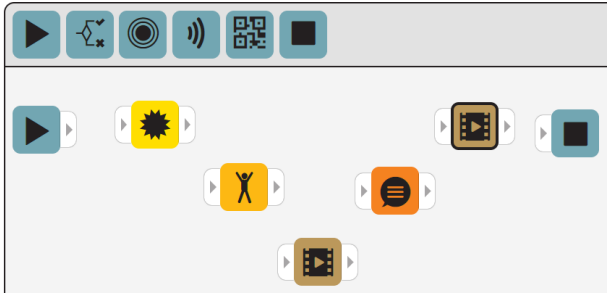
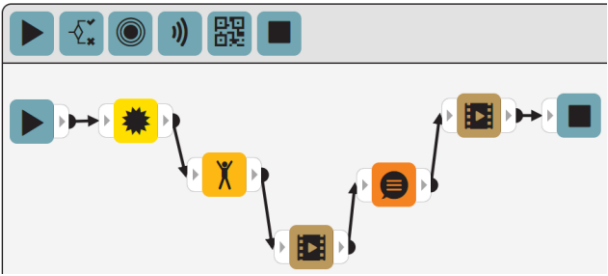
It is also not possible to convert an advanced composition to a simple composition.

5.3.2 [Creating a new advanced composition](#)

After clearing the timeline or just starting fresh, the following blocks must be used for EVERY composition: **Start timeline** (▶) and **Stop timeline(s)** (■).

5.3.2.1 [A 'simple' composition](#)

To create a composition in the timeline, the following steps must be taken:

<p>Step 1: Drag the required blocks to the timeline-field.</p> <p>By dragging the blocks into the field, the timeline can be created. Make sure to include Stop-blocks for every branch</p>	
<p>Step 2: Link the blocks to one another</p> <p>By clicking the 'Output connector' of a block and the 'Input connector' of another block, a link will be created between them and a timeline will be created like a flowchart.</p> <p>To remove a link, click the arrow (which will turn red when mouse is hovering over it) and the link will be removed.</p>	

Make sure no excess blocks are still present when playing the composition, a popup will remind you that all blocks present in the timeline-field need to be connected.

5.3.2.2 [An advanced composition](#)

So far, only the blocks from the simple composer have been used.

The following example will use the advanced blocks to create a composition.

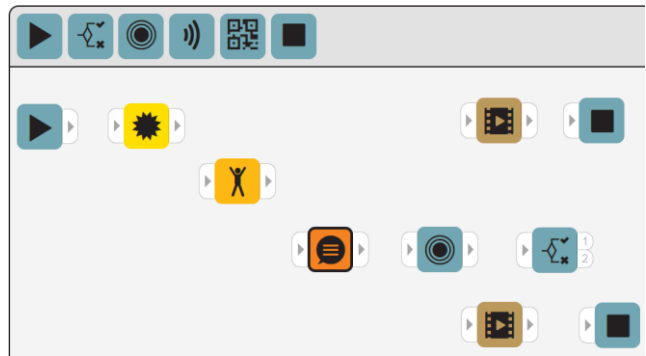
The following composition will follow the flow as follows:

- 1) Pepper will wake up, stand straight, speak an introduction and ask to be touched on the front head sensor.
- 2) If the front head sensor is touched, Pepper will take a bow (path 1).
If the front head sensor is not touched, Pepper will be sad (path 2).

To create the composition, the same steps as before can be used:

Step 1: Drag the required blocks into the timeline-field.

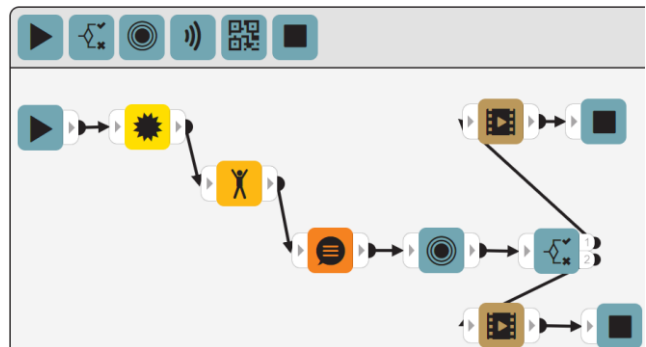
Do not configure the If/Else-Block yet, this is best done *AFTER the timeline has been fully established*.



Step 2: Link the blocks to one another in the required order by clicking the 'Output connector'-Block of one block and clicking the 'Input connector'-block of another.

Take care to have the 'If/Else'-block AFTER the 'Wait for sensor (advanced)'-block.

The If/Else block in more detail:



Step 3: Check the settings

If the name of the sensor has been altered after the blocks have been connected, the settings **of the if/else-block** need to be changed so the correct sensor has been chosen.

