First steps with NAO

INTRODUCTION

This guide will help you start building your first steps and experience with NAO.

In the first part, "**From the box to Autonomous Life and Applications**", you will learn how to start NAO and bring him to life. The second part will help you discover more possibilities, tell you where to get additional information. For example, you will discover Choregraphe and its graphical environment and understand how to use Applications.

You will also find information to upgrade your NAO software in the "**NAO upgrade guide**" document as well as other resources on our websites. They are all listed at the end of the document.

Remember you can always refer to the NAO User Guide - Overview for more details.

TABLE OF CONTENT

First steps with NAO

1 - FROM THE BOX TO THE AUTONOMOUS LIFE

WHAT IS INCLUDED IN THE BOX

- NAO
- 1 Safety Guide
- 1 Hello Guide
- 1 Battery (inside NAO)
- 1 Charger
- 1 Ethernet cable
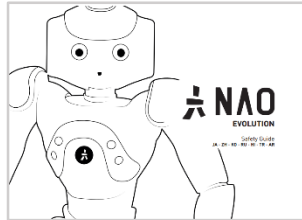
WHAT YOU NEED TO PREPARE BEFORE STARTING NAO

- Your Aldebaran Community user account information (login and password) – if you already created them – If you have not created them yet, you can go through the steps described below in How to configure your Aldebaran Community user account. Make sure you do it before starting your NAO;

- Your Choregraphe and Webots software's licenses keys: you should have received them by email from Aldebaran or your distributor. If not, please contact your distributor or Aldebaran customer care www.aldebaran.com/customer_care;

- A computer to connect NAO to your Aldebaran Community user account;

- An internet connection (Ethernet Connection).

Back to table of Content   V1.1

3

HOW TO CONFIGURE YOUR ALDEBARAN COMMUNITY USER ACCOUNT

- If you have not created your Aldebaran Community user account yet:
  Click on the attached link NAO on his way to do it or go to the
  Aldebaran Community site under "Resources", "Tutorials", "Your NAO is on his
  way": https://community.aldebaran.com/en/content/your-nao-his-way

- Create your account by clicking the "**Create your account**" link:
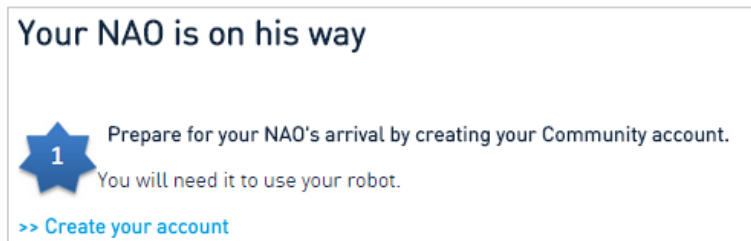
- Fill the form "**Join the community**"

- You will receive a confirmation email and will need to click on the validation link
  (check your spam folder if you don't receive the email shortly).
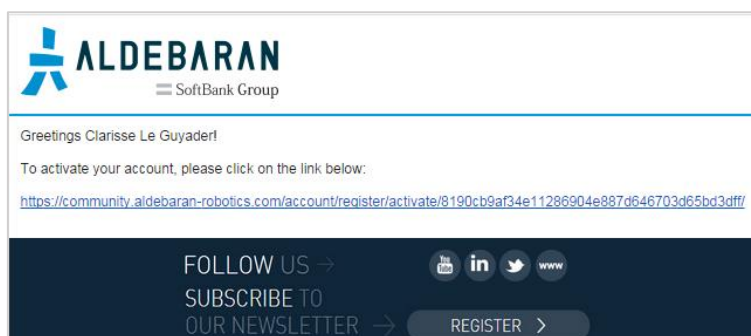
- You will be connected to the validation webpage. Click "**login**" (top-right corner of the page) and sign on using the email and password you just created:

- Now that you have your Aldebaran Community user account, you are part of the Aldebaran Community and have access to all resources on the Community website.

- If you have any questions or issues at this stage, you can find some additional information or ask questions on the" Community welcome page" through the forum menu: https://community.aldebaran.com/en/forum. You can also contact your distributor or send your question to Aldebaran Customer care at https://account.aldebaran.com/support/ (you need to be connected to your account)

HOW TO GET NAO OUT OF THE BOX

- Carefully unpack NAO and place him in a safe crouching or seated position by maintaining his back with your hand and making sure he is resting on a hard and flat surface. This surface should not be carpeted and not too slippery or NAO will have trouble maintaining his balance.
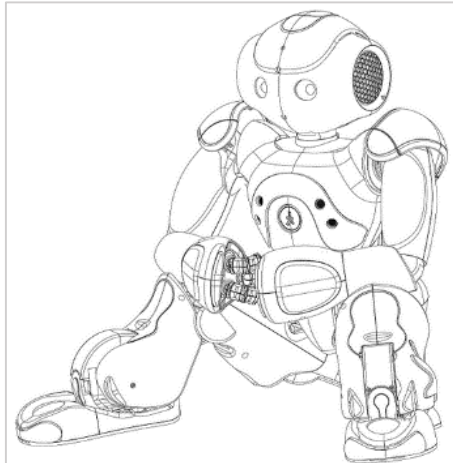
- Refer to the Hello Guide, either the paper version in the box or the online version.
  http://doc.aldebaran.com/2-1/_downloads/nao_hello-guide.pdf
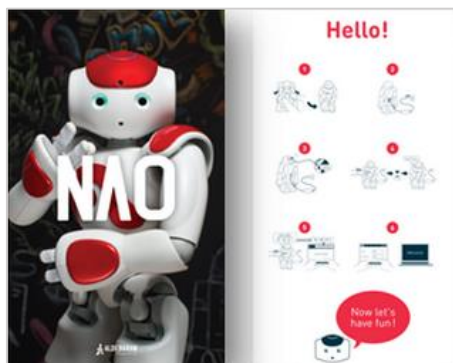
- Once you have unpacked your robot you should read the Safety Guide A or B depending on your language :

  - **Safety Guide A** for English, French, Spanish, Portuguese, German, Italian and Dutch.
    http://doc.aldebaran.lan/doc/release-2.1/aldeb-doc/_downloads/nao_safetyguide_2014_en_fr_sp_pt_gr_it_nl.pdf

  - **Safety Guide** B for Japanese, Chinese, Korean, Russian, Hindi, Turkish and Arabic.
    http://doc.aldebaran.lan/doc/release-2.1/aldeb-doc/_downloads/nao_safetyguide_2014_ja_zh_ko_ru_hi_tr_ar.pdf

HOW TO CONNECT NAO TO THE INTERNET

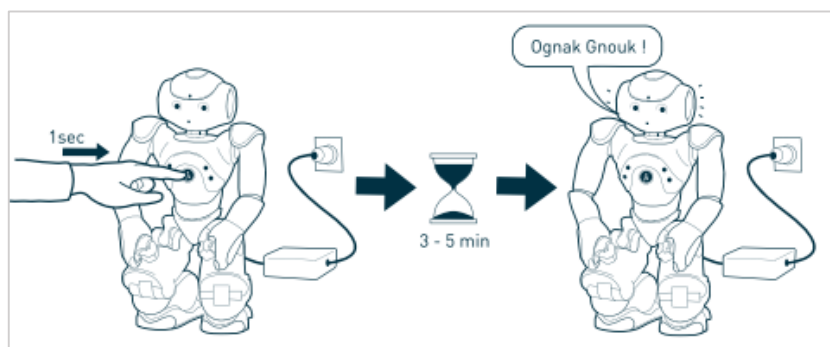You will need to connect NAO to the internet for the initial settings and then to download Applications or upgrades. **For the initial settings, an Ethernet connection is mandatory**; from there the Wi-Fi connection is highly recommended as it will allow NAO to move more freely!

- Remove the hatch behind the head of the robot to access the Ethernet socket and plug in the Ethernet cable.
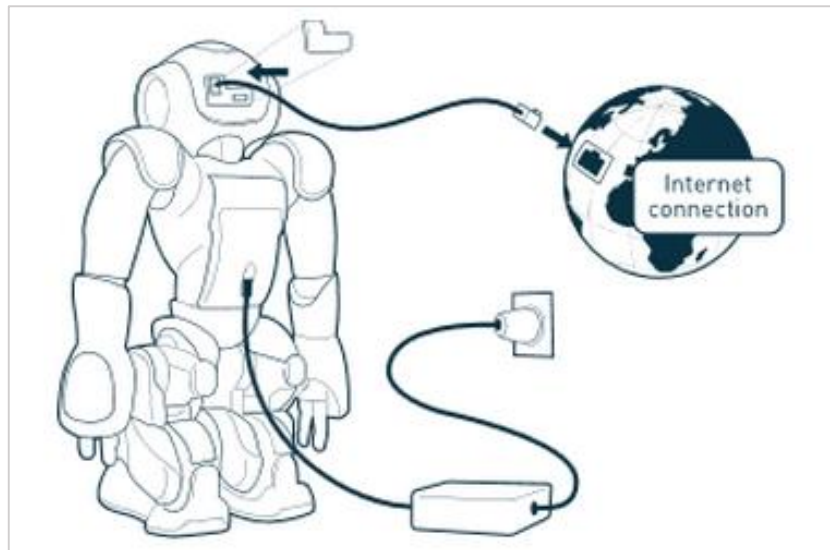

- Connect the Ethernet cable:
  - to your network router (if it has a spare Ethernet port);
  - or to your computer directly.

- Once the cable is plugged, press the chest button to start NAO. After a few minutes NAO will say "Ognak Gnouk".


- You will notice that your robot moves slightly and seems to be waiting for something to happen.

- You need to get NAO's Internet address to connect NAO to the Internet. To get this address, press the chest button once and wait until NAO says "Hello, I'm NAO, my Internet address is...", and gives a sequence of numbers: this is his IP address. The format is "123.123.123.123" (four sets of numbers between 0 and 255, separated by periods).

