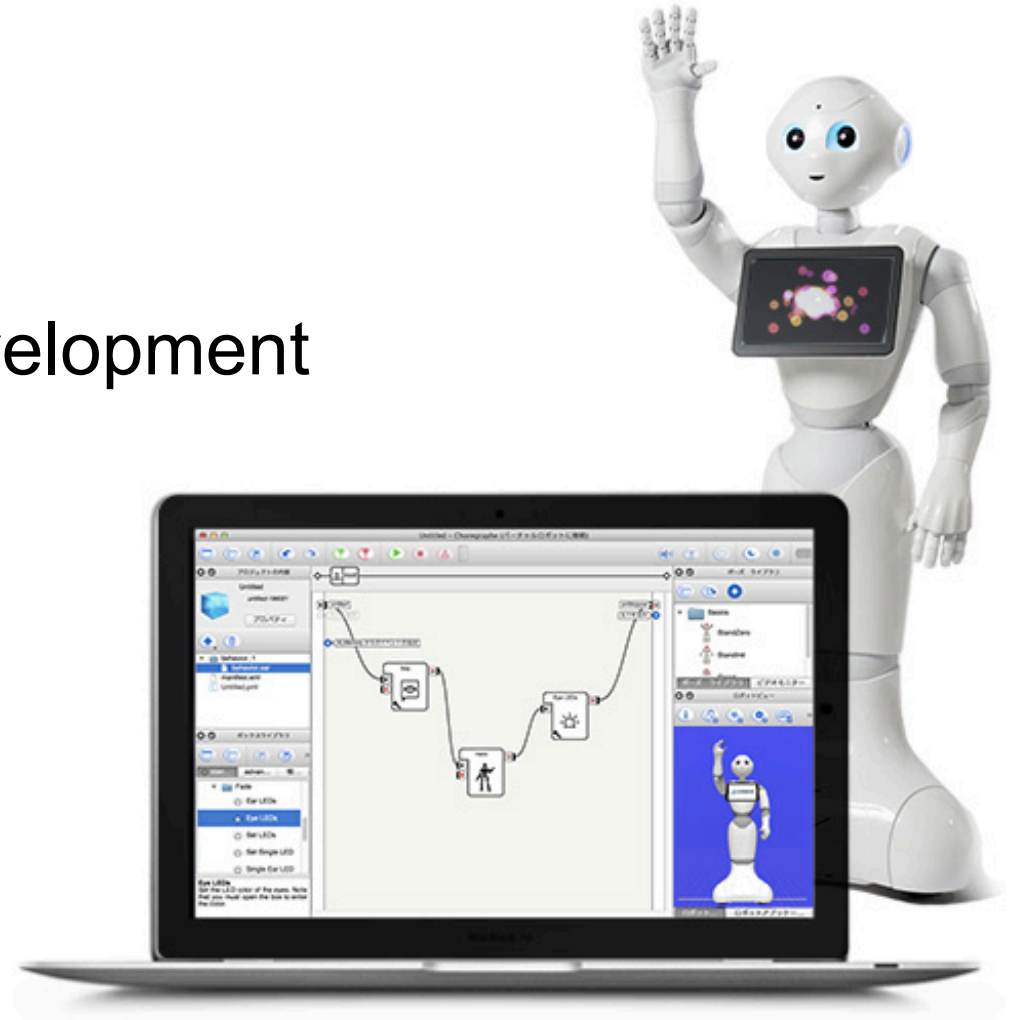
Nao Application Development
- Basic -



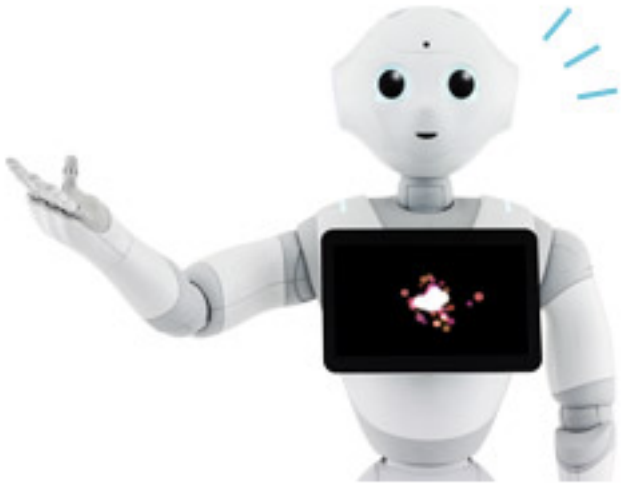
Goal of this workshop

Goal

- ✓ Develop easy robot application with Choregraphe

Outline

- Pepper’s hardware
- What is Choregraphe
- Basic robot application development
  - Say
  - Voice recognition and sensors



Pepper’s hardware

Hardware Specification - Nao

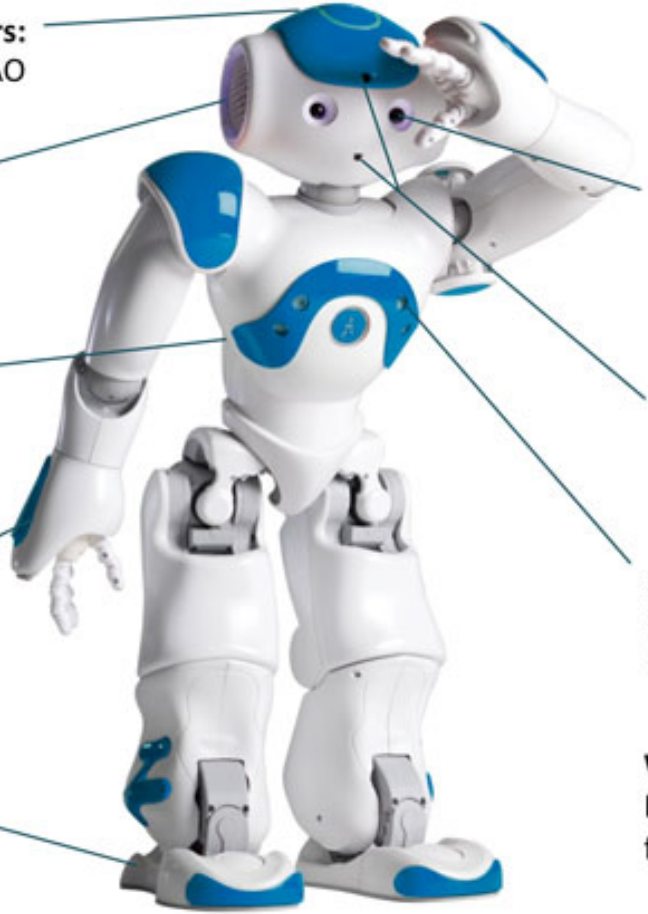
Tactile sensors:
Menu to interact non-verbally with NAO

Speakers (x2):
NAO talks, prompts, shares his story, plays music...