Sensor	If/Else
<div style="background-color: black; color: white; padding: 5px; text-align: center;">Sensor</div> <p>Name:</p> <input type="text" value="Choice"/>	<div style="background-color: black; color: white; padding: 5px; text-align: center;">If/else</div> <p>If sensor:Choice = Head front</p> <p style="text-align: right;">→ Path 1</p> <hr/> <p>Else</p> <p style="text-align: right;">→ Path 2</p>

Things to note in the settings of the advanced blocks:

- Every advanced block should have a name, since ALL earlier advanced blocks will be used as a reference in an If/Else-block. The name should also be unique and easy to understand. In this case, the name **choice** has been used as a simple example.
- In the If/Else block, the list for variables is updated when the block is selected and the list of variables that can be used is divided into categories (speech recognition, sensors and QR code).

APPENDIX 6 – SAFETY

1 Battery

The following specifications contain the safety regulations and specifications for the battery of Pepper.



Safety Data Sheet MSDS 2.001.031

Rechargeable Lithium Ion Battery (Series: LIC..., LIP..., LPP...)

1. Identification of the product and of the company undertaking

Product details

Trade name:	Rechargeable Lithium ion battery
Electrochemical system:	Lithium ion
Anode (negative):	Carbon (proprietary)
Cathode (positive):	Metal oxide (proprietary)

This MSDS applies to the following cell types or batteries assembled from these types:

Type	Energy per cell	Voltage per cell
LIC 14500 PD	3.0 Wh	3.7 V
LIC 18650 15 PCJ	5.4 Wh	3.7 V
LIC 18650 22PC	7.8 Wh	3.7 V
LIC 18650 22FC	7.9 Wh	3.7 V
LIC 18650-22AL	8.1 Wh	3.7 V
LIC 103450 AC	8.4 Wh	3.7 V
LIC 18650-25FKD	9.3 Wh	3.7 V
LIC 18650-26HC	9.4 Wh	3.7 V
LIC 26650-30H	9.6 Wh	3.2 V
LIC 18650 26FC	9.6 Wh	3.7 V
LIC 18650 29EC	10.4 Wh	3.7 V
LIC 18650 30BC	11.2 Wh	3.7 V
LIP 423048 AJL	2.6 Wh	3.7 V
LIP 463048 FD	2.7 Wh	3.7 V
LIP 383450 AJL	2.8 Wh	3.7 V
LIP 423450 AJL	3.2 Wh	3.7 V
LIP 523450 AJL	4.1 Wh	3.7 V
LIP 553450 WC	4.2 Wh	3.7 V
LIP 663450 MC	4.9 Wh	3.7 V
LIP 533048 AJ	5.4 Wh	3.7 V
LIP 103450 SC	7.5 Wh	3.7 V

Type	Energy per cell	Voltage per cell
LPP 402025 CE	0.5 Wh	3.7 V
LPP 402934 E	1.1 Wh	3.7 V
LPP 422339 PL	1.3 Wh	3.7 V
LPP 751830 PL	1.5 Wh	3.7 V
LPP 442834 PV	1.5 Wh	3.7 V
LPP 702035 PL	1.6 Wh	3.7 V
LPP 443441 PN	2.2 Wh	3.7 V
LPP 443441 PVL	2.3 Wh	3.7 V
LPP 383450 PL	2.6 Wh	3.7 V
LPP 553048 PL	3.0 Wh	3.7 V
LPP 753039 PL	3.3 Wh	3.7 V
LPP 523450 DL	3.5 Wh	3.7 V
LPP 423566BE	4.2 Wh	3.7 V
LPP 503562 PN	4.2 Wh	3.7 V
LPP 503759 DL	4.6 Wh	3.7 V
LPP 503562 DL	4.6 Wh	3.7 V
LPP 503759 8HH	5.2 Wh	3.7 V
LPP 454261 8TH	5.9 Wh	3.7 V
LPP 683566 BE	6.7 Wh	3.7 V

Supplier details

Address: VARTA Microbattery GmbH
Daimlerstr. 1
D-73479 Ellwangen/Jagst
Germany

Emergency telephone number: +49 7961 921 110 (VAC)

Legal Remark (U.S.A.)

Safety Data Sheets are a sub-requirement of the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard, 29 CFR Subpart 1910.1200. This Hazard Communication Standard does not apply to various subcategories including anything defined by OSHA as an "article". According to OSHA, Article means a manufactured item other than a fluid or particle: (i) which is formed to a specific shape or design during manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and (iii) which under normal conditions of use does not release more than very small quantities, e.g., minute or trace amounts of a hazardous chemical (as determined under paragraph (d) of this section), and does not pose a physical hazard or health risk to employees.

Because all of our batteries are defined as "articles", they are exempted from the requirements of the Hazard Communication Standard.