- If you don't understand the numbers or need to hear them again, you can make NAO repeat them by pressing the chest button again. NAO will repeat them slower the third time.
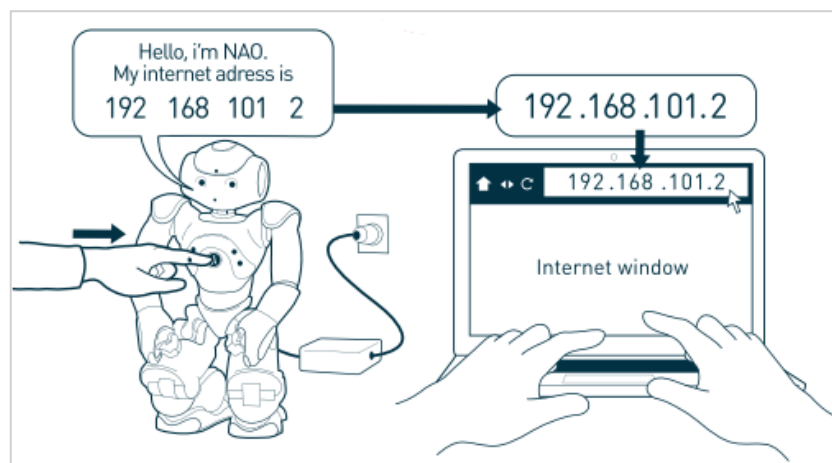
- Open a web browser and enter this **IP address** in the address bar without any other numbers or signs. Make sure you add periods between the numbers.

- An authentication window will appear: complete both the User Name & Password with the default values: User Name: nao, Password: nao
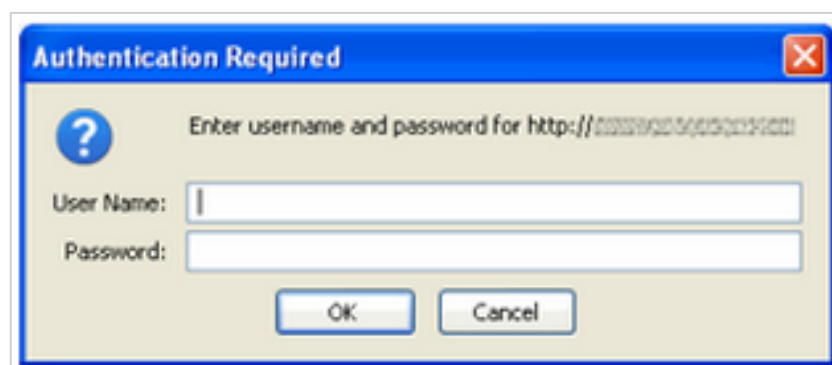
- The **Getting started** wizard will be launched and from there you just need to follow the steps to configure your NAO.
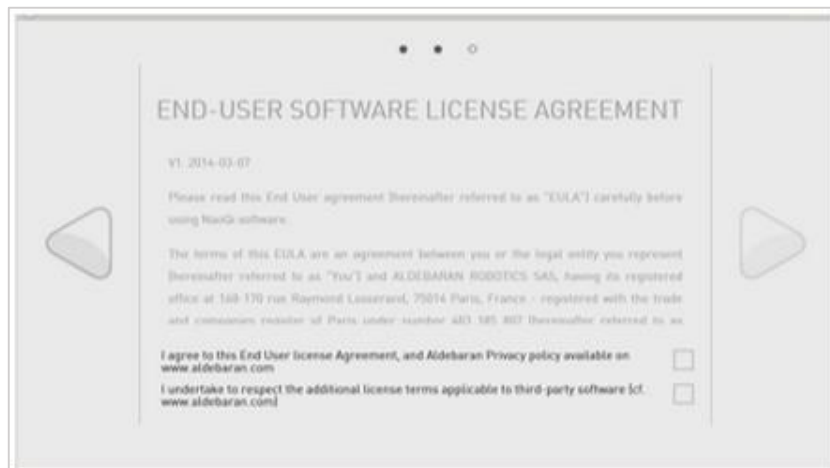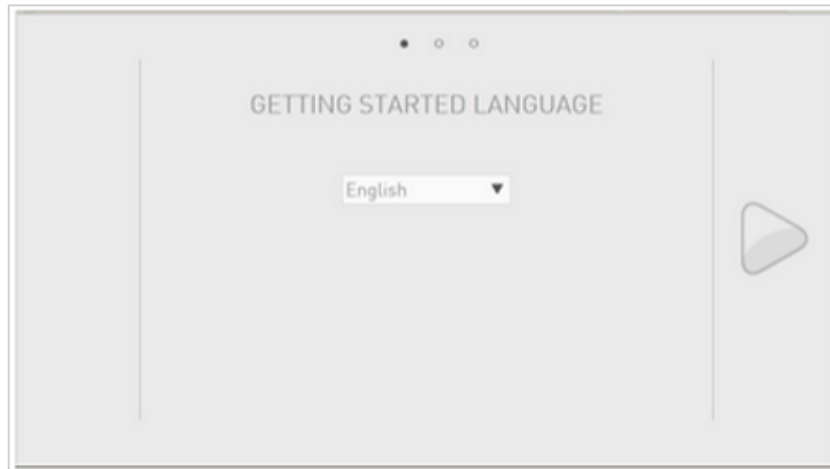
- When you're asked to configure a Wi-Fi connection, select your available Wi-Fi connection, enter the password (if there is one) and click "Connect"

Tips: Do not remove the <u>Ethernet</u> cable from NAO or your computer yet – the wizard requires the Ethernet connection.

- **Customize your robot**. You have the possibility to change the name of your robot and the password. *(Keep the password! It is mandatory to connect to the robot and to its webpage.)*
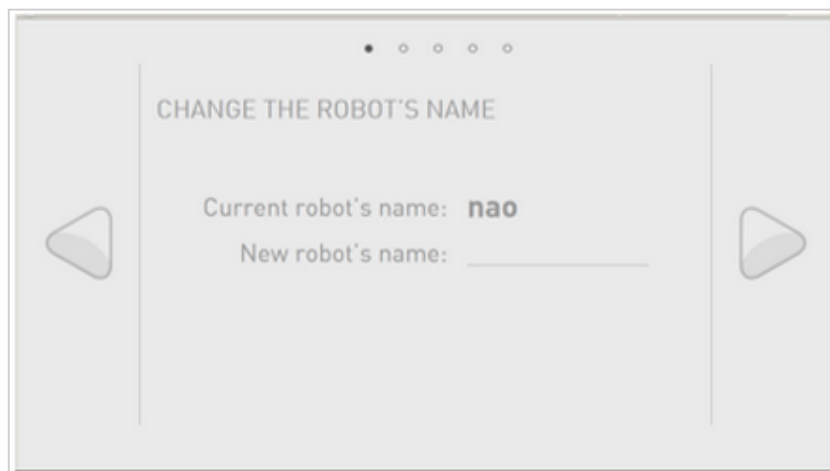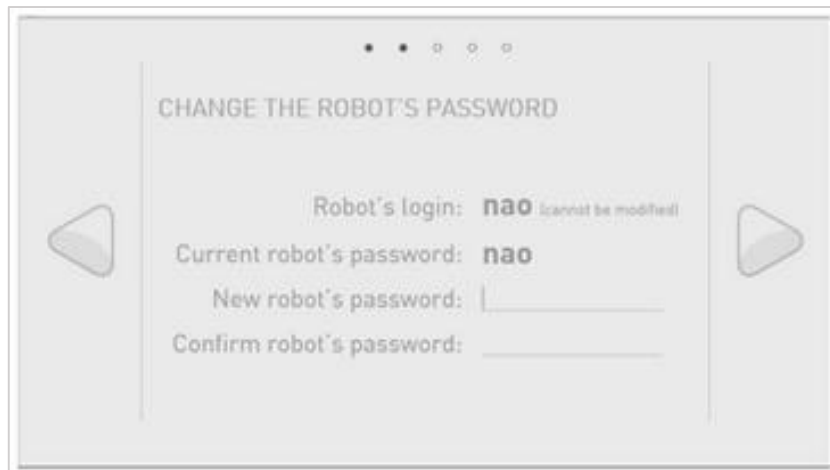
- Then you need to enter the login and password you used to access the **Aldebaran Community.** Once this step is completed, your robot is paired with your Aldebaran Community user account.
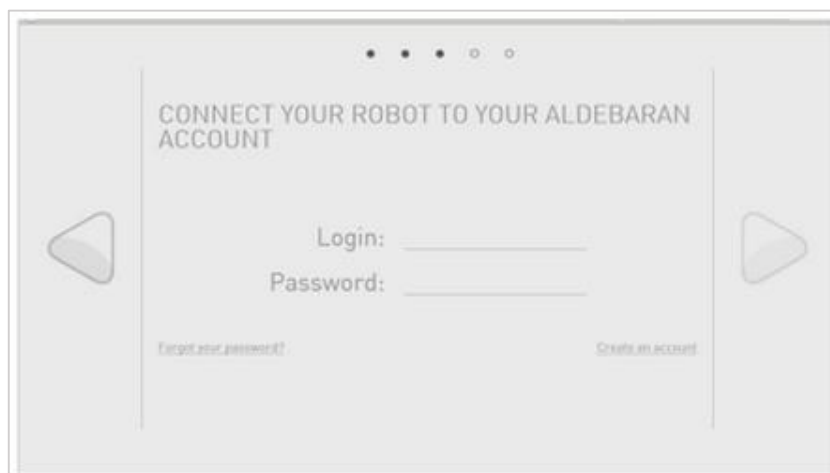
- Click on the next button