Battery:
NAO is free to navigate without being connected to a power source.

Prehensile hands with sensors:
To grasp small items and to work on object exchange and turn-taking

Foot bumpers:
Another way to interact with NAO.



Microphones (x4):
NAO detects the origin of sounds and understands what you say.

Eyeleds:
NAO uses color code to express emotions and even play edutaining color games with your children!

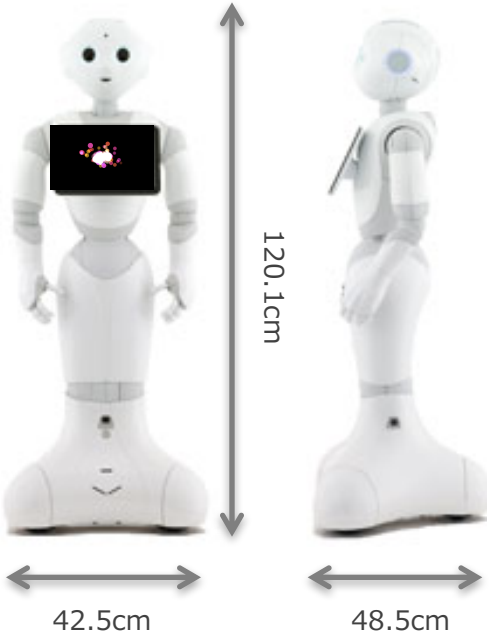
Cameras (x2):
NAO recognizes pre-recorded faces, pictures , reads books, imitates.

Sonars (x4):
NAO detects whether something stands closely in front of him.

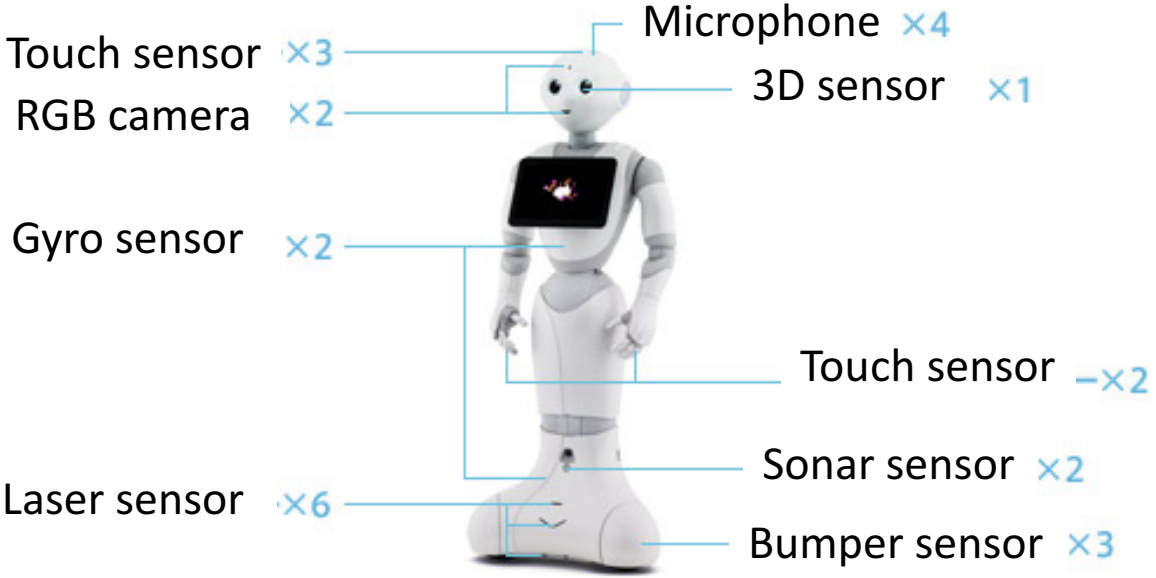
Wifi Connection:
NAO can use information from the web

Hardware Specification - Pepper

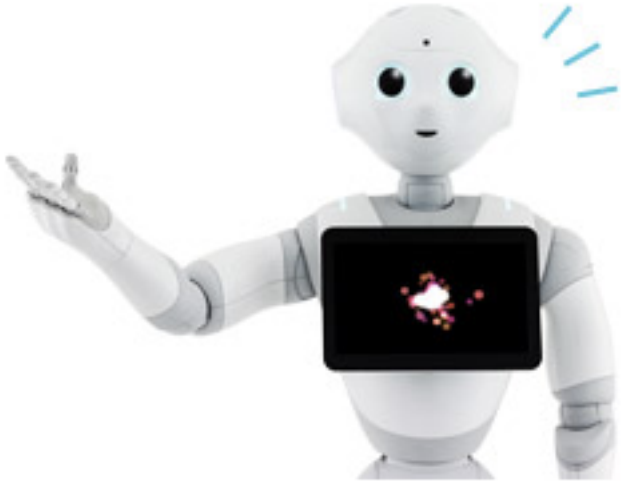
Size



Sensors



What is
“Choregraphe”?



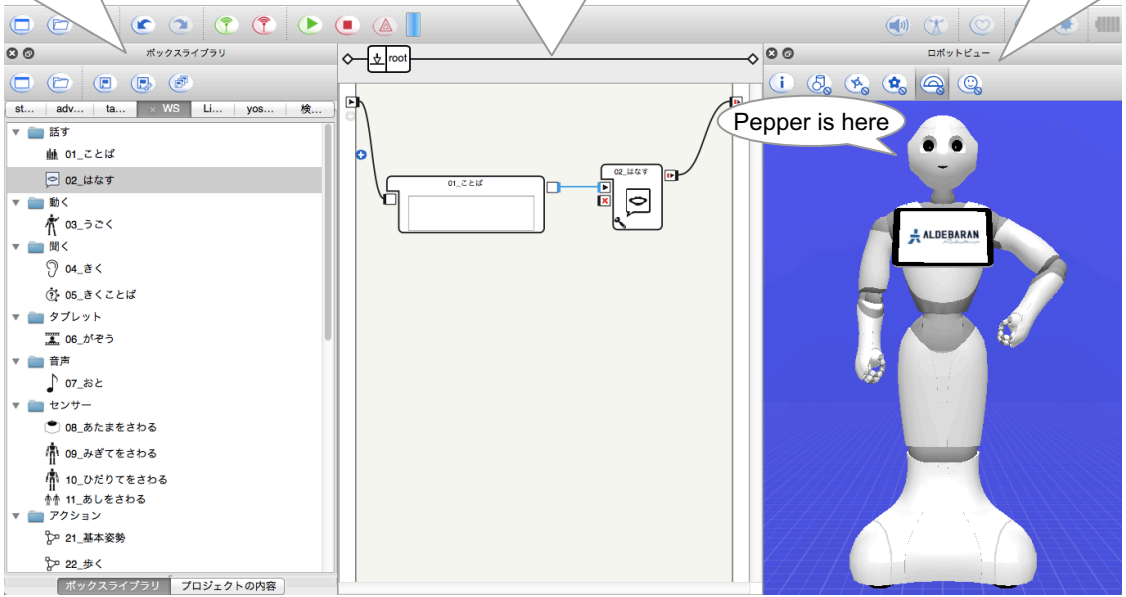
What is “Choregraphe”?