Legal remark (EU)

These batteries are no "substances" or "mixtures" according to Regulation (EC) No 1907/2006 EC. Instead they have to be regarded as "articles", no substances are intended to be released during handling. Therefore there is no obligation to supply a "safety data sheet according to Regulation (EC) 1907/2006, Article 31".

General remark

This information is provided as a service to our customers. The details presented are in accordance with our present knowledge and experiences. They are no contractual assurances of product attributes.

2. Hazards identification

The battery is sealed hermetically. Thus, the ingredients have no hazard potential, except the battery is violated or dismantled.

If in case of mistreatment the ingredients are released, a spontaneously flammable gas mixture may be released under certain circumstances (measures according to chapter 4 to 6).

Attention: If batteries are treated wrong the danger of burns or bursts occurs. Batteries must not be heated above 100°C or incinerated. The battery contents must not get in contact with water. If the negative electrode gets in contact with water or humidity hydrogen gas is formed, which may inflame spontaneously.

3. Composition/information on ingredients

Ingredients

Contents	CAS No.	Material
2 - 10 %	7429-90-5	Aluminum foil
20 - 50 %	Confidential	Metal oxide (proprietary)
< 5 %	Confidential	Binder
2 - 10 %	7440-50-8	Copper foil
10 - 30 %	Confidential	Carbon (proprietary)
10 - 20 %	Confidential	Electrolyte (proprietary)
Remainder	N/A	Inert materials

During charge process a lithium carbon intercalation phase is formed, which is highly flammable and corrosive, but not released under the circumstances of normal usage.

4. First-aid measures

Measures at accidental release

After inhalation:	Fresh air. Seek for medical assistance.
After skin contact:	Remove solid particles immediately. Flush affected areas with plenty of water (at least 15 min.). Remove contaminated cloth immediately. Seek for medical assistance.
After eye contact:	Flush the eye gently with plenty of water (at least 15 min.). Seek for medical assistance.
After ingestion:	Drink plenty of water. Avoid vomiting. Seek for medical assistance. No trials for neutralization.

5. Fire-fighting measures

Suitable extinguishing media:	Metal fire extinction powder, rock salt or dry sand shall be used. In case only water is available, it can be used in large amounts.
Extinguishing media with limited suitability:	Carbon dioxide (CO ₂) is not suitable. Water in small quantities may have adverse effects.
Special protection equipment during fire-fighting:	Contamination cloth including breathing apparatus.
Special hazard:	Cells may explode and release metal parts. At contact of electrolyte with water traces of hydrofluoric acid may be formed. In this case avoid contact and take care for good ventilation. At contact of charged anode material with water extremely flammable hydrogen gas is generated.
Attention:	Do not let used extinguishing media penetrate into surface water or ground water. If necessary, thicken water or foam with suitable solids. Dispose off properly.

6. Accidental release measures

Person related measures:	Wear personal protective equipment adapted to the situation (protection gloves, face protection, breathing protection).
Environment protection measures:	Bind released ingredients with powder (rock salt, sand). Dispose off according to the local law and rules. Avoid leached substances to penetrate into the earth, canalization or water.
Treatment for cleaning:	If battery casing is dismantled, small amounts of electrolyte may leak. Package the battery tightly including ingredients together with lime, sand or rock salt. Then clean with water.

7. Handling and storage

Guideline for safe handling:	Always follow the warning information on the batteries and in the manuals of devices. Only use the recommended battery types. Keep batteries away from children. For devices to be used by children, the battery casing should be protected against unauthorized access. Unpacked batteries shall not lie about in bulk. In case of battery change always replace all batteries by new ones of identical type and brand. Do not swallow batteries. Do not throw batteries into water. Do not throw batteries into fire. Avoid deep discharge. Do not short-circuit batteries. Use recommended charging time and current. Do not open or disassemble batteries.
Storage:	Storage preferably at room temperature (approx. 20°C). Avoid large temperature changes. Do not store close to heating devices. Avoid direct sunlight. At higher temperature the electrical performance may be reduced. Preferred storage at 50% of the nominal capacity (OCV see chapter 1, or multiples of this in case of serial multi-cell configurations). Storage of unpacked batteries can cause short circuit and heat generation.
Storage category according to TRGS 510:	It is recommended to consider the "Technical Rule for Hazardous Substances TRGS 510 - Storage of hazardous substances in nonstationary containers" and to handle rechargeable Lithium ion batteries according to storage category 11 ("combustible solids").
Storage of large amounts:	Follow the recommendations of the German Insurance Association (GDV - "Gesamtverband der Deutschen Versicherungswirtschaft e.V.") concerning lithium batteries: http://vds.de/fileadmin/vds_publicationen/vds_3103_web.pdf In case of storage of large amounts (used storage volume > 7 m³ and/or more than 6 pallets) batteries shall be stored in fire-resistant or separated rooms or areas (e.g. warehouse or container for hazardous materials). Mixed storage with other products is not allowed. The storage area shall be monitored by an automatic fire detection system, connected to a permanently manned place. A fire-extinguishing system shall reflect the extinguishing agents mentioned in chapter 5.

