



Advanced Robotics Solutions  
for Transport, Cleanliness, Security and Health

# *RobuLAB10, a service robot to develop assistance for elderly*

Consuelo GRANATA, PhD student

[consuelo.granata@robosoft.com](mailto:consuelo.granata@robosoft.com)

[sales@robosoft.com](mailto:sales@robosoft.com)

## ROBOSOFT's profile

- ❖ created in 1985 (startup of INRIA)
- ❖ Robot design and manufacturing
- ❖ 30 employees
- ❖ Biarritz : south-west of France



# Our mission : automate services

- ❖ Transport
- ❖ Cleanliness
- ❖ Security
- ❖ Healthcare
- ❖ Education and Research



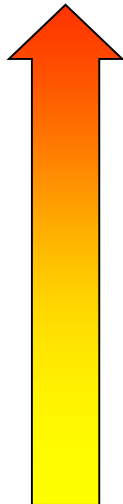
## Internal R&D project in health care robotics

We now want to develop a home-centric robot  
Based on our background and tools:

For what ?:

For who ?:

Critical for human life



Emergency alarms

Motion stimulation

Cognitive stimulation

Memory

Localisation

Stimulation/Entertainment

Communication

House duties

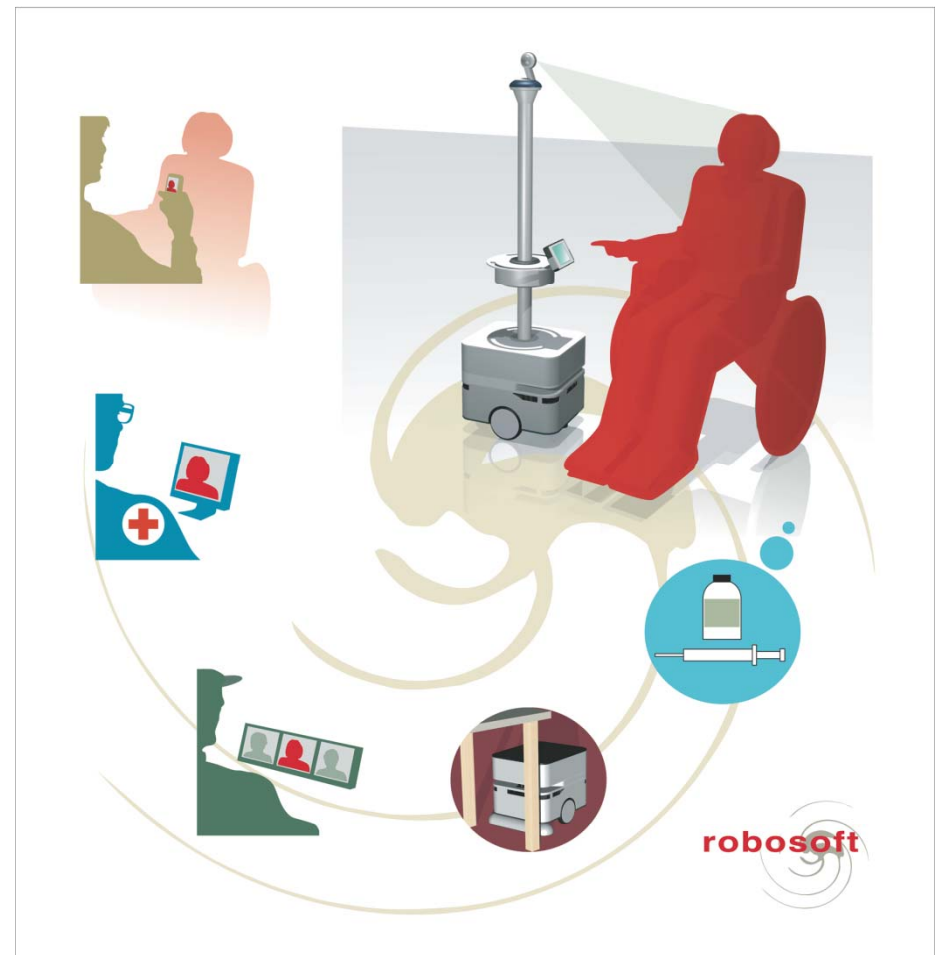
✓ Elderly

✓ Disabled people

✓ Handicapped people

## Services to be provided by Home Centric robot

- Tele-presence through visio-conferencing
- Tele-medicine through health monitoring
- Remote surveillance
- House duties
- Cognitive stimulation
- Physical stimulation



# Using Home Centric Robot

## Levels of control

- ✓ Automatic mode (achieves tasks by itself)
- ✓ Assisted mode (guided by the person)
- ✓ Manual mode (the person controls its behavior)

## Means of interaction

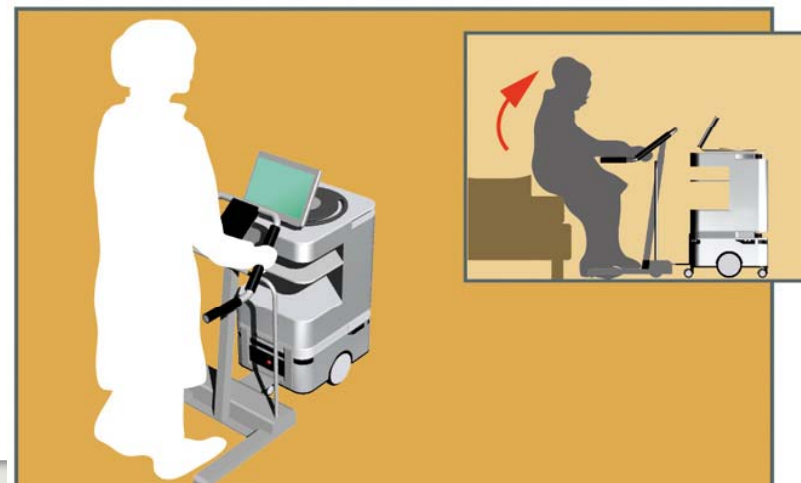
- ✓ Speech recognition and synthesis
- ✓ Gesture/face analysis and recognition
- ✓ Touchscreen
- ✓ Joystick/gamepad
- ✓ Network, distant control