- If you have customized the name of the robot, you need to reboot NAO. Make sure the robot is fully charged, or better, plug the charger, and click the **Reboot now** button.
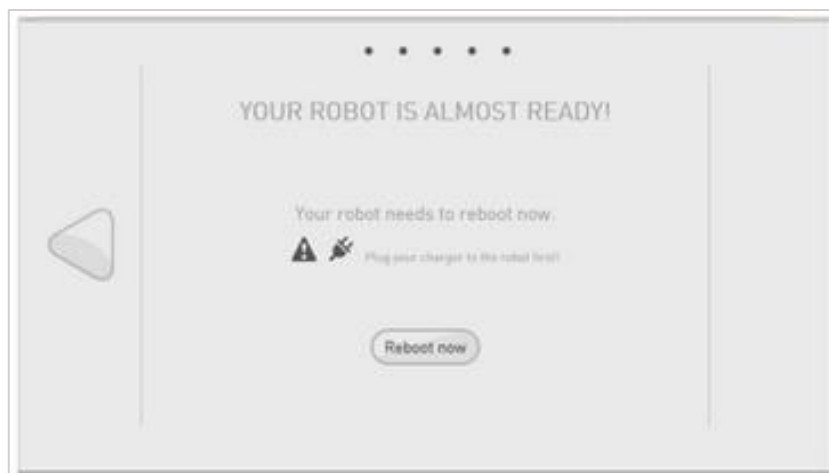
- If you have not changed the name, your robot is ready;
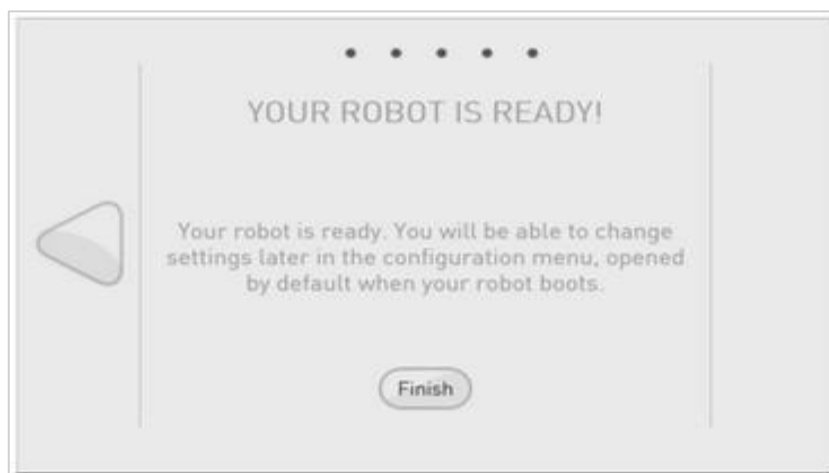
- Click the finish button, the NAO webpage appears;
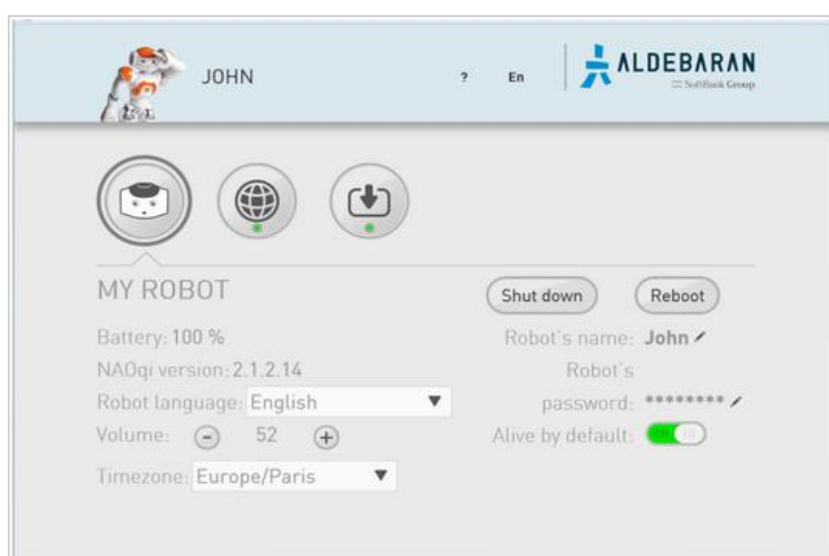
- The NAO webpage will help you manage your robot and check different parameters like the battery level, connection status, volume or the list of Applications uploaded on your NAO. You can also check the NAOqi version installed on your NAO and select one of the 2 languages (English installed by default) if you have already chosen and installed your second language for your NAO; if not, you can see how to do it just below.

    - More details on this NAO webpage are available in the documentation. http://doc.aldebaran.com/2-1/nao/webpage_access.html#access-webpage-nao

NAO's default language will be set in English but you can add another language of your choice.
- If you have not selected the default language for your NAO, go to the Aldebaran Store
http://cloud.aldebaran.com, choose "MY APPS" and select "LANGUAGES".
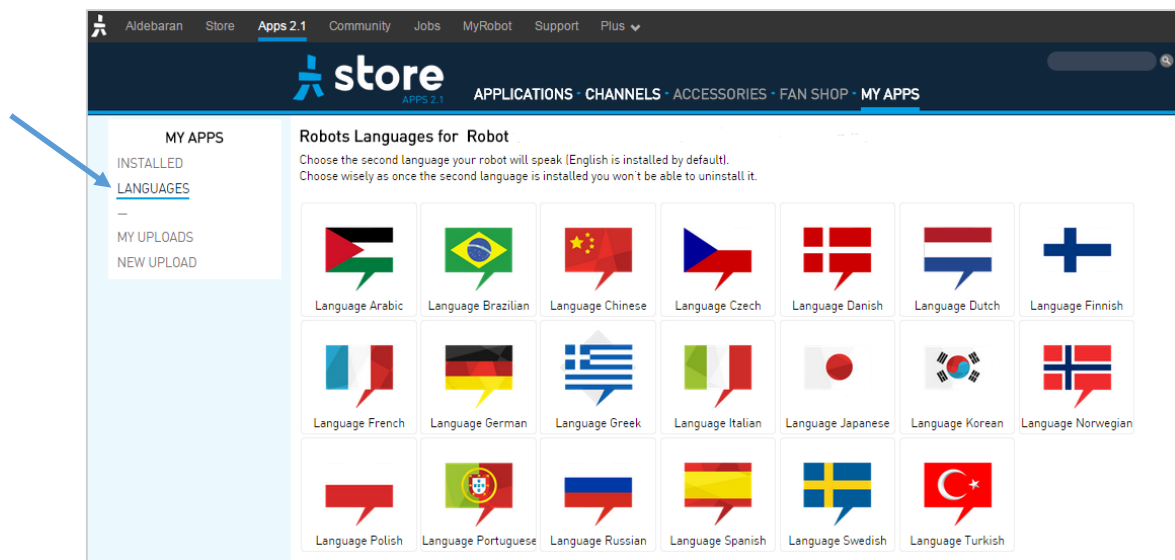
- Choose the second language for NAO and click INSTALL.
YOU NEED TO CHOOSE IT WISELY AS ONCE THE SECOND LANGUAGE IS
INSTALLED, YOU WON'T BE ABLE TO CHANGE YOUR MIND.

- A popup appears to validate your choice. Click OK.
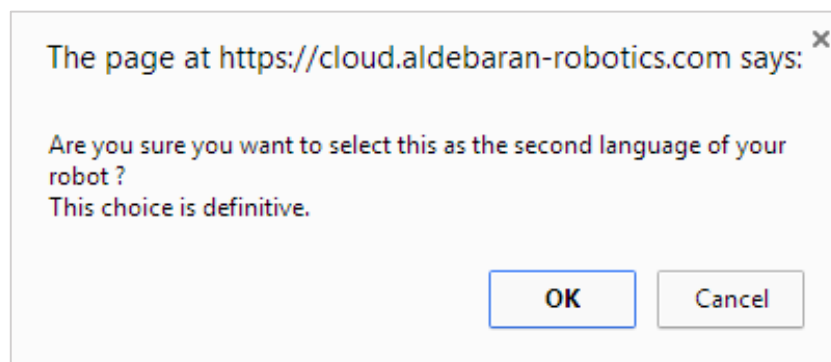
- Your second language is confirmed.
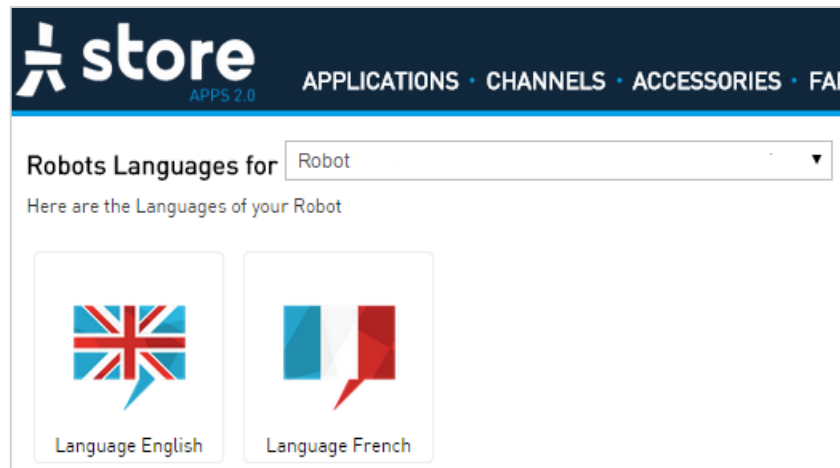
- You will need to reboot NAO **by** pressing and holding the Chest Button for 3 seconds, until NAO says "**GNUK GNUK.**"

NAO'S BASIC FUNCTIONS AND INTERACTION TIPS

Here are some quick instructions on how to take care of NAO and interact with him. Pay attention to the eyes color!

- o ON/OFF process

  - To <u>turn NAO on</u>, press the Chest Button once.

  - For the NAO V5, the <u>Eye LEDs</u> and the <u>Status LEDs</u> fade in, smoothly and repeatedly, from Black to White.