8. Exposure controls/personal protection

Under normal conditions (during charge and discharge) release of ingredients does not occur.

9. Physical and chemical properties

Not applicable if closed.

10. Stability and reactivity

Dangerous reactions:	When heated above 100°C the risk of rupture occurs.
----------------------	---

11. Toxicological information

Under normal conditions (during charge and discharge) release of ingredients does not occur. In case of accidental release see information in chapter 2, 3, 4.

12. Ecological information

Not applicable if closed.

13. Disposal considerations

USA: Lithium ion batteries are classified by the federal government as non-hazardous waste and are safe for disposal in the normal municipal waste stream. These batteries, however, do contain recyclable materials and are accepted for recycling by the Rechargeable Battery Recycling Corporation's (RPBC) Battery Recycling Program. Please go to the RPRC website at www.rprc.org for additional information.

In the European Union, manufacturing, handling and disposal of batteries is regulated on the basis of the DIRECTIVE 2006/66/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 6 September 2006 on batteries and accumulators and waste batteries and accumulators and repealing Directive 91/157/EEC. Customers find detailed information on disposal in their specific countries using the web site of the European Portable Batteries Association (http://www.epbaeurope.net/legislation_national.html).

Importers and users outside EU should consider the local law and rules.

In order to avoid short circuit and heating, used lithium ion batteries should never be stored or transported in bulk. Proper measures against short circuit are:

- Storage of batteries in original packaging
- Coverage of the terminals
- Embedding in dry sand

14. Transport information

Rechargeable Lithium ion batteries manufactured by VARTA Microbattery are considered to be UN 3480 Lithium Ion Batteries, and are tested according to 38.3 of the "UN Manual of Tests and Criteria" for compliance with the requirements of special provisions ADR 188, IMDG 188, DOT / 49 CFR § 173.102, and the requirements of IATA DGR packing instruction 985. Positive test results as well as other relevant information required for transportation are stated in dedicated "Declarations of Conformity".

Transportations of cells or batteries packed with equipment or contained in equipment have to follow the appropriate regulations for UN3481.

During the transportation of large amounts of batteries by ship, trailer or railway, do not store them in places of high temperature and do not allow them to be exposed to condensation. During the transportation do not allow the packaging to be damaged, as a damage of the packaging may cause fire. In the event packaging is damaged, special procedures must be used including inspection and repackaging if necessary and handle with care.

Code of practice for packaging and shipment of secondary batteries given in IEC 62133: *The packaging shall be adequate to avoid mechanical damage during transport, handling and stacking. The materials and pack design shall be chosen so as to prevent the development of unintentional electrical conduction, corrosion of the terminals and ingress of moisture.*

15. Regulatory information**Marking consideration:**

European Union: According to Directive 2006/66/EC, the batteries have to be marked with the crossed wheel bin symbol. According to Commission Regulation (EU) No 1103/2010 portable secondary (rechargeable) batteries and accumulators shall be marked with a capacity marking, except those which are incorporated or designed to be incorporated in appliances before being provided to end-users, and not intended to be removed.

Rechargeable Lithium ion batteries, which contain electronic modules (e.g. PCM) and which are subjected to the EMC directive 93/97/EEC, must be CE approved and must wear the CE marking.

According to Dangerous Goods Regulations (see 14.) battery packs have to be marked with the Watt-hour rating.

International safety standards:

The basis cells are approved according to UL 1642.

Water hazard class:

The regulations of the German Federal Water Management Act (WHG) are not applicable as Lithium ion batteries are articles and not substances, thus there is no risk of water pollution, except the batteries are violated or dismantled.

16. Other information**Note:**

Date of issue of the transport regulations: ADR 2013, RID 2013, IATA 2014 (55th edition), IMDG 2012, DOT / 49 CFR 2013.
Latest covered modification of the European Battery Directive 2006/66/EC: Directive 2013/56/EU.