- One of robot development tool that uses mainly “drag & drop”

Drag & Drop the Box

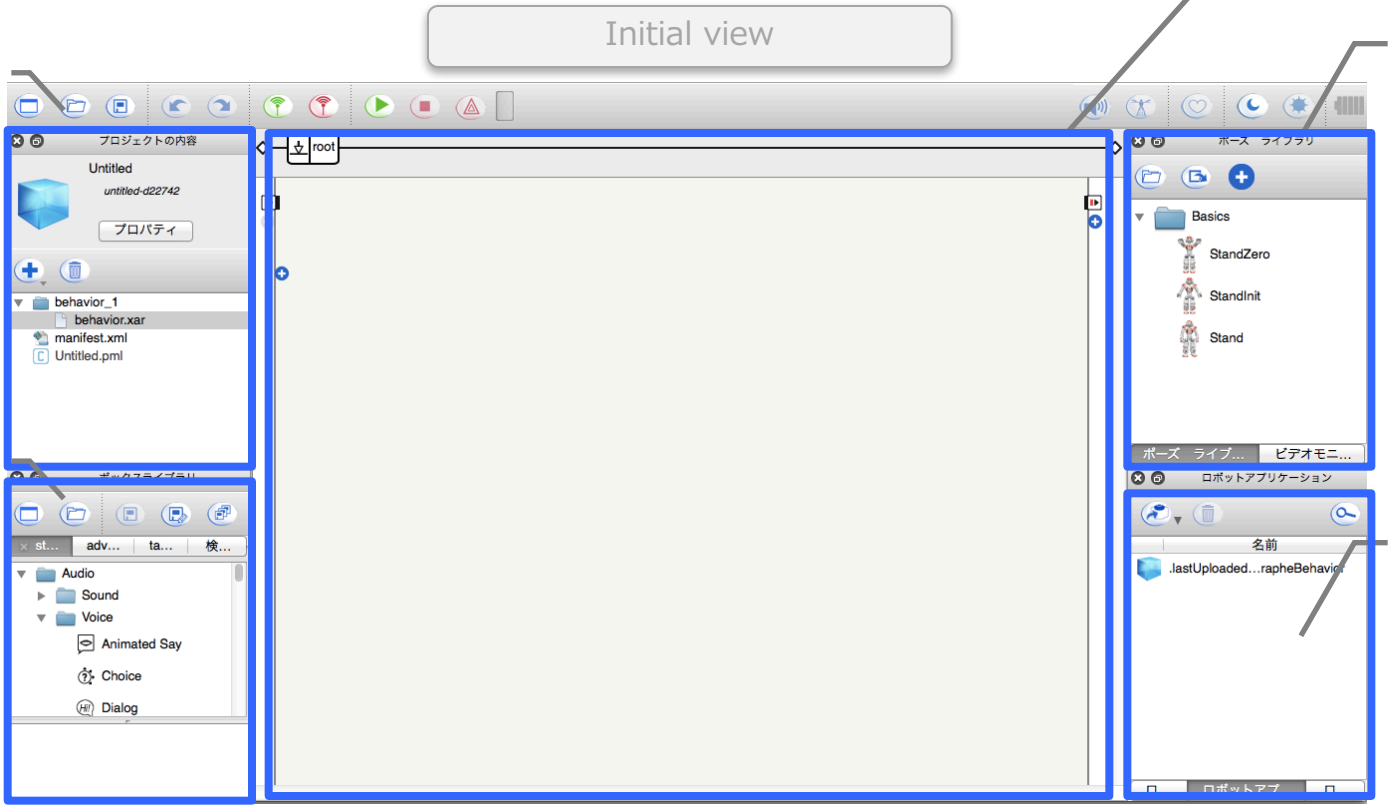
Connect between Boxes

Pepper moves



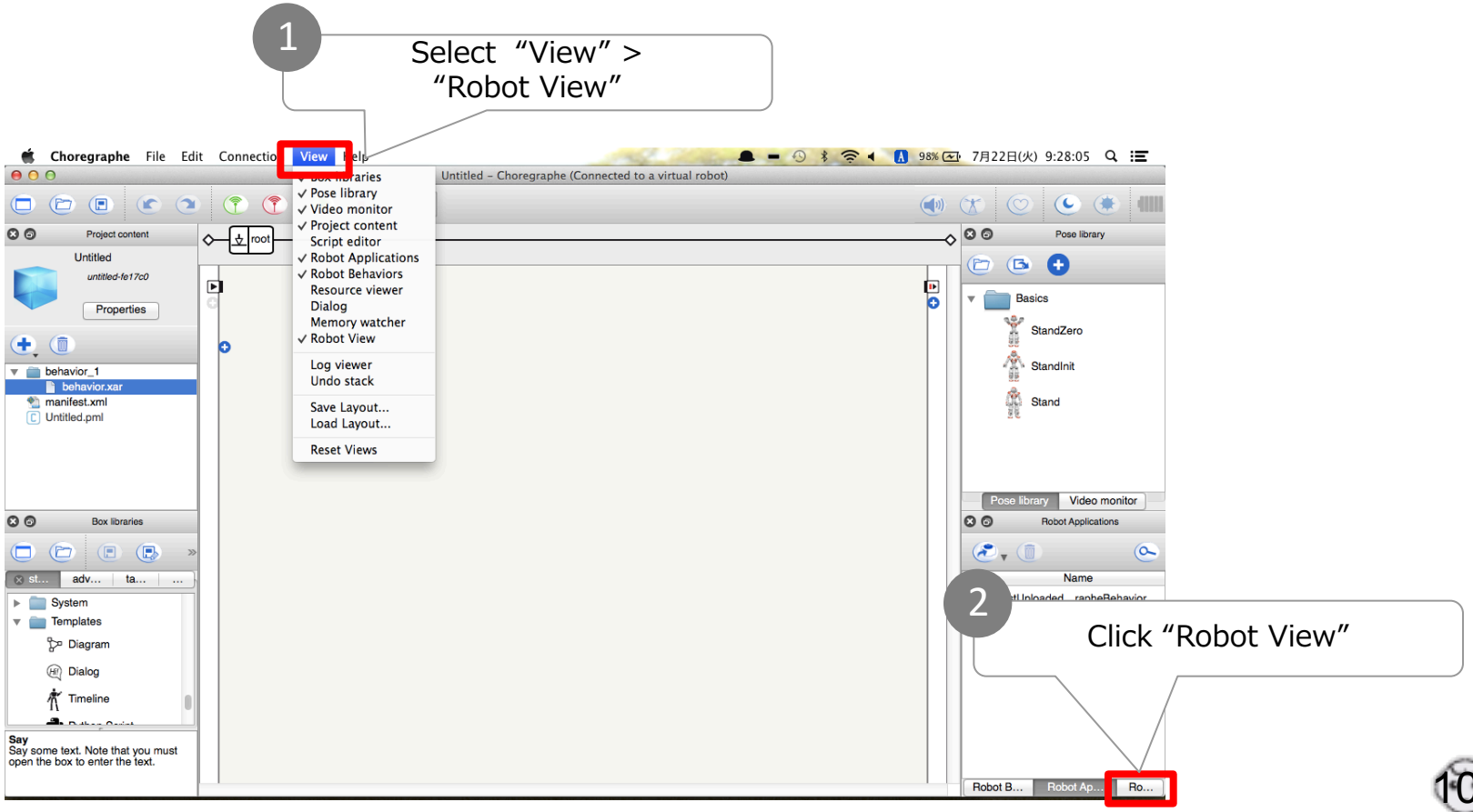
View

- 5 views shown on the first running on Choregraphe