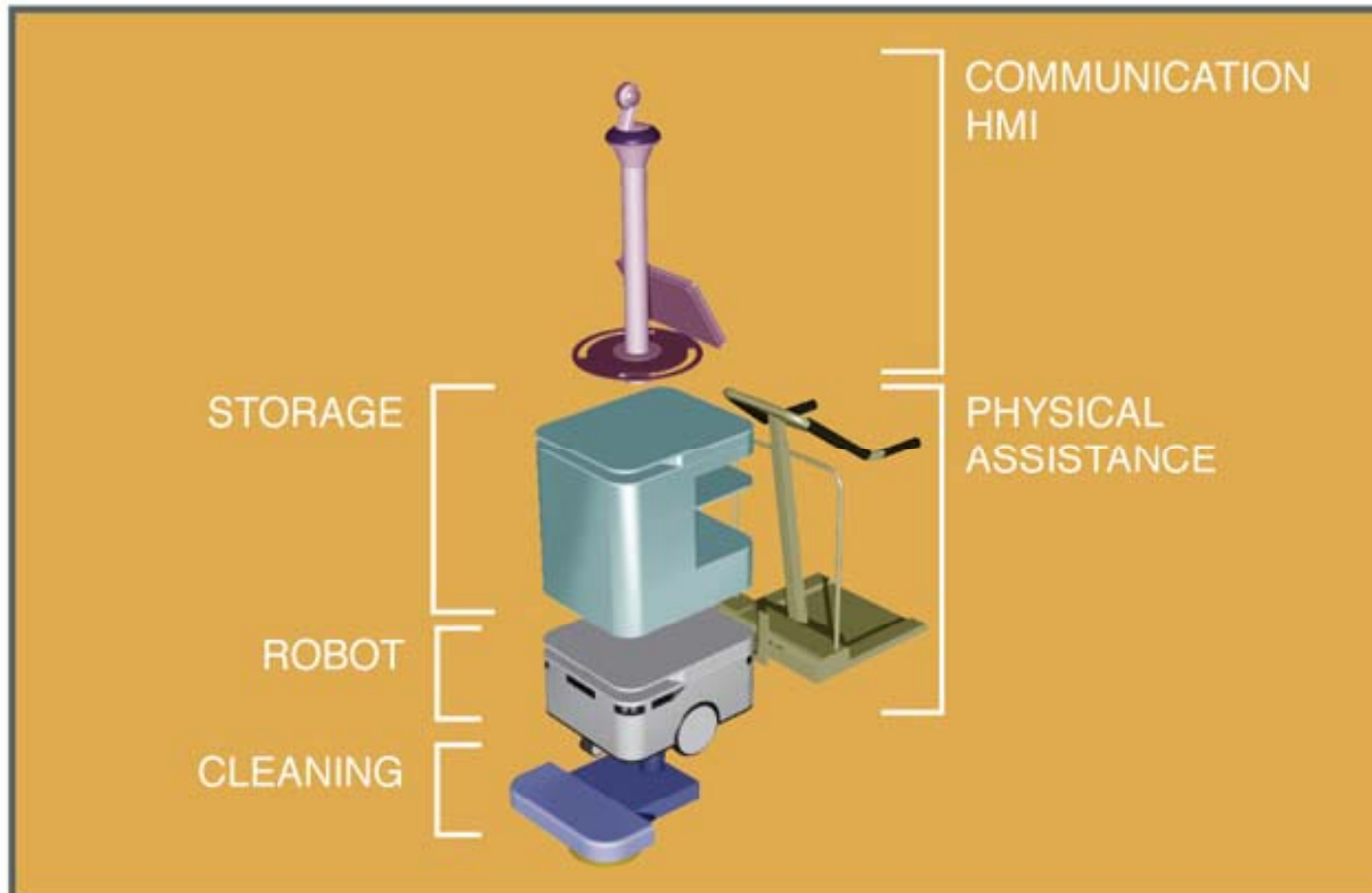
## robuLAB10 robotic platform

Mobile platform dedicated to service providing, including cognitive and everyday assistance.



## Some possible configurations of Robulab10...





Physical assistance

Tasks : stand-up and walk assistance, trailer

Equipment : fixed/mobile handles, standing platform



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Some examples illustrating the use of a home  
Centric robot

## An example

- **Sylvie**, 85 years old



- ✓ She is almost autonomous for daily life.
- ✓ But she has frequent memory losses.
- ✓ She lives alone in her apartment, in a residence for the elderly