Issued by:

VARTA Microbattery GmbH
Quality / Environmental Management

Contact person:

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Tel. +49-7961-921-680
Fax +49-7961-921-73680
E-Mail: rainer.jostes@varta-microbattery.com

Updates:

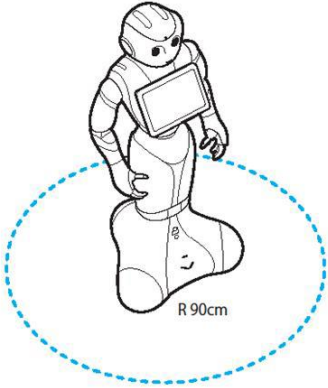
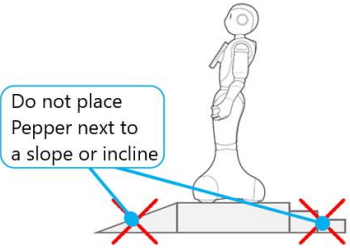
Current SDS can be downloaded from VARTA's web page following the link:
<http://www.varta-microbattery.com/en/news-downloads/downloads.html>

2 Environment

When using Pepper, the following safety precautions must be taken for the environment in which Pepper is active:






2.1 Risk of slanting

To prevent Pepper from falling over, the following precautions are necessary:

<p>The immediate surroundings of Pepper (in a radius of 90 cm) must be a flat, non-reflective and even (i.e. without a carpet) surface.</p>	 <p>A line drawing of the Pepper robot standing on a flat surface. A dashed blue circle is drawn around the robot's base, with the text "R 90cm" written below it.</p>
<p>Do not place Pepper next to a slope or incline.</p>	 <p>A line drawing of the Pepper robot standing on a sloped surface. A blue speech bubble with a red border contains the text "Do not place Pepper next to a slope or incline". Two red 'X' marks are placed on the slope, one near the robot's feet and one further down the incline.</p>



2.2 Temperature and humidity

To ensure all the inner parts of Pepper work as expected, the following precautions are necessary:

	Do not expose Pepper to direct sunlight.
	Do not place Pepper directly next to a radiator or other heat sources.
	Pepper was designed for indoor use only.
	Maintain a temperature between 5°C and 35°C.
	Keep the humidity level between 20 and 80%.

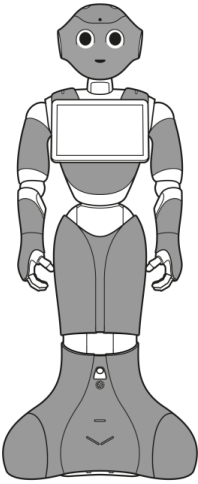
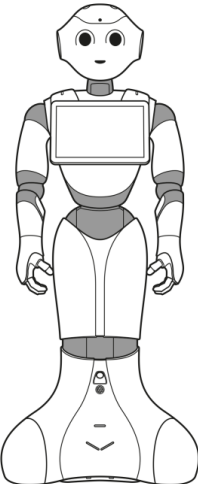
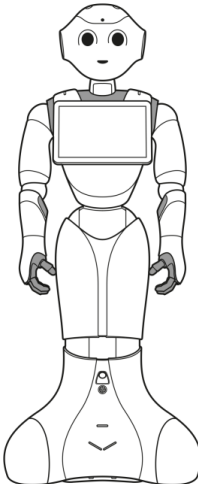
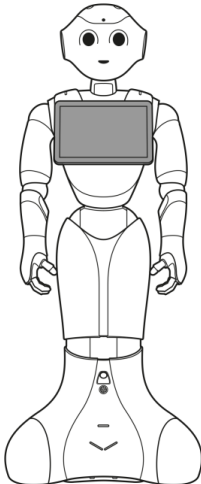
2.3 Identification

To ensure Pepper can detect voices or faces correctly, the following precautions should be taken:

	To execute the voice recognition properly Pepper should be placed in a relatively quiet room. Background-noise should not be a problem, background voices on the other hand could be.
	No obstacles may be detected within a 2-meter range of Pepper, or the identification of people may not work correctly.

2.4 Maintenance

The table below list the type of cleaning products that may be used to clean Pepper:

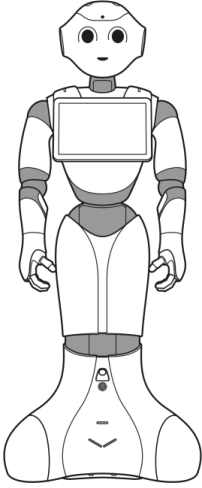
Never use water or cleaning products based on alcohol or ammoniac.			
To clean the plastic part, PVC cleaning wipes or dry, soft cloth should be used.			The tablet-screen should be cleaned with specialized wipes.
			
The hard plastic doesn't stain easily.	The joints may contain some oil from the lubrication of the motors.	The soft plastic surfaces stain quite easily.	The tablet-screen could show a lot of fingerprints

3 Usage

When operating Pepper, the following precautions should be used:

3.1 Joints

The following hazards appear when operating the motors in the joints:

Pinch hazard To prevent the fingers of the user from being pinched during the operation of Pepper, do not touch the joints while Pepper is moving.	
Damage to the motors To prevent the motors from being damaged, do not block the joints during the operation of Pepper.	