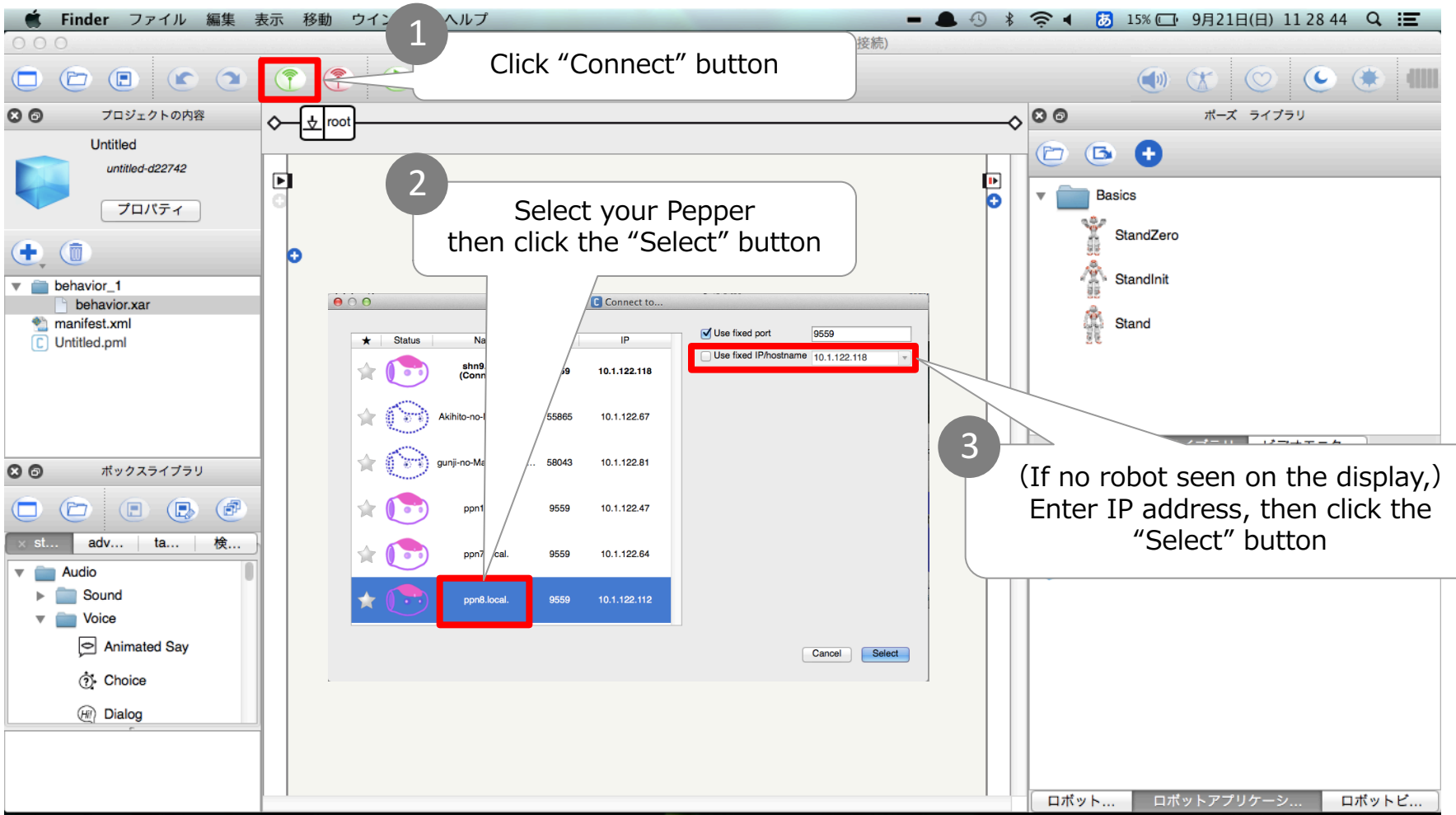


View modification

- Display extra views needed for this workshop



Connect to the robot



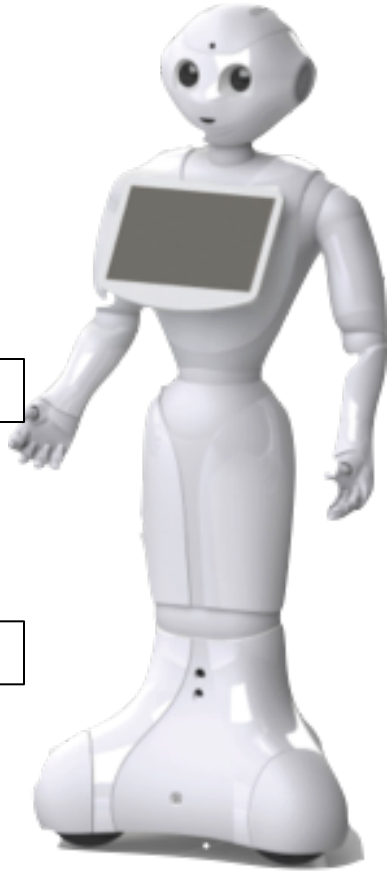
Confirmation of Robot name and IP address