  - For the NAO V4 & V3.x, <u>Eye LEDs</u> alternately change between Blue, Red, and Green. The <u>Status LED</u>s fade in, smoothly and repeatedly, from Black to White.
  - After 5 minutes all the LEDs are off for a while, then Blue, then quickly Red and Green.
  - The startup process is completed when NAO says "OGNAK GNOUK." For further details see: switching on documentation http://doc.aldebaran.com/2-1/nao/boot_process_nao.html#switching-on

  - Shortly after, NAO will stand up and try to capture your attention. If Applications are installed, they may be launched automatically or interactively.

  - To <u>turn NAO off</u>, make sure NAO is in a safe position. You can also place a hand on his back to keep him steady. Press and hold the chest button for 3 seconds, until NAO says "GNUK GNUK."

    - <u>Eyes</u>, chest, and head LEDs are all off when the shutdown process is completed. For further details, see: Understanding the shutdown process documentation. http://doc.aldebaran.com/2-1/nao/understanding.html

- Those instructions are available in details on the documentation through "More Details about NAO". In addition to the above content, you will find other information:

  - Main usages of the Chest button;
  - Event and state notifications ;
  - Understanding the boot process ;
  - Understanding the shutdown process.

o Interaction tips

- **When NAO starts, it will automatically run Autonomous Life.** When you look at him, the eyes will light partially pink, then the robot says hello and starts listening.

- **Talk to NAO :**
  Say "yes" or "no" – these are the words recognized by default.
  To make sure NAO is listening, check his eye LEDs, and pay attention to the slight "blip" sounds.
  Eye LEDs are:
  - Blue and turn, while he is listening.
  - Green, when he is processing what the human just said.
  - Alternately white and blue means he is not listening and the dialog has not started

- During your interaction with NAO, he makes automatically a "blip" sound to let you know that he's ready to listen to you and you can talk to him.
  - When NAO is starting listening, the sound is ascending,
  - When he is stopping, the sound is descending.

More information on interactions are available on the documentation: Interacting with NAO

o Taking Care of NAO

You will find important information to help you for the maintenance of NAO:

  - Replacing the battery: about specifications and how to charge NAO;
  - Removing NAO's head: why and how to remove NAO's head;
  - Best practices: about charging NAO, Ethernet cable, safe poses of NAO.

2 – INTERACT WITH NAO AND USE APPLICATIONS

HOW TO INTERACT WITH NAO

You will be able to add Applications or Channels and enrich your experience with NAO: the Aldebaran Store is the place for you to access to different categories of Applications such as dances, educational Applications, games, sports … and Channels.

  o Definitions

An Application is a set of content that can be installed on NAO from the Aldebaran Store. It contains resources such as Behaviors and Dialog topics.
The **Behavior** is an easy way to make the robot talk, walk, dance, play a sound… and a **Dialog topic** provides your robot with conversational skills.

A Channel is a way to update dynamically a set of Applications on your robot. Subscribing to a Channel ensures your Applications are automatically added, updated, and removed, when necessary.

For a first experience the Basic Channel provides a first set of Applications to start interacting with NAO. Out of the box, NAO has a minimal Autonomous Life Behavior already installed. It means that NAO gets up, sways slightly, and seems to be waiting for something to happen. The Autonomous Life gets richer with the Basic Channel which adds dialog abilities, but also push and fall recovery abilities, and useful sounds. With the Basic Channel, NAO is able to orientate its head towards you and react to basic stimuli, such as sounds, movements, or tactile contacts. If you are away, NAO does not talk and looks for people willing to talk and interact with him. If you come closer, NAO listens and tries to come up with a relevant response.

More information on the Autonomous Life are available in the documentation: "**Understanding Autonomous Life settings**":
http://doc.aldebaran.com/2-1/nao/nao_life.html?highlight=autonomous%20life#understanding-autonomous-life-settings
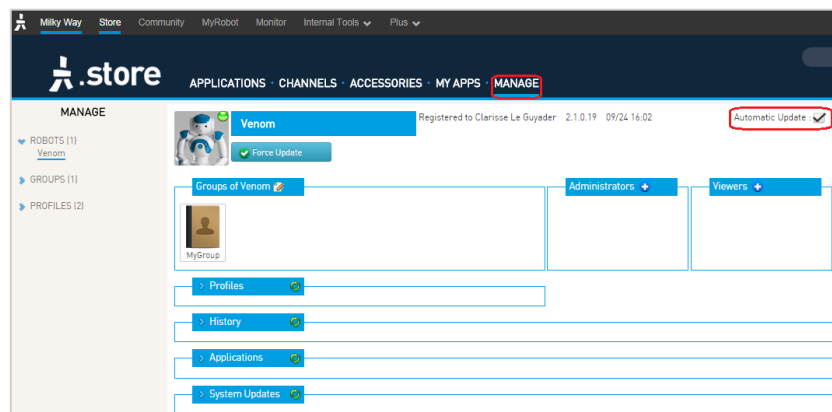
  o How to Install the Basic Channel and talk to NAO

The Basic Channel is available since NAOqi 2.1 versions.

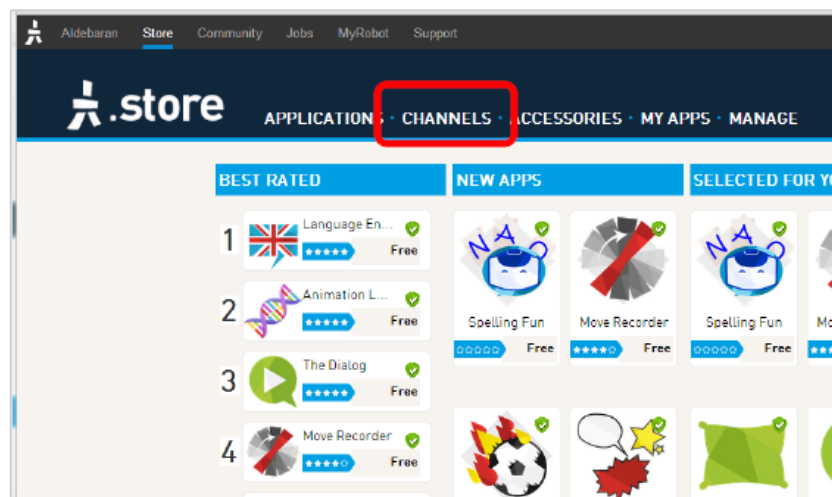 - Connect to the **Aldebaran Store** on http://cloud.aldebaran.com
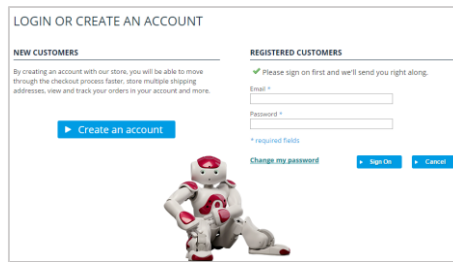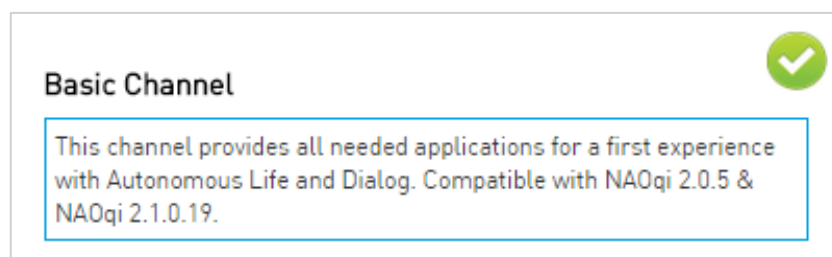
- Click on "**MANAGE**", click on your robot and display the **Automatic Update box.**

- Then click on "**CHANNELS**".

- On the Channels page, click "**Basic Channel**". A green mark will appear.

- Check the installation of the Basic Channel on your NAO webpage by clicking on the update button.

(To go back to your NAO webpage, type the IP address on your web browser)

- When everything is installed (Applications are ticked in green on the right), **reboot the robot by** pressing and holding the chest button for 3 seconds, until NAO says "GNUK GNUK."

- When the robot starts, it runs Autonomous Life and Basic Channel. If you want to have a short conversation with your robot, you can try some short sentences like: *What's your name? What can you do? How many degrees of freedom do you have? How old are you? What time is it? Stand up, sit down.*

○ <u>Basic Channel – What can I say to NAO</u>

- You can try one of the following questions to start interactions with NAO:

Meet NAO

How are you?

What can you talk about?

What can you do?

What do we do now?

How do I install an Application...

...

| **About NAO**	**Skills**
What's your name?	Give me an example
Who are you?	Can you shake my hand?
Introduce yourself	Can you say goodbye?
How old are you?	Can you point at me?
What is a Humanoid robot?	Can you stand on one foot?
...	...
Move	**Setup**
Come to me!	What is your battery level?
Can you walk forward?	Do you need charging?
Can you walk backwards?	I want to configure the Wi-Fi
Can you open your hands?	What is you IP address?
...	....