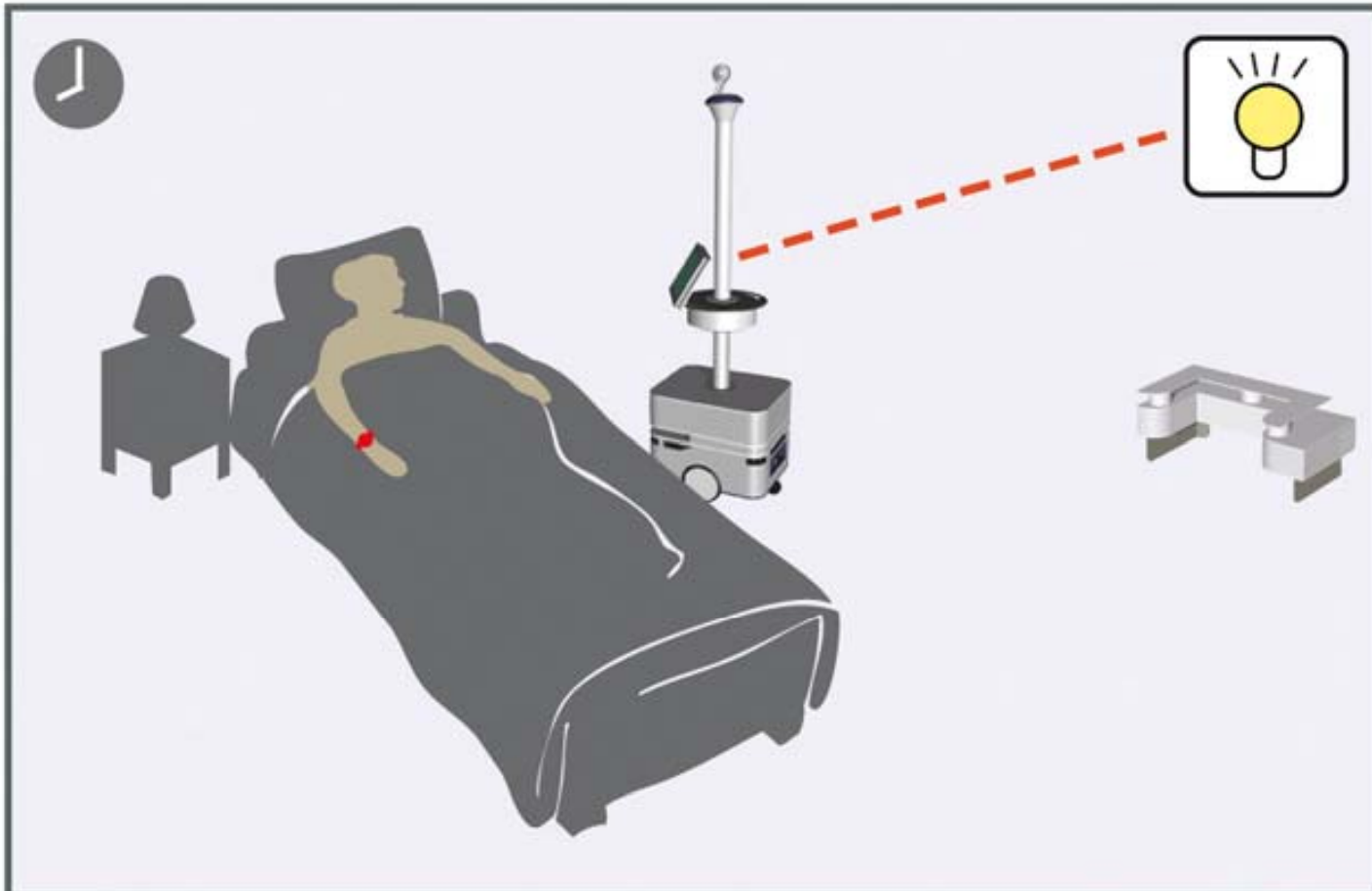
Sylvie is still sleeping, Robot is close to her and recharges batteries