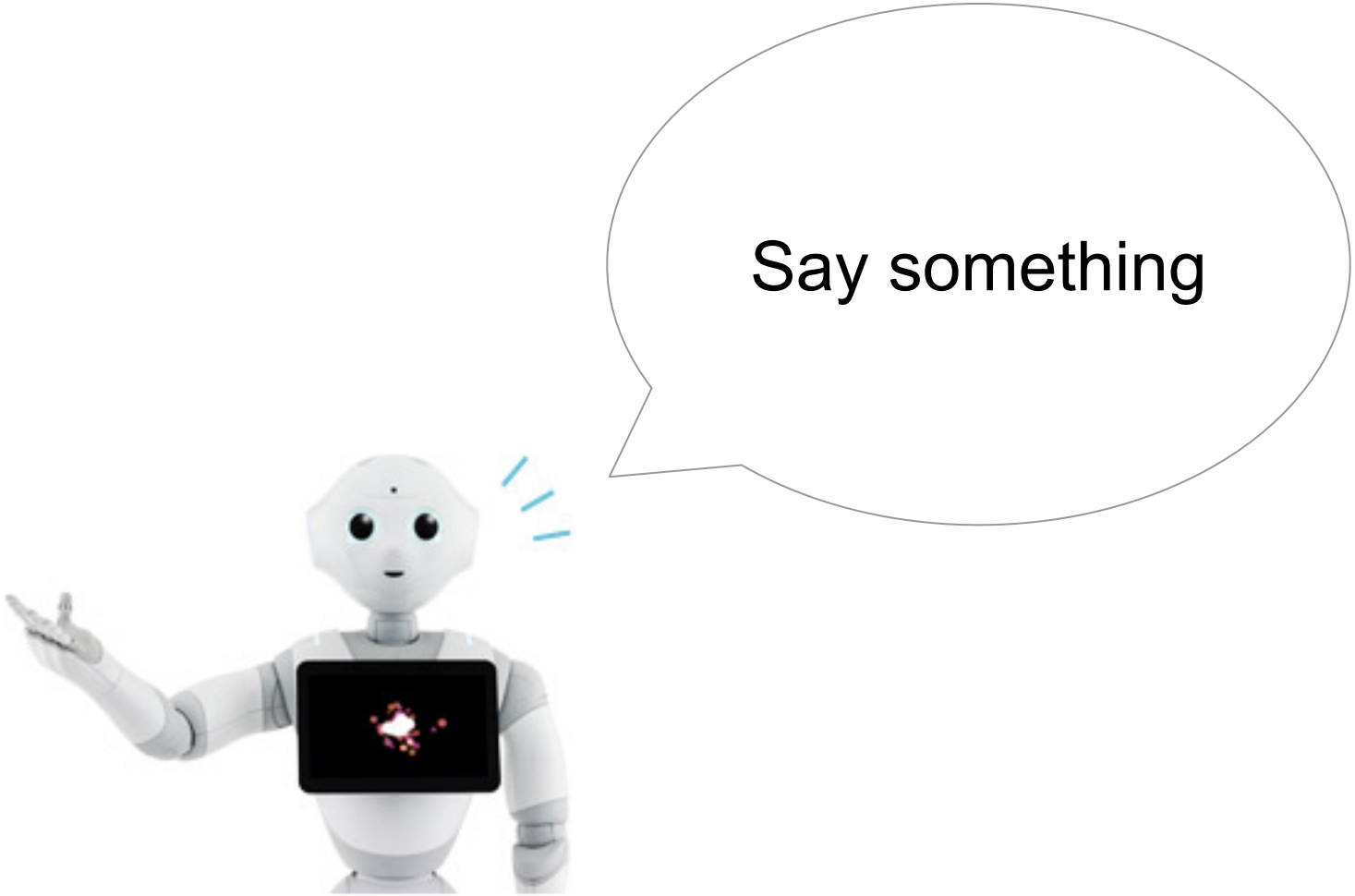
Push the chest button, then Pepper talks

Hello, I am ”Pepper 51”.
My internet address is ”10.1.122.165”.