- You can retrieve the full list of trigger sentences and more details on the Basic Channel in the documentation:
  - Meet NAO
  - About the talk
  - About settings and system
  - NAO's skills
  - More about NAO

- If you need to switch the Autonomous Life on and off, press the chest button twice. You can also manage the Autonomous Life from the NAO webpage by switching it on and off permanently.
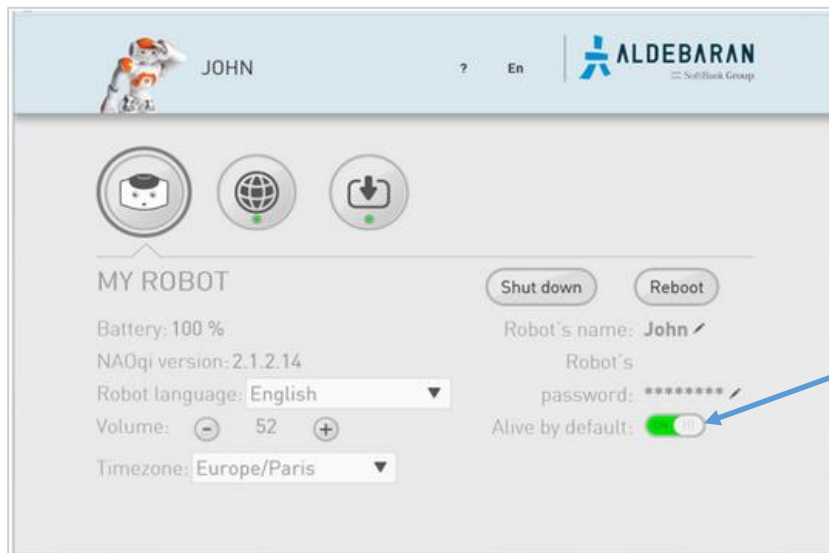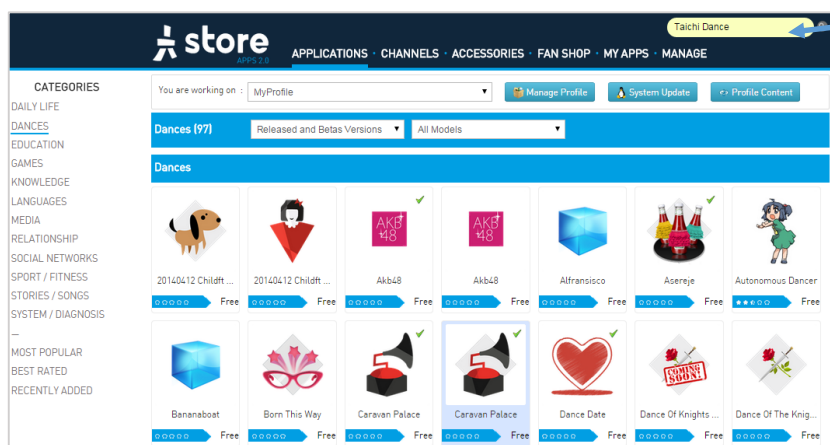
## HOW TO DOWNLOAD APPLICATIONS FROM THE ALDEBARAN STORE

- On the Aldebaran Store https://store.aldebaran.com, click on "APPLICATIONS" and select the operating system of your robot.
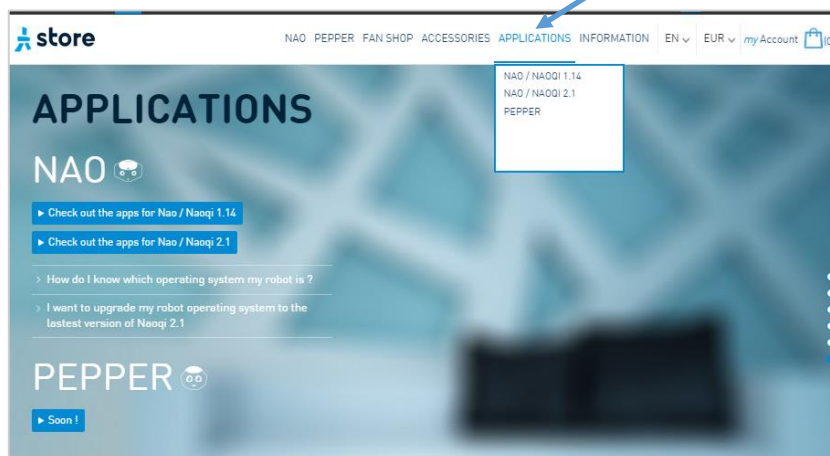

- If you know the name of the Application, you can use the search box (example here: taichi dance);

- Select your Application to open the dedicated page. You can view the description, check technical parameters and trigger sentences that you will need to launch the Application (see the "**trigger**" screenshot below);
- Click the "**Install**" button;
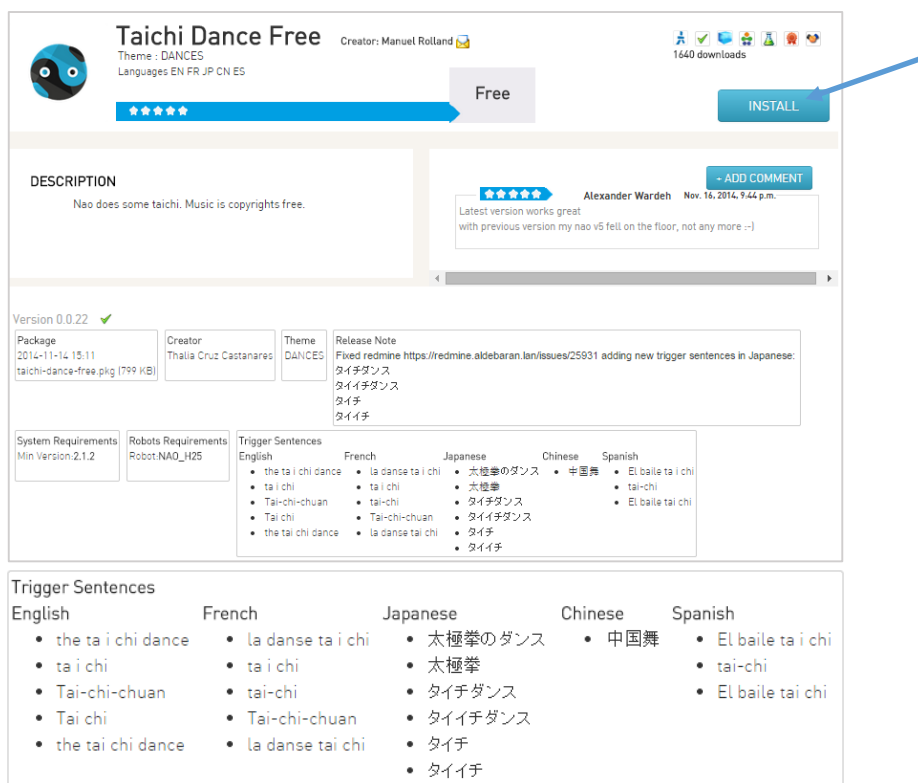
- You should always chose the last release version if you want to make sure it has been qualified by Aldebaran teams.

- Confirm by clicking "Install" again;
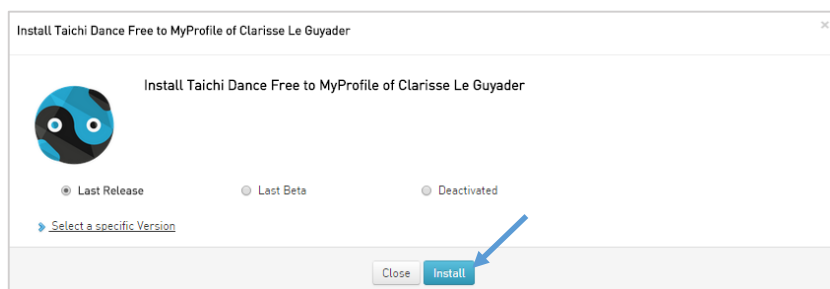
- Going back to « MY APPS », you will see all Applications installed on your robot.

- From the NAO webpage you can also check the status of the new Application you have downloaded and update if necessary. You always need to reboot the robot to finalize the download or update of Applications. To do this: press the chest button for 3 seconds until it says "GNUK GNUK" to turn NAO off. The shutdown process is completed when all the LEDs are off;

- Thanks to the trigger sentence you will be able to launch the Application by talking to NAO. For example for "taichi" you would say "the taichi dance" or any of the sentences listed on the Application page as previously explained.

How to connect NAO and run Activities with Choregraphe

Choregraphe is a multi-platform software enabling you to create Animations, Behaviors and Dialogs, to test them on a simulated robot or directly on NAO, to monitor and control your NAO and to enrich Behaviors with your own Python code.

o Install Choregraphe

- You can download the latest version of Choregraphe from the Aldebaran Community website https://community.aldebaran.com/en/resources/software.

- Make sure you get the Choregraphe version matching your NAOqi version;

- Check the NAO box under "**My Robots**";

- Click on the appropriate version depending on your operating system (Windows, Linux or Mac);

- Note for Windows: It is recommended to use the Setup version.
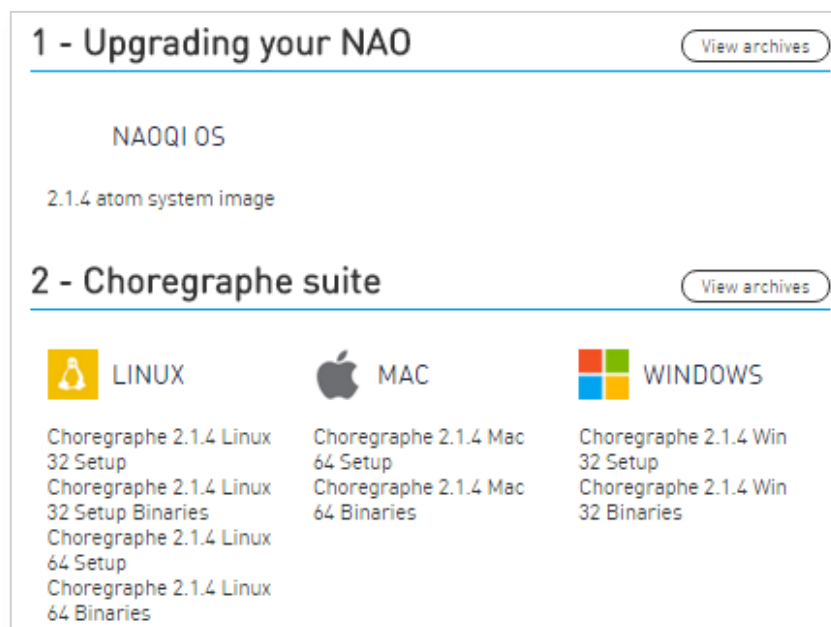
- Open the file you just downloaded and follow the instructions for the installation.

- Depending on the configuration, the installer may additionally ask you to setup "Bonjour" and some other libraries that are missing on your computer.