3.2 Movement

3.2.1 Risk of falling

Due to limitations of the sensors, the following obstacles may not be detected correctly:
(see the manual, chapter sensors for more information)

Hanging objects (i.e. tables or chairs)	The range of detection of the sensors of Pepper is low to the floor, after which Pepper will extrapolate the data into a 'collision model' through software processing. This implies that objects above a certain height that do not connect directly to the floor (i.e. table surfaces or wires) are not detected.
Heights to the sides or backward	The sensor detecting heights is only available at the front of Pepper, so the sides or to the back only surface-actuators are present.
A slope of more than 5°	If the slope is more than 5°, Pepper will execute the falling reflex. If Pepper is stopped on a slope, Pepper may fall.
Elevations lower than 3 cm.	To have Pepper move around, the sensors are 2 to 3 cm off the ground. This causes a gap in the sensor grid in which Pepper cannot detect anything, such as minor elevations.

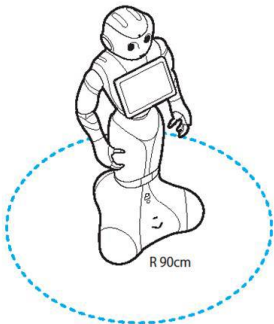
Keep the above restrictions in movement in mind when operating Pepper from the Pepper Control.

3.3 Sensors

The range of the sensors have the following limitations:

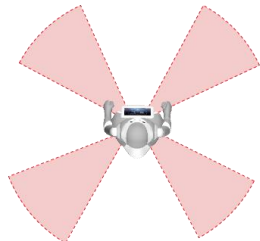
3.3.1

Safety-distance

 <p>A line drawing of the Pepper robot. A dashed blue circle is drawn around its base, with the text "R 90cm" written below it.</p>	<p>Any obstacles in a range of 90 cm of Pepper may cause some movements to not be executed correctly.</p>
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3.3.2

Blind Spots

 <p>A 3D rendering of the Pepper robot. Four red, fan-shaped areas extend from the robot, representing its blind spots. The areas are positioned at the front-left, front-right, back-left, and back-right.</p>	<p>The sensors don't measure everything. There are gaps in the range where Pepper cannot detect obstacles properly. The figure shows the areas where the detection is most flawed.</p>
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3.4 Moving by hand

To prevent damage to the motors of the wheels, use the following steps when moving Pepper by hand:

<p>Step 1: Open the power hatch</p> <p>This action unlocks ⁽¹⁾ the brakes on the wheels and allows Pepper to be moved by hand.</p>	
<p>Step 2: Place Pepper in a resting-position</p> <p>This unlocks the motors of the hip and shoulders, so some range of motion is available when moving Pepper up or down a slope.</p>	
<p>Step 3: Hold Pepper securely</p> <p>When moving Pepper, always place a hand on the shoulder and hip to maintain the balance as much as possible.</p>	
<p>Step 4: Move Pepper along the ground</p> <p>DO NOT LIFT Pepper off the ground, this may cause damage to the motors in the hip or ankles.</p> <p>Should it be necessary to lift Pepper briefly (i.e. an elevation), please lift Pepper by the foot.</p>	

⁽¹⁾: If the power hatch is open when moving Pepper up or down a slope, Pepper may roll back. Make sure Pepper is properly **supported** when pushing Pepper up or down a slope.

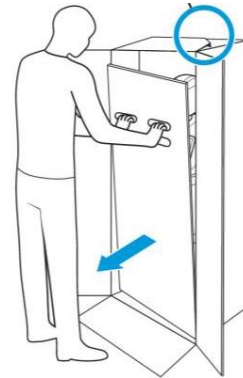
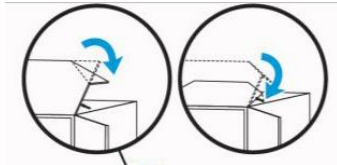
APPENDIX 7 – (UN-)PACKING PEPPER

1 Unpacking Pepper

Use the following procedure when unpacking Pepper:

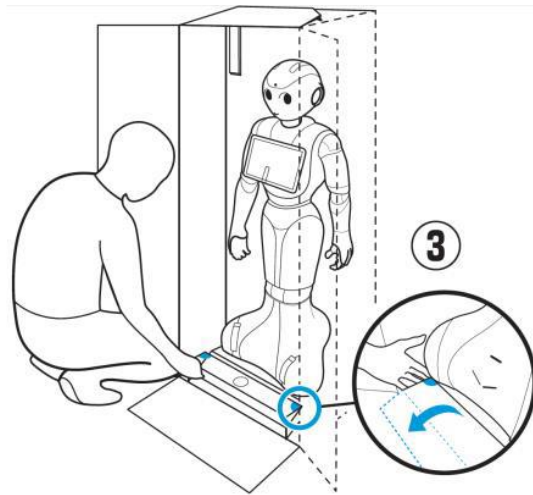
Step 1 - Open the box

The corner of the lid at the top of the box can be folded and held in place on top of the box.