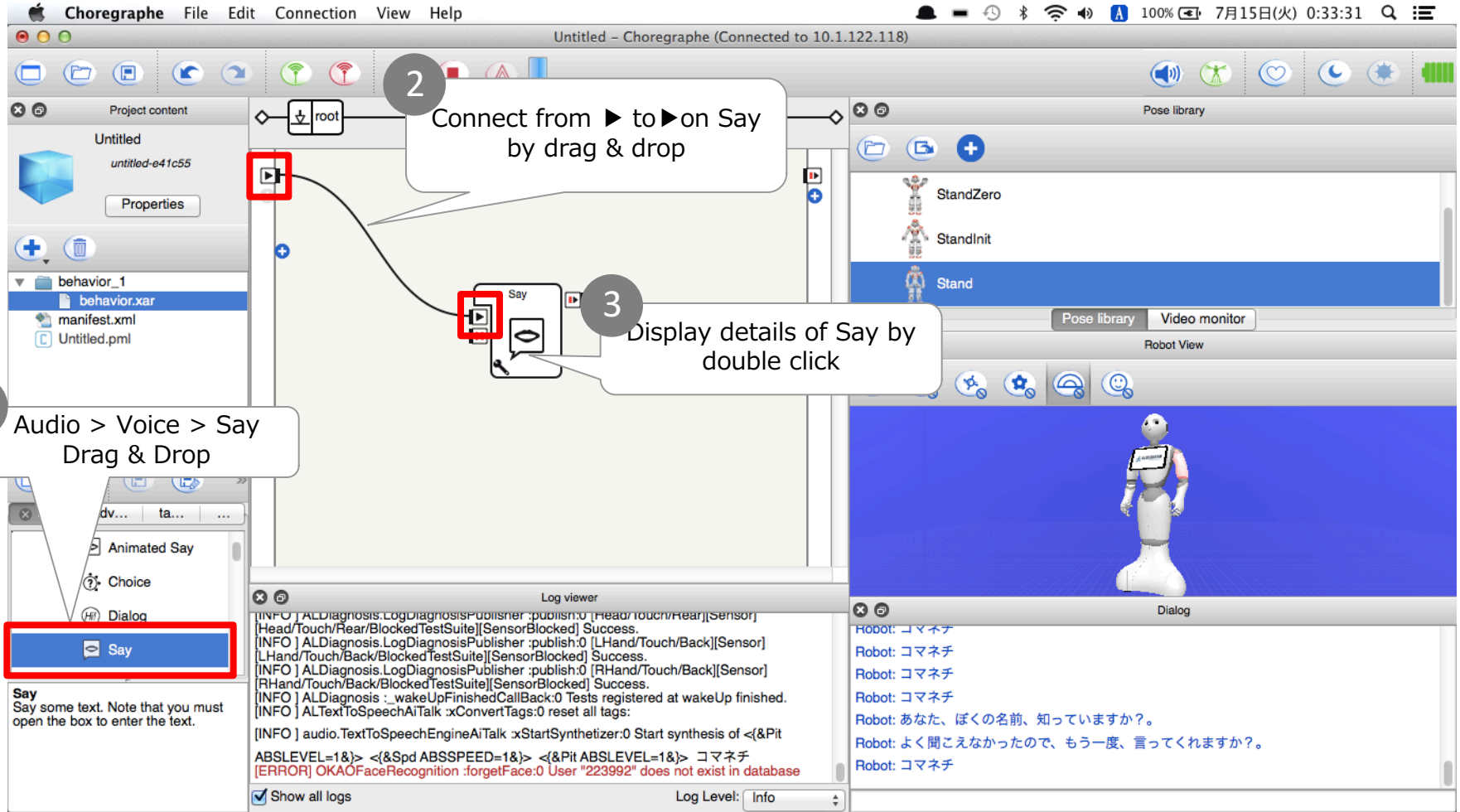
Robot name

IP address

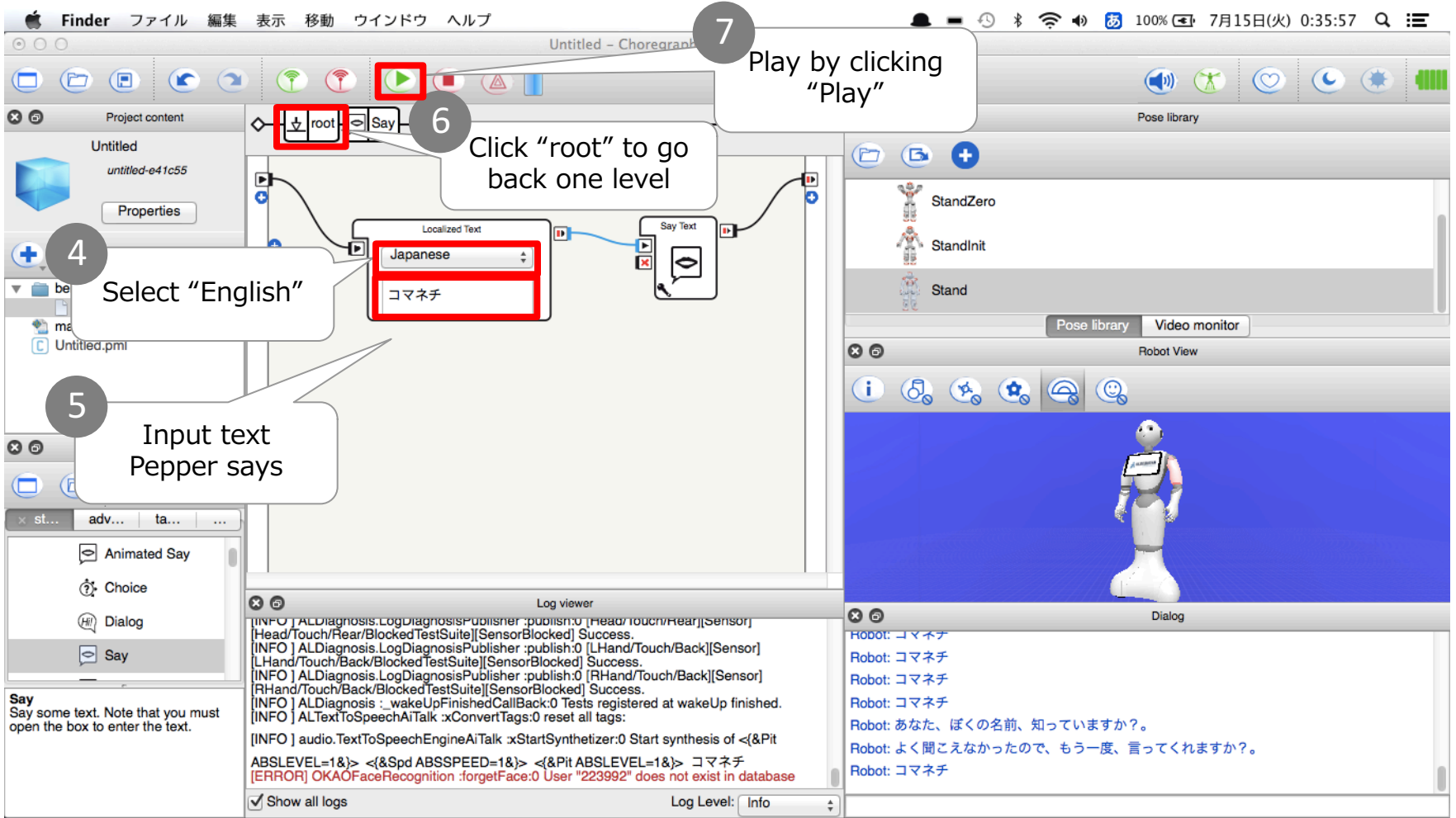



Say something

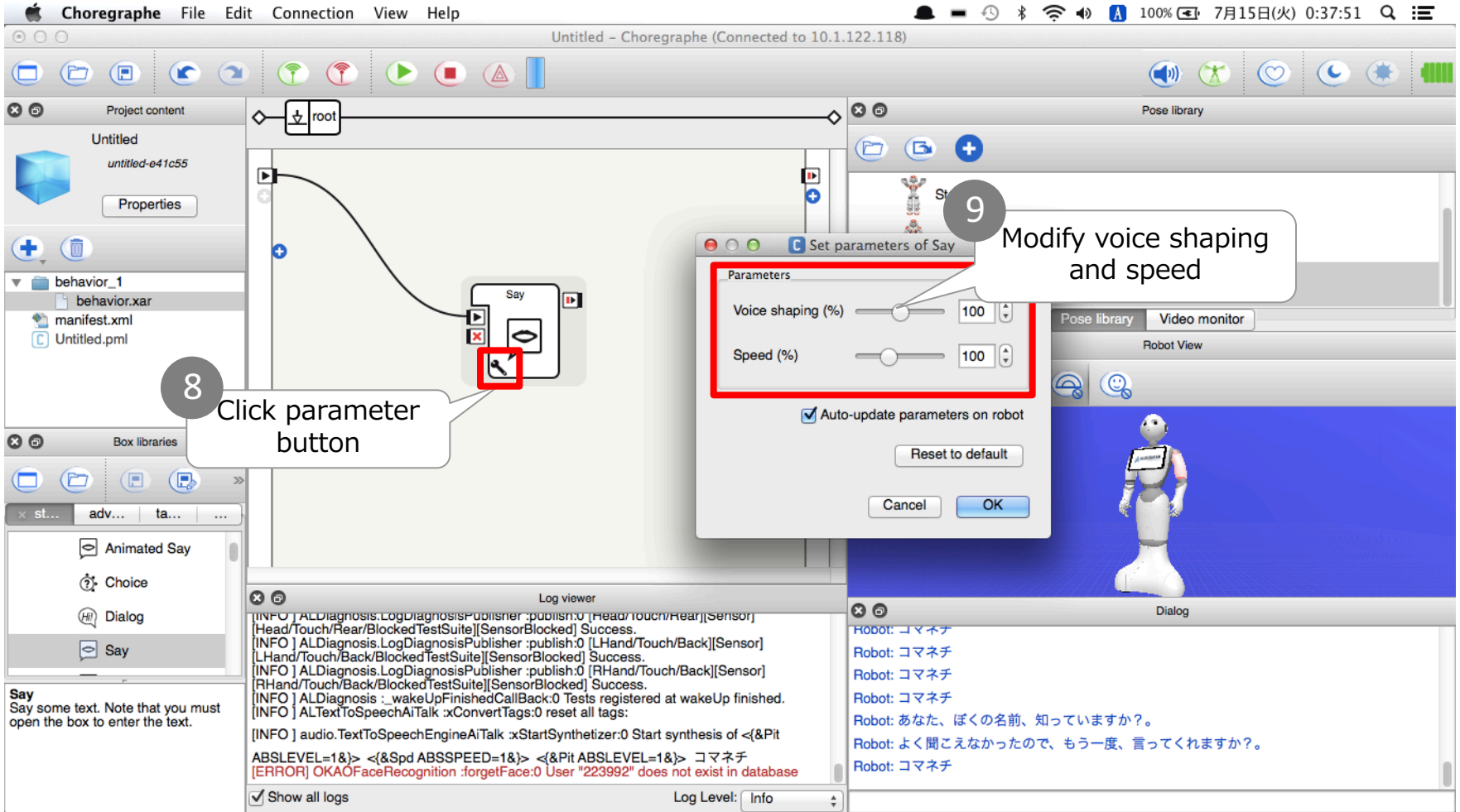
“Say” 1/3

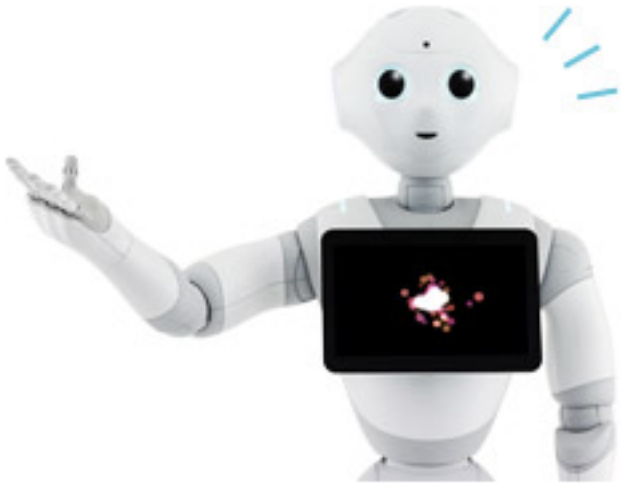

Choregraphe File Edit Connection View Help
Untitled – Choregraphe (Connected to 10.1.122.118)
Project content
Untitled
untitled-e41c55
Properties
behavior_1
behavior.xar
manifest.xml
Untitled.pml
root
Say
2
Connect from ▶ to ▶on Say by drag & drop
3
Display details of Say by double click
1
Audio > Voice > Say Drag & Drop
Animated Say
Choice
Dialog
Say
Say some text. Note that you must open the box to enter the text.
Pose library
StandZero
StandInit
Stand
Pose library
Video monitor
Robot View
Log viewer
[Head/Touch/Rear/BlockedTestSuite][SensorBlocked] Success.
[INFO] ALDiagnosis.LogDiagnosisPublisher :publish:0 [LHand/Touch/Back][Sensor]
[LHand/Touch/Back/BlockedTestSuite][SensorBlocked] Success.
[INFO] ALDiagnosis.LogDiagnosisPublisher :publish:0 [RHand/Touch/Back][Sensor]
[RHand/Touch/Back/BlockedTestSuite][SensorBlocked] Success.
[INFO] ALDiagnosis :_wakeUpFinishedCallBack:0 Tests registered at wakeUp finished.
[INFO] ALTextToSpeechAiTalk :xConvertTags:0 reset all tags:
[INFO] audio.TextToSpeechEngineAiTalk :xStartSynthetizer:0 Start synthesis of <{&Pit
ABSLEVEL=1&}> <{&Spd ABSSPEED=1&}> <{&Pit ABSLEVEL=1&}> コマネチ
[ERROR] OKAOFaceRecognition :forgetFace:0 User "223992" does not exist in database