- If you are running Choregraphe for the first time, you will be asked to type in a **license key**. You will find it in the email you received from Aldebaran or your distributor when you purchased your NAO. If you don't have it, please contact your

distributor or Aldebaran customer care. Otherwise, feel free to try Choregraphe for 90 days www.aldebaran.com/customer_care.

   o Menus, panels and toolbar at a glance

-   By default, Choregraphe will start with the following page:
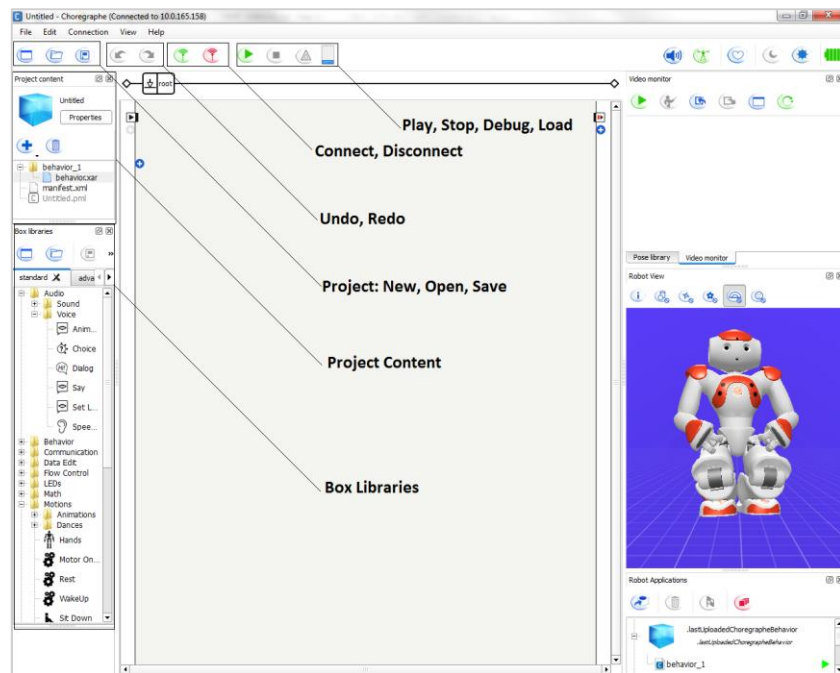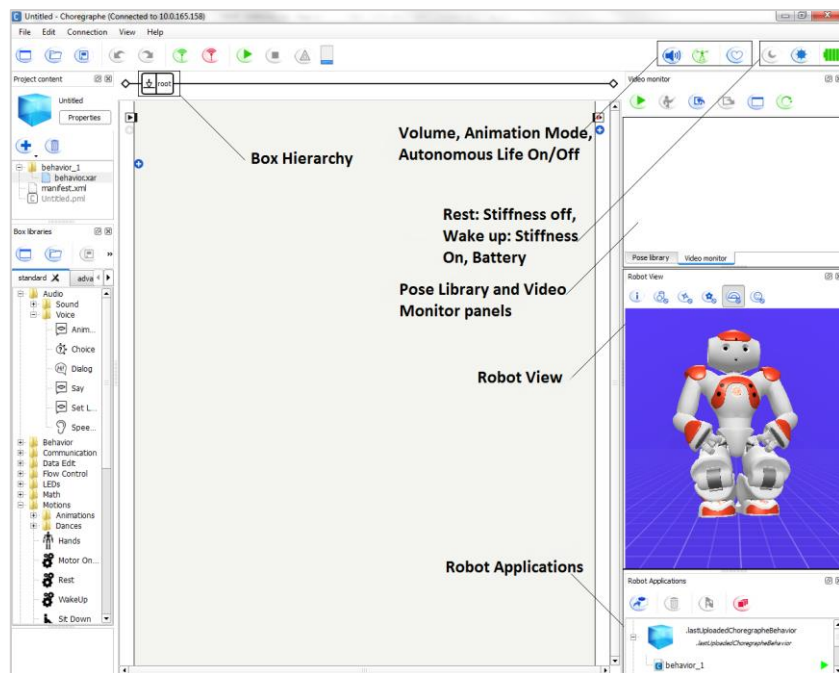
-   You will find all the information about the interface, menu bar, toolbar and panels in the documentation.
    http://doc.aldebaran.com/2-1/software/choregraphe/interface.html

## HOW TO CONNECT NAO AND RUN APPLICATIONS FROM CHOREGRAPHE

- Open Choregraphe

- Click on "**connection**" then "**connect to…**" to open the connection manager.
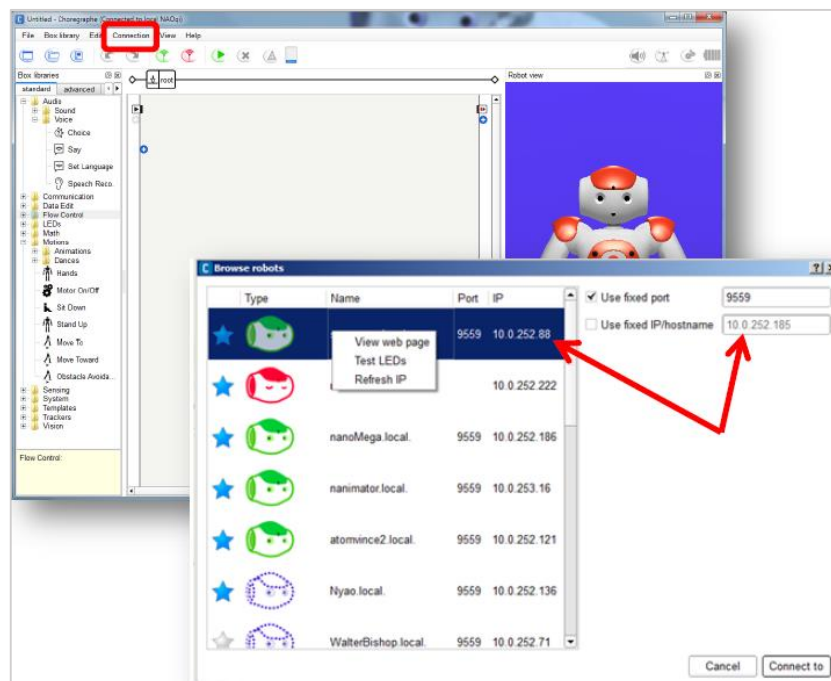
- Look for your robot name. You can connect it by clicking on its name, or by entering its internet address (the IP number) on the right side of the window.

<u>Note</u>: The robot needs to be connected on the same network as your computer (Wi-Fi or cable).

- Once connected in Choregraphe, open the "**Robot Application**" panel and then check "**Behavior Manager**" to display this new panel.
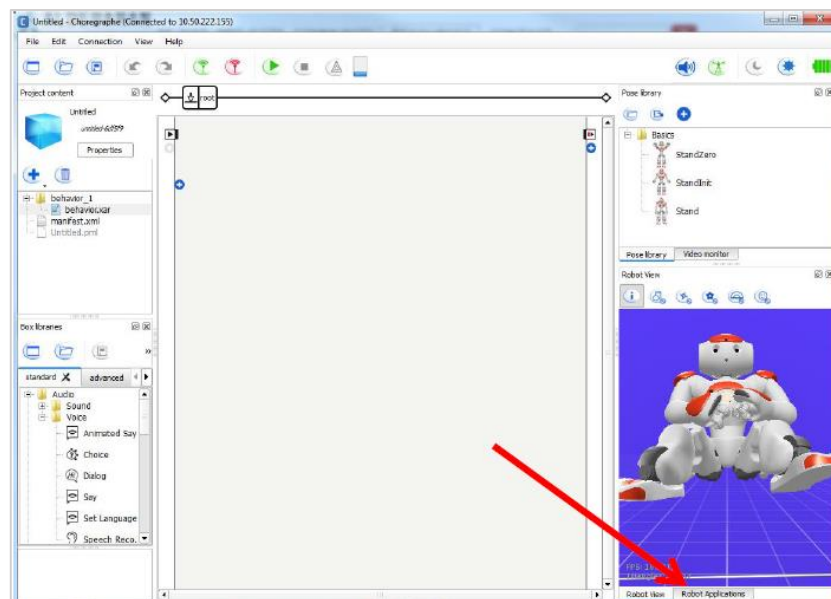
- In the "**Robot Application**" panel, you see the list of Applications running on your NAO. Find "**Check Updates**", expand it and play the "**Behavior**" inside!

<u>Note on Robot Application panel</u>: Each row is a program that is currently installed on NAO.

You will recognize the Applications with their logo and name.

For each program (i.e. each row), the green arrow (▶) is a "play" button. Click on it if you want to run the program. While the Application is running you can click on "Stop" box (■) to stop the Behavior. If you want a Behavior to start automatically, select it and click the flag button.
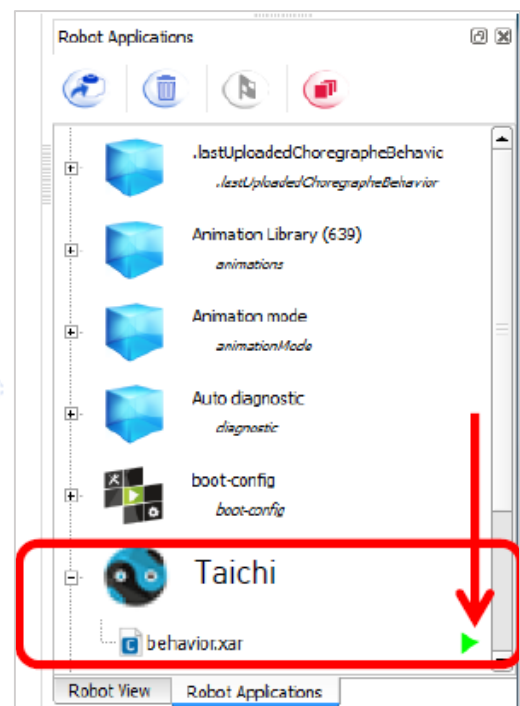
- For more details during your first steps with Choregraphe, see the"Choregraphe User Guide" on the documentation website: http://doc.aldebaran.com/2-1/software/choregraphe/index.html   .