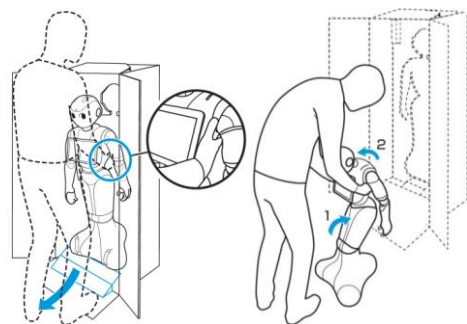
Step 2 - Unfold the base at the feet

At the base of the feet of Pepper, a small slope can be folded outwards, so Pepper has a slope to roll down from.



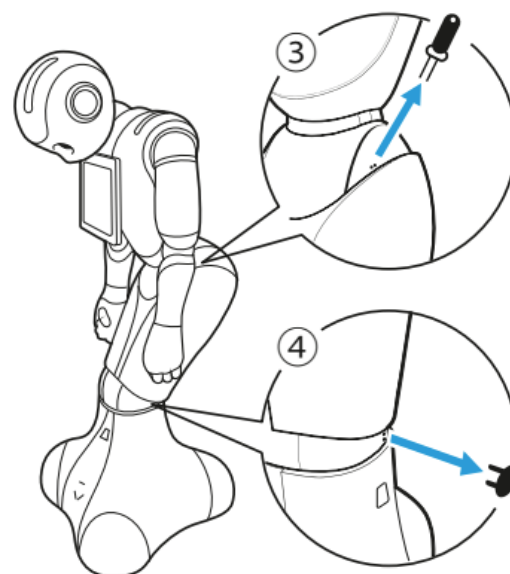
Step 3: Carefully roll Pepper down as shown on the picture on the right

Note: Keep supporting the shoulders until step 4 is completed.



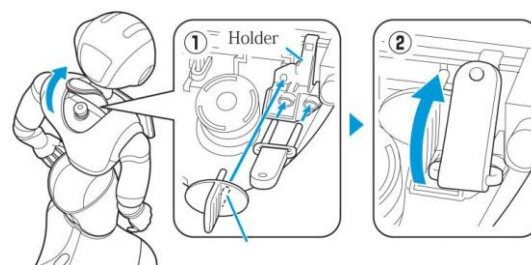
Step 4 – Remove the safety pins

Place Pepper in the following position and remove the safety pins.

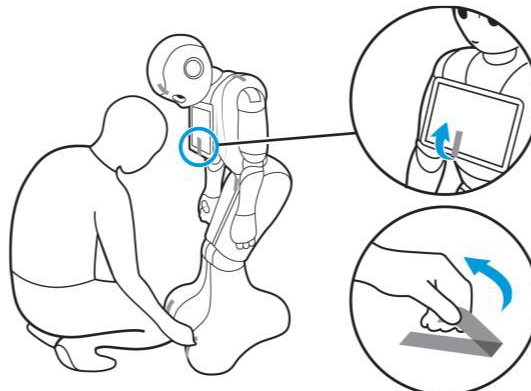


Step 5 - Store the safety pins

Below the shield at the neck of Pepper, there is a small space to store the safety pins.



Step 6 - Remove the protection below the tablet.



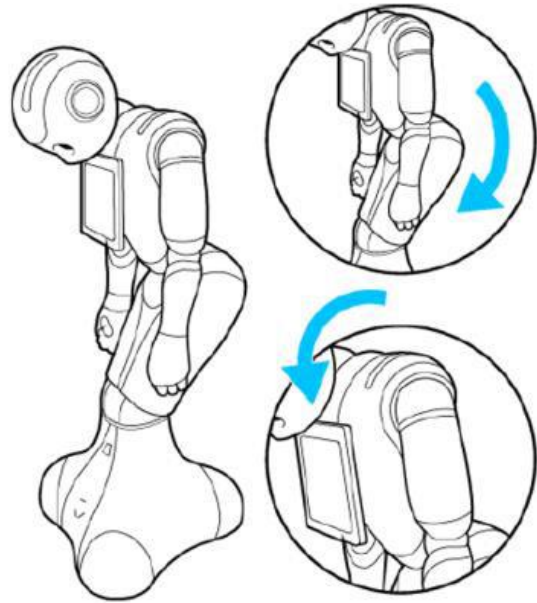
IMPORTANT:

The box **must be kept** to be able to receive support on the hardware (even AFTER the warranty has expired).