Show all logs
Log Level: Info
Dialog
Robot: コマネチ
Robot: コマネチ
Robot: コマネチ
Robot: コマネチ
Robot: あなた、ぼくの名前、知っていますか？。
Robot: よく聞こえなかったので、もう一度、言ってくれますか？。
Robot: コマネチ

“Say” 2/3


7
Play by clicking “Play”
6
Click “root” to go back one level
4
Select “English”
5
Input text Pepper says
root
Say
Localized Text
Japanese
コマネチ
Say Text
Project content
Untitled
untitled-e41c55
Properties
Untitled.pml
Animated Say
Choice
Dialog
Say
Say
Say some text. Note that you must open the box to enter the text.
Pose library
StandZero
StandInit
Stand
Pose library
Video monitor
Robot View
Log viewer
[Head/Touch/Rear/BlockedTestSuite][SensorBlocked] Success.
[INFO] ALDiagnosis.LogDiagnosisPublisher :publish:0 [LHand/Touch/Back][Sensor]
[LHand/Touch/Back/BlockedTestSuite][SensorBlocked] Success.
[INFO] ALDiagnosis.LogDiagnosisPublisher :publish:0 [RHand/Touch/Back][Sensor]
[RHand/Touch/Back/BlockedTestSuite][SensorBlocked] Success.
[INFO] ALDiagnosis :_wakeUpFinishedCallBack:0 Tests registered at wakeUp finished.
[INFO] ALTextToSpeechAiTalk :xConvertTags:0 reset all tags:
[INFO] audio.TextToSpeechEngineAiTalk :xStartSynthetizer:0 Start synthesis of <{&Pit
ABSLEVEL=1&}> <{&Spd ABSSPEED=1&}> <{&Pit ABSLEVEL=1&}> コマネチ
[ERROR] OKAOFaceRecognition :forgetFace:0 User "223992" does not exist in database
Show all logs
Log Level: Info
Dialog
Robot: コマネチ
Robot: コマネチ
Robot: コマネチ
Robot: コマネチ
Robot: あなた、ぼくの名前、知っていますか？。
Robot: よく聞こえなかったので、もう一度、言ってくれますか？。
Robot: コマネチ