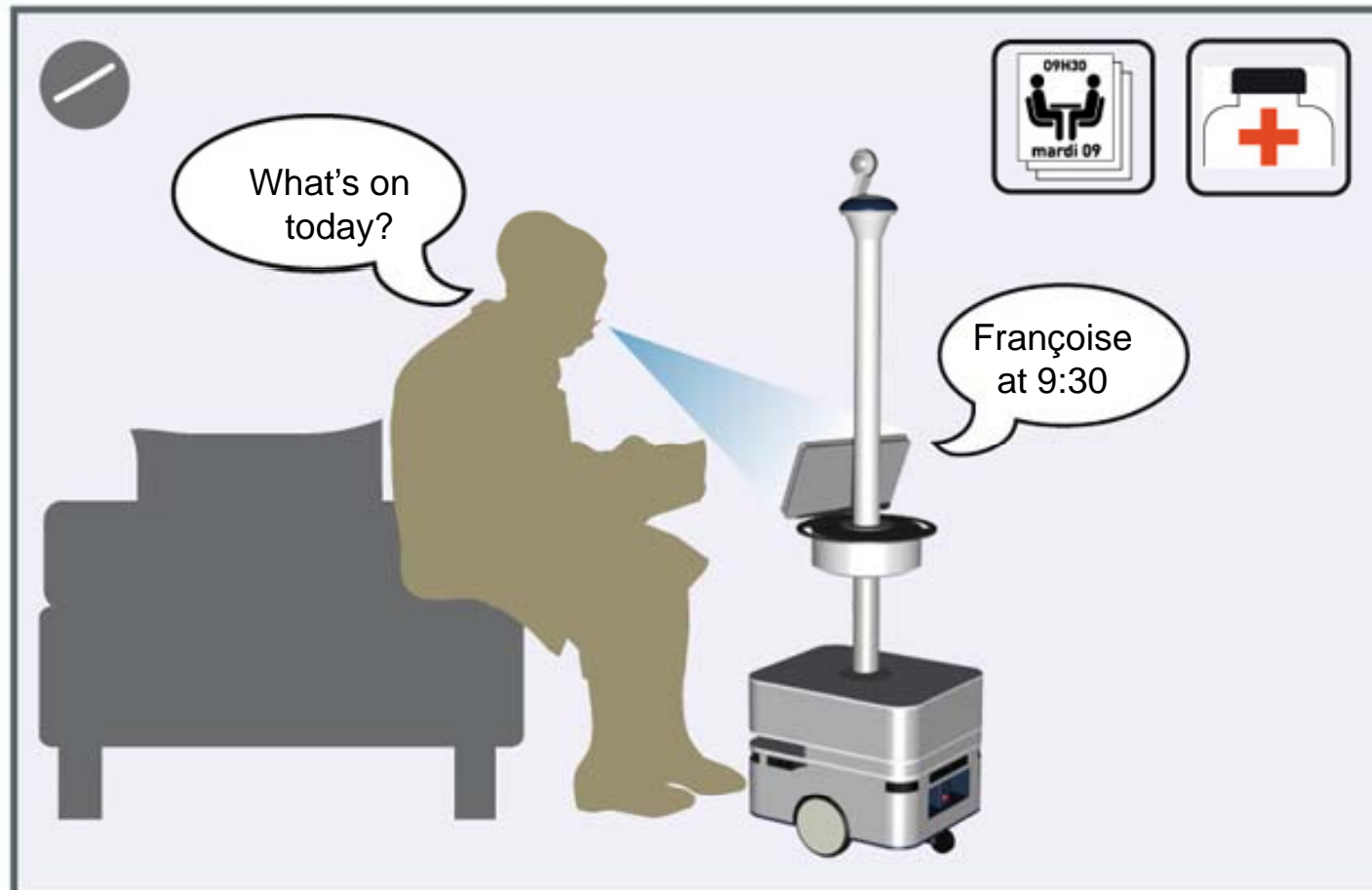
It's time for robot to wake up Sylvie



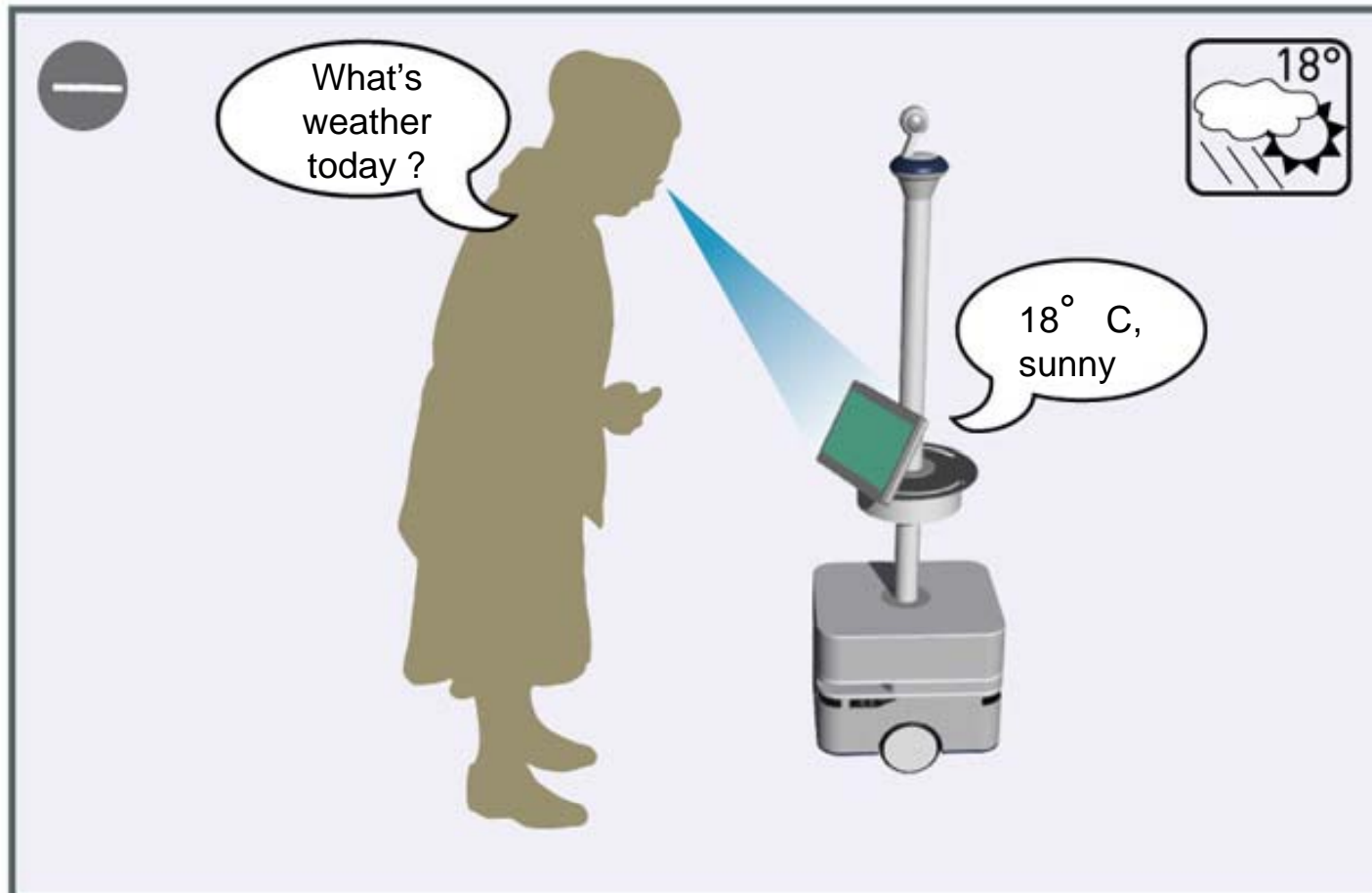
“Good morning Sylvie, it is 8 o'clock, it's time to wake up”.  
“Can I turn the light on ?” “Yes please”



Robot turns on the light.