- You can also click on the links below and find information about:

  - How to create a Behavior
  - How to connect your NAO
  - How to wake up your NAO
  - How to play a Behavior

- Continue to discover Choregraphe with some simple tutorials:

  - Hello World 1 - using Choregraphe
  - Hello World 2 - using Python in Choregraphe
  - Hello World 3 - using Dialog topic in Choregraphe

- Learn by doing:

  - Discover and learn with Choregraphe tutorials

HOW TO RUN ACTIVITIES VIRTUALLY WITH WEBOTS™

o   Introduction

Webots™ will enable you to launch a simulated **NAO** moving in a virtual world. It offers a safe place to test behaviors before playing them on a real robot.
For purpose of guidance, we recommend you to use a computer with a quadri-core processor, 8GB of RAM and a NVIDIA® graphics card. Do not hesitate also to look at the Webots™ user guide for more information on how to get the right speed for realistic simulation.

o   Installation

- Uninstall completely any old version of Webots™ that may have been installed on your computer previously.

- Log in on the Community website and go to the resources pages (https://community.aldebaran.com/en/resources/software)

- Click on the appropriate version of Webots™ depending on your operating system (Windows, Linux 32 or 64 bits, or Mac OS).

- Launch the installer and follow the step-by-step instructions.

- To use Webots™, you have to create a Webots™ account.

- You can go directly on https://www.cyberbotics.com, select my account and click on "If you don't already have a **Webots™** account, please register."

- A registration page will open. Fill in the form and approve the privacy policy of Cyberbotics.
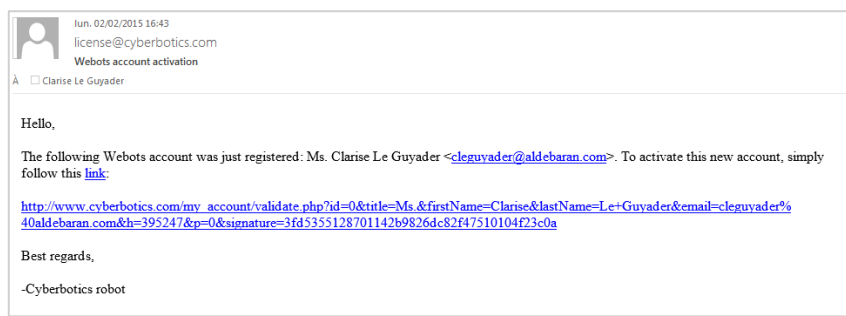
- You can also choose to launch Webots™ and click on "Register a new Webots™ account"


- A registration page will open. Fill in the form and approve the privacy policy of Cyberbotics.

- You will receive a confirmation email and will need to click on the activation link. Click and validate your account.


- The first time you launch Webots™ you will be asked to register your license. On the Administration menu, enter the activation code. You will find it in the delivery confirmation email or on the bill you received from Aldebaran or your distributor. If not, please contact your distributor or Aldebaran customer care: www.aldebaran.com/customer_care.
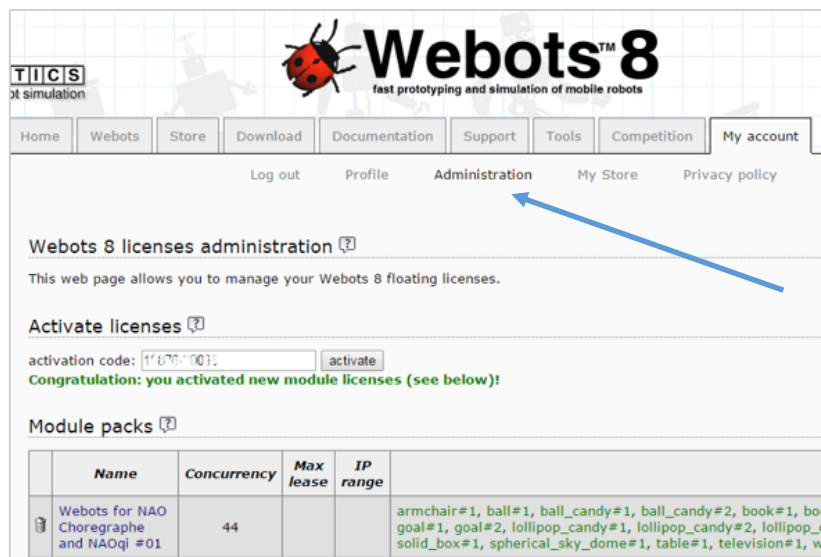
- The activation code allows you to activate your license on your account and become the administrator of these licenses. Once entered, press the "activate" button and your licenses should immediately appear in the "Module packs" section.

o Getting started

- Launch Webots™ and enter your Webots™ account e-mail and password you just created to login. Leave Synchronization to the default option. Change network if you need a special configuration such as a proxy to access the Internet.
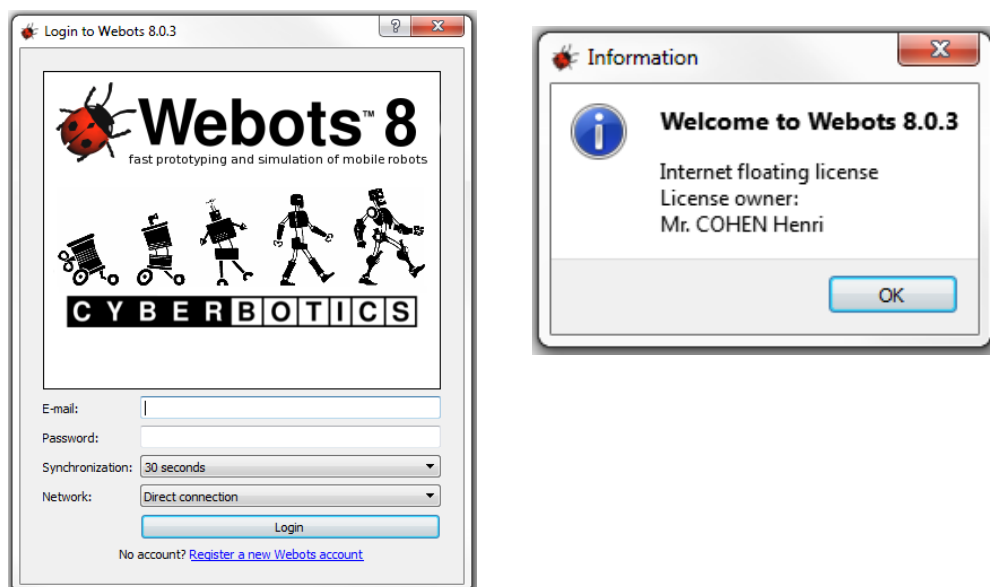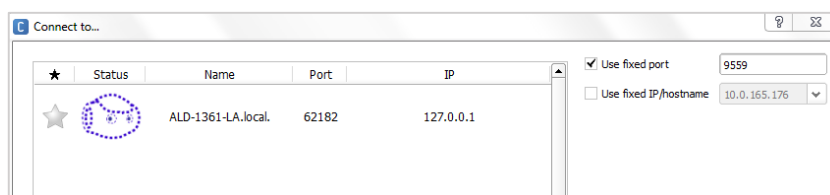

- During the first install you get a black image.
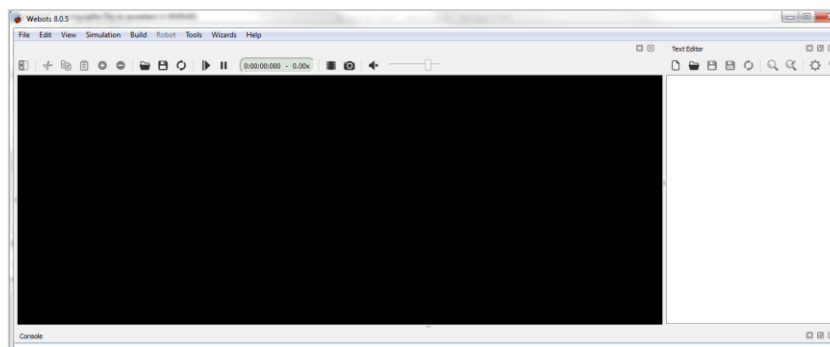
- Choose File > Open Sample World...and select the entry
  `robots/aldebaran/nao.wbt` Webots™ will then open with NAO in the default
 empty world. After that you will get the world open systematically.
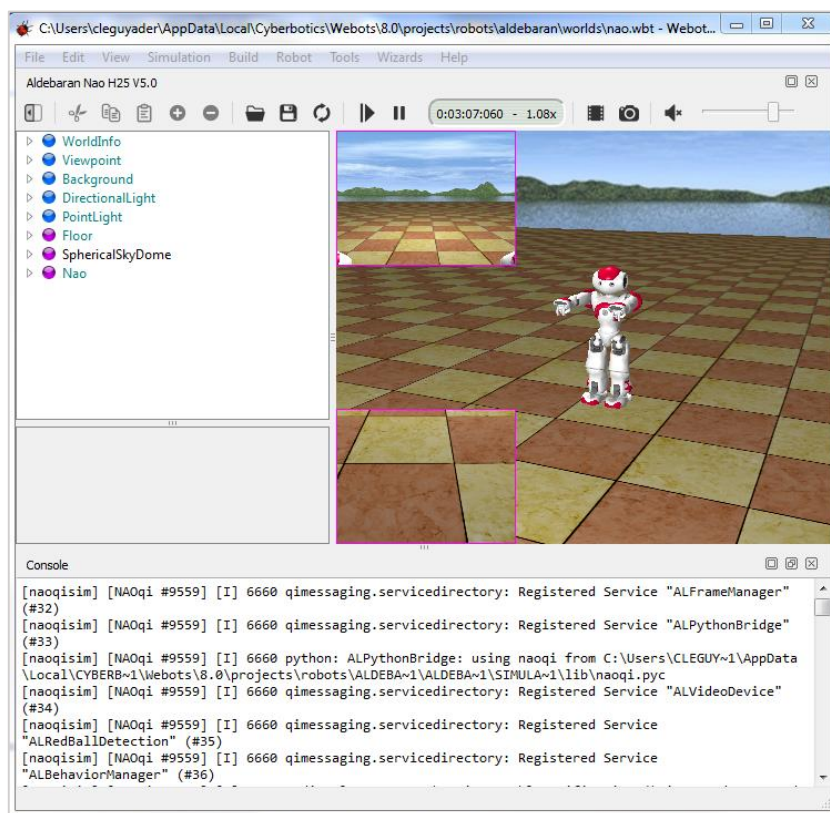
- Launch Choregraphe, and connect to this new robot (click on Connection, then
  "Connect To"). It will appear with a dotted-lined head.