2 Packing Pepper

Use the following procedure when packing Pepper:

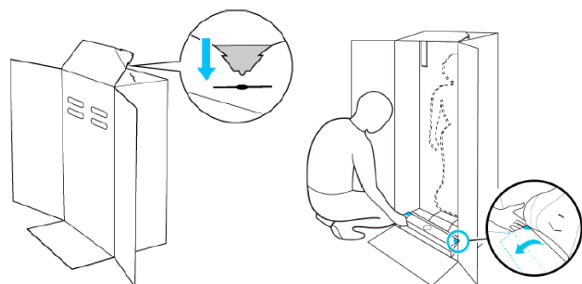
Step 1 - Place Pepper in the following position (the 'Crouch'-posture is sufficient).



Step 2 - Push the stop-button (the cover may be removed if necessary).

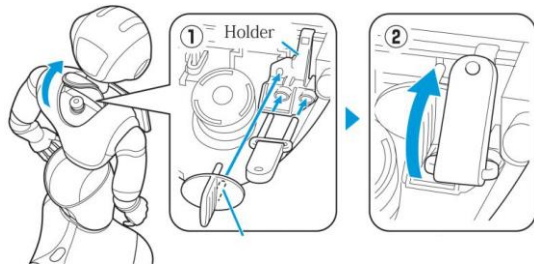


Step 3 - Open the box and unfold the base at the feet if necessary.

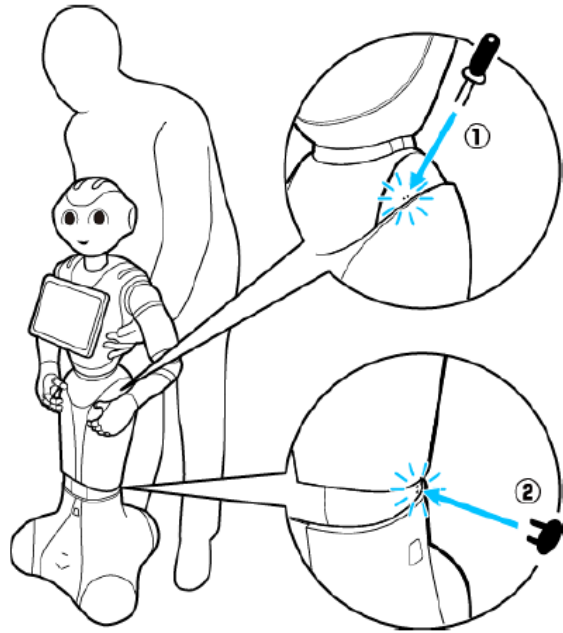


Step 4 - Re-insert the safety pins.

The safety pins should be found here:



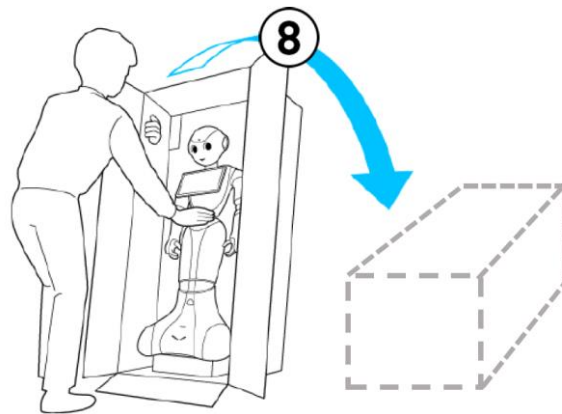
Note: From this point on, keep supporting Pepper until Pepper is secured in the box.



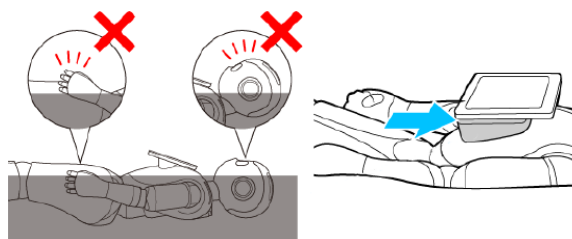
Step 5 - Place Pepper in the box.



Step 6 - CAREFULLY place the box on the ground.



Step 7 - Secure the head, hands and tablet.

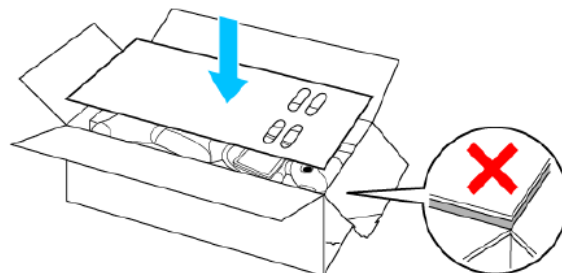


Step 8 - Place the battery-charger back in the box.



Step 9 - Close the box.

Note: Ensure the front cover is completely inside the box.



The robot is now ready to be shipped.