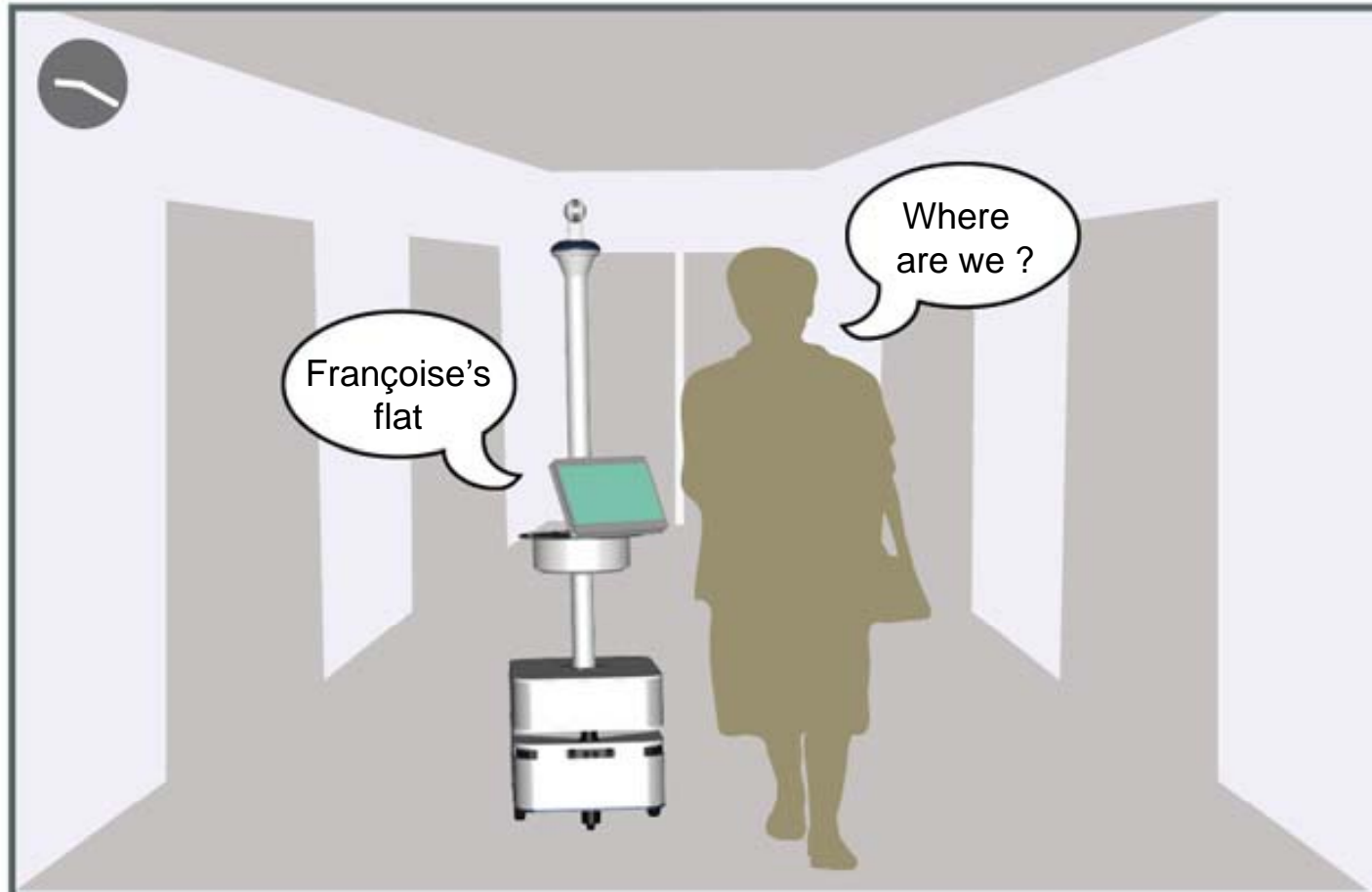
Robot reminds her about visiting Françoise at 9:30 for a scrabble, as they decided last Thursday when they met at the supermarket. It also reminds Sylvie to take her medicines.