- In Choregraphe, you can now:
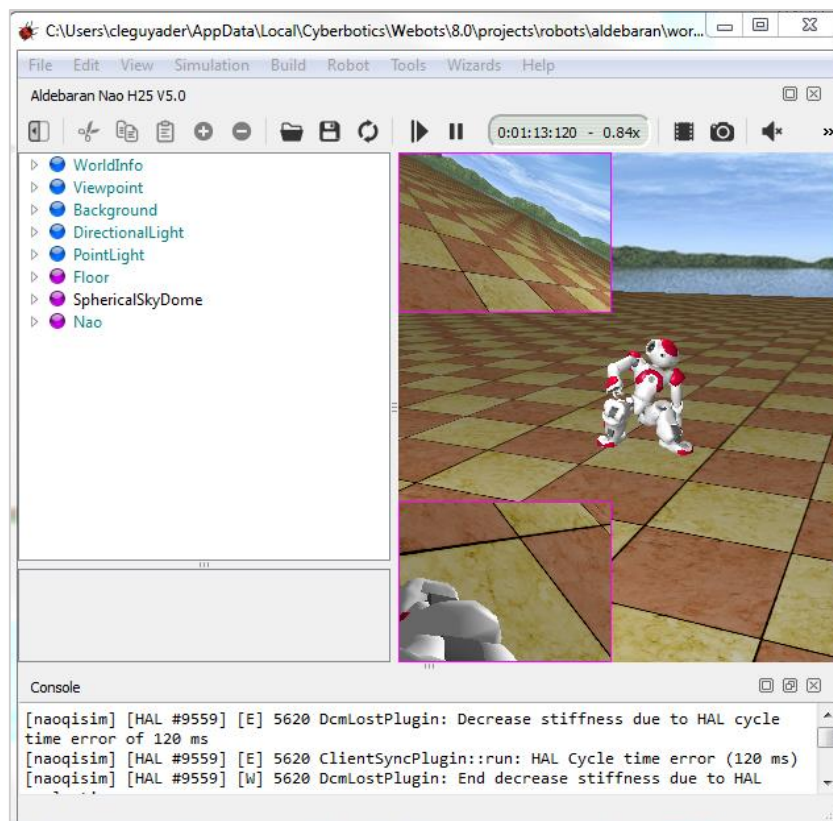 - Control the virtual robot with the Robot view panel,
 - Check what the virtual robot is seeing in the Video monitor panel.
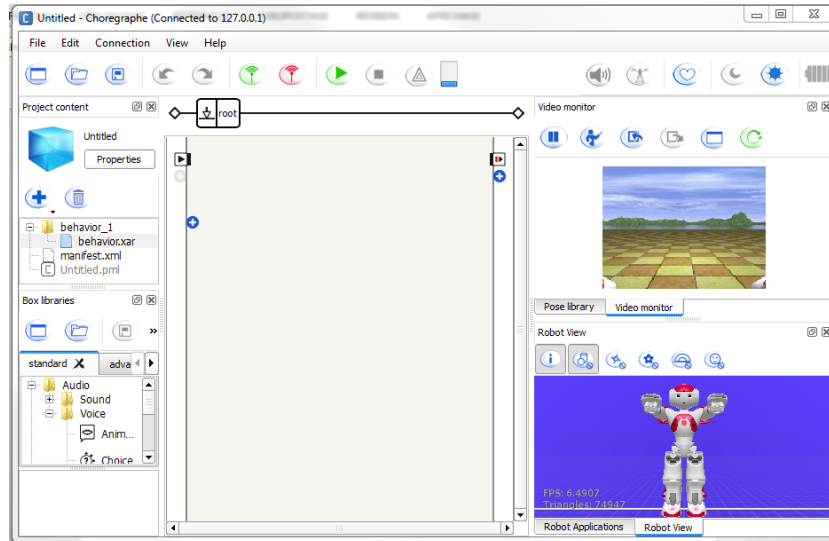
- Create a behavior in Choregraphe to test it in Webots™.

- For example, test the Sit Down box.

- Make sure the Stiffness is on or click the stiffen-button Wake Up button.

- Click the Play button and follow the behavior both in Choregraphe and in Webots.
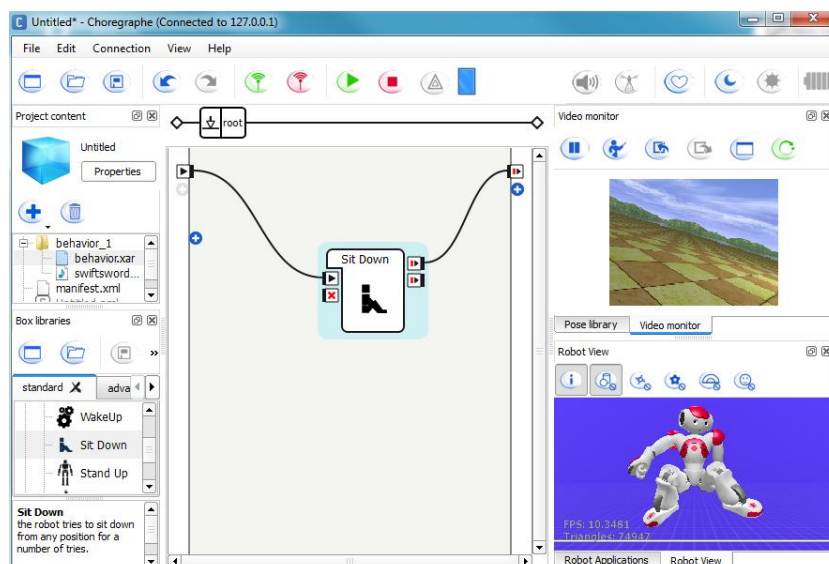
- To monitor the simulated NAO, in Webots™, double-click the robot.

- The panel below appears.
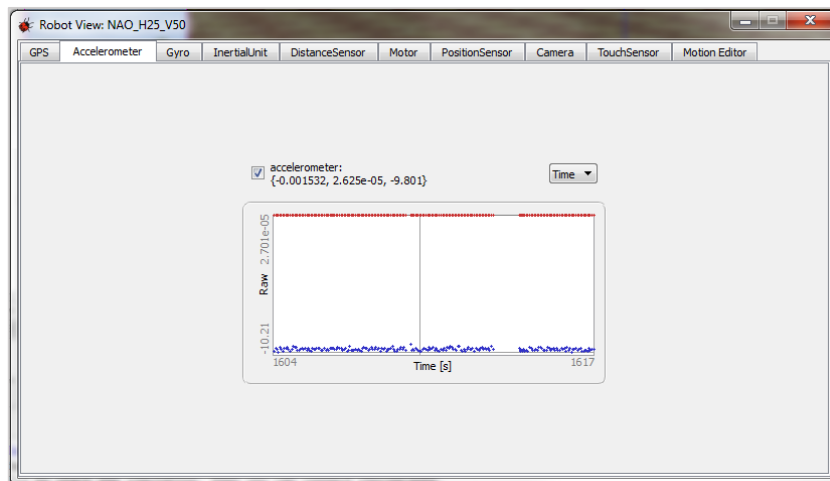
- Choose one of the tabs and select the data you want to monitor.

- Find more information on Webots™ on our documentation web site and what's new with the last release documentation.

3- GET ADDITIONAL INFORMATION

ALDEBARAN WEBSITES

You can send your questions to Aldebaran customer care
www.aldebaran.com/customer_care (you need to be connected to your account).

CORPORATE WEBSITE
www.aldebaran.com
Learn more about Aldebaran story and vision on the corporate website. You will discover the Aldebaran Family of robots: NAO, Pepper and Romeo. Take time to navigate and discover all our solutions to teach, develop or design new experiences with NAO.

COMMUNITY
https://community.aldebaran.com/en/content/welcome-aldebaran
Aldebaran Community is a home of exchange where you can ask questions through the forum but also share experiences. Community members will find all resources of documentation and tutorials to improve their skills.

- **ASK, on the Forum:** a place dedicated to knowledge sharing and skill improvement. Discuss with other Community members, share your experiences, browse threads to get answers and discover how to do more with your robot.
- **FIND, in Resources:** the basics for every Aldebaran robot owner.
  Learn how to program with NAO with our guides. From basic knowledge to specific tutorials, find everything you need in a few clicks:
    - o Software suite
    - o Documentation
    - o Tutorials
    - o FAQ
- **COLLABORATE, with the projects section:** initiate a project with NAO with other passionate Community members.

NAO WEBPAGE
http://doc.aldebaran.com/2-1/nao/webpage.html?highlight=nao%20web%20page
The NAO webpage displays the main settings of your robot. It will help you to manage your robot and check different parameters like the battery level, connection, volume or the Applications uploaded on your NAO. More details are available on the NAO webpage documentation.

A-STORE
http://cloud.aldebaran.com
With your Aldebaran Community Account, you will have access to the Aldebaran Store and different categories of Applications like dances, educational Applications, games, sports … and Channels. Check regularly for new Applications. Check our fan page on https://store.aldebaran.com.

Twitter - @NaoRobot - Facebook - Aldebaran - Facebook - Nao the Robot
YouTube – http://www.youtube.com/user/aldebaranRobotics