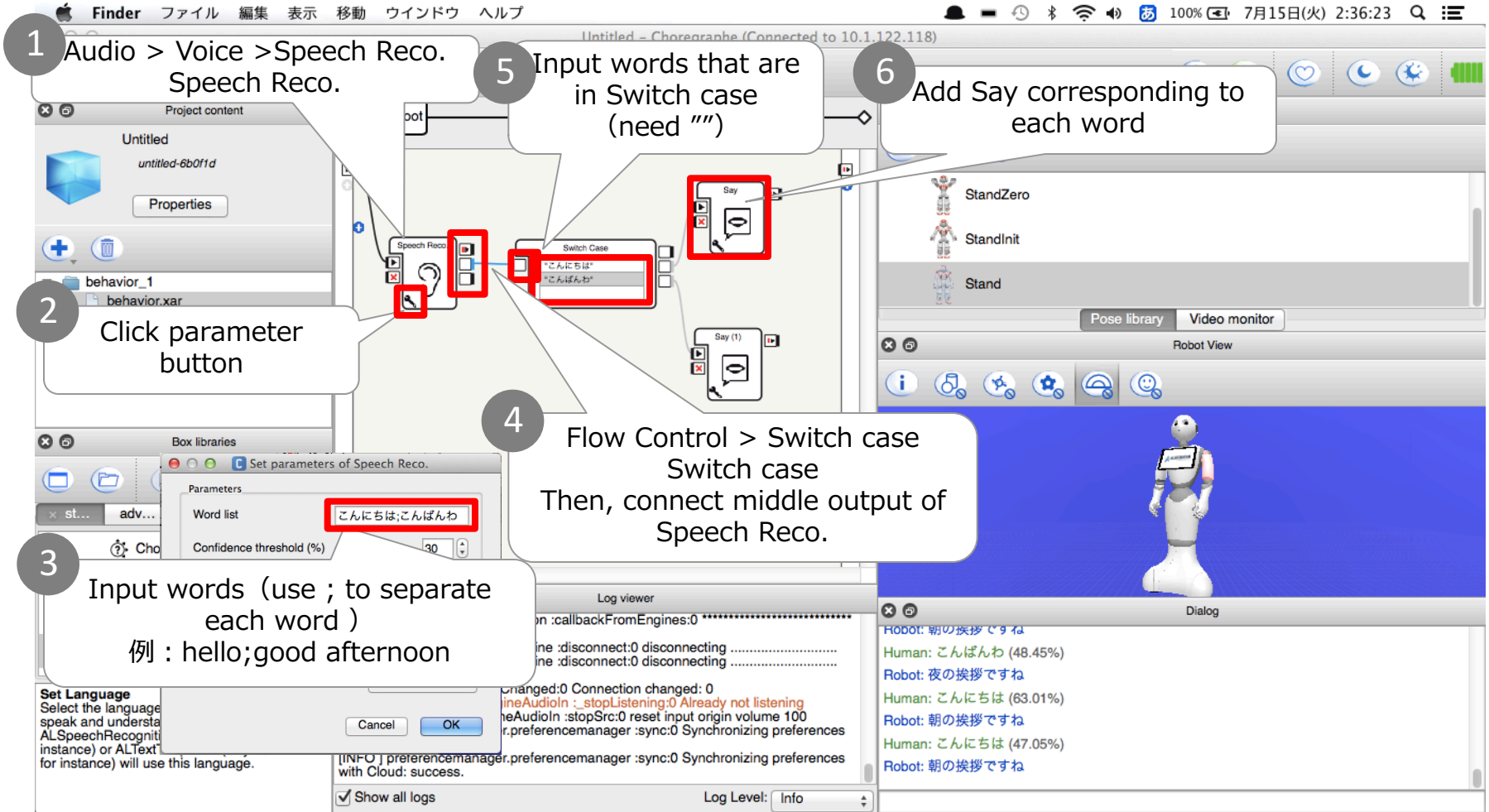
“Say” 3/3


Choregraphe File Edit Connection View Help
Untitled – Choregraphe (Connected to 10.1.122.118)
Project content
Untitled
untitled-e41c55
Properties
behavior_1
behavior.xar
manifest.xml
Untitled.pml
root
Say
8
Click parameter button
9
Modify voice shaping and speed
Set parameters of Say
Parameters
Voice shaping (%)
100
Speed (%)
100
Auto-update parameters on robot
Reset to default
Cancel
OK
Pose library
Video monitor
Robot View
Box libraries
Animated Say
Choice
Dialog
Say
Say
Say some text. Note that you must open the box to enter the text.
Log viewer
[Head/Touch/Rear/BlockedTestSuite][SensorBlocked] Success.
[INFO] ALDiagnosis.LogDiagnosisPublisher :publish:0 [LHand/Touch/Back][Sensor]
[LHand/Touch/Back/BlockedTestSuite][SensorBlocked] Success.
[INFO] ALDiagnosis.LogDiagnosisPublisher :publish:0 [RHand/Touch/Back][Sensor]
[RHand/Touch/Back/BlockedTestSuite][SensorBlocked] Success.
[INFO] ALDiagnosis :_wakeUpFinishedCallBack:0 Tests registered at wakeUp finished.
[INFO] ALTextToSpeechAiTalk :xConvertTags:0 reset all tags:
[INFO] audio.TextToSpeechEngineAiTalk :xStartSynthetizer:0 Start synthesis of <{&Pit
ABSLEVEL=1&}> <{&Spd ABSSPEED=1&}> <{&Pit ABSLEVEL=1&}> コマネチ
[ERROR] OKAOFaceRecognition :forgetFace:0 User "223992" does not exist in database
Show all logs
Log Level: Info
Dialog
Robot: コマネチ
Robot: コマネチ
Robot: コマネチ
Robot: コマネチ
Robot: あなた、ぼくの名前、知っていますか？。
Robot: よく聞こえなかったので、もう一度、言ってくれますか？。
Robot: コマネチ



Voice recognition
and sensors

Interactive application with “Speech Reco.”



Interactive application with touch sensors