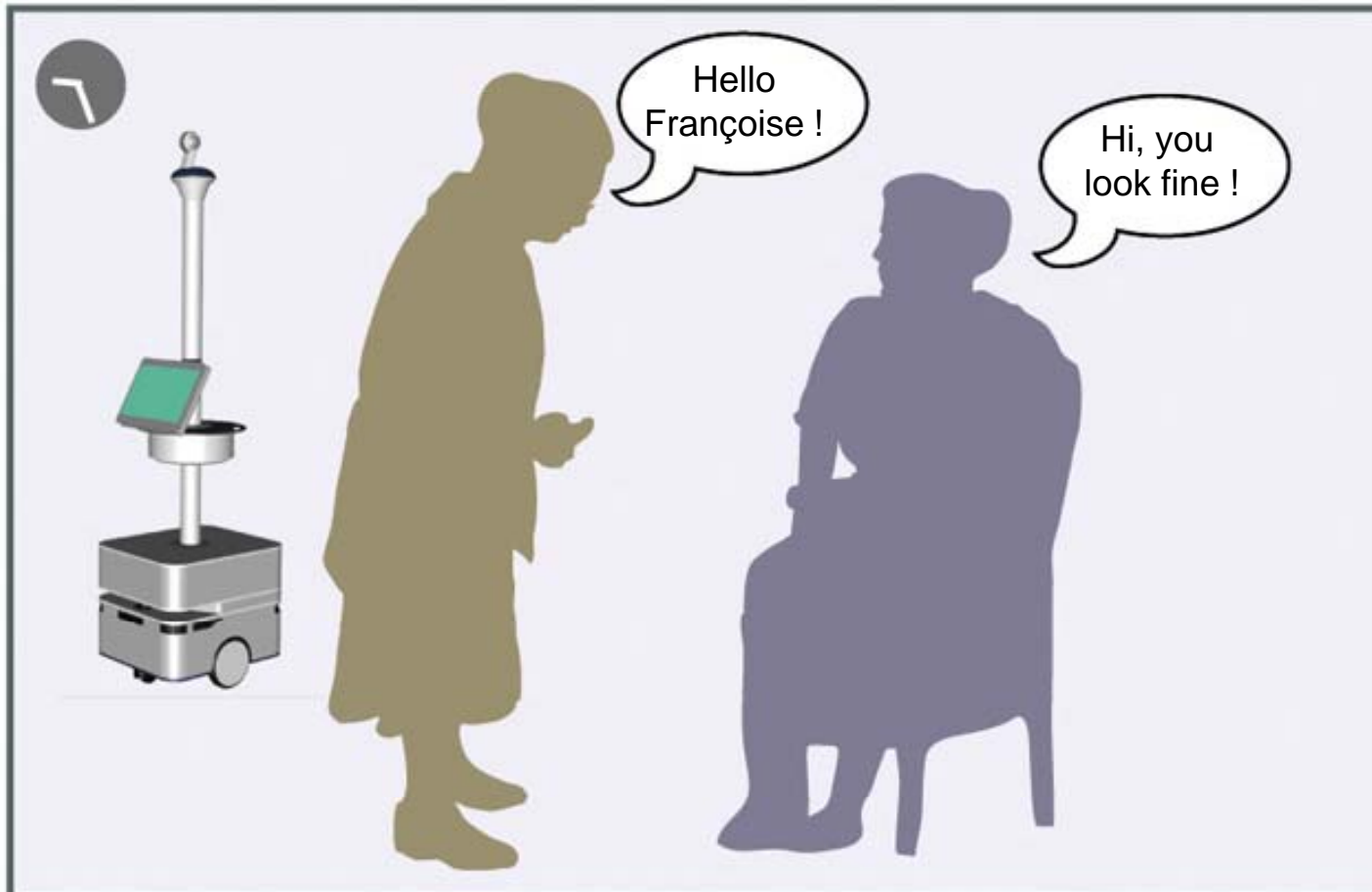
"Sylvie, it is time to go"

"What is the weather ?" "It is 18 degrees outside and quite sunny"

"Good, I'm ready to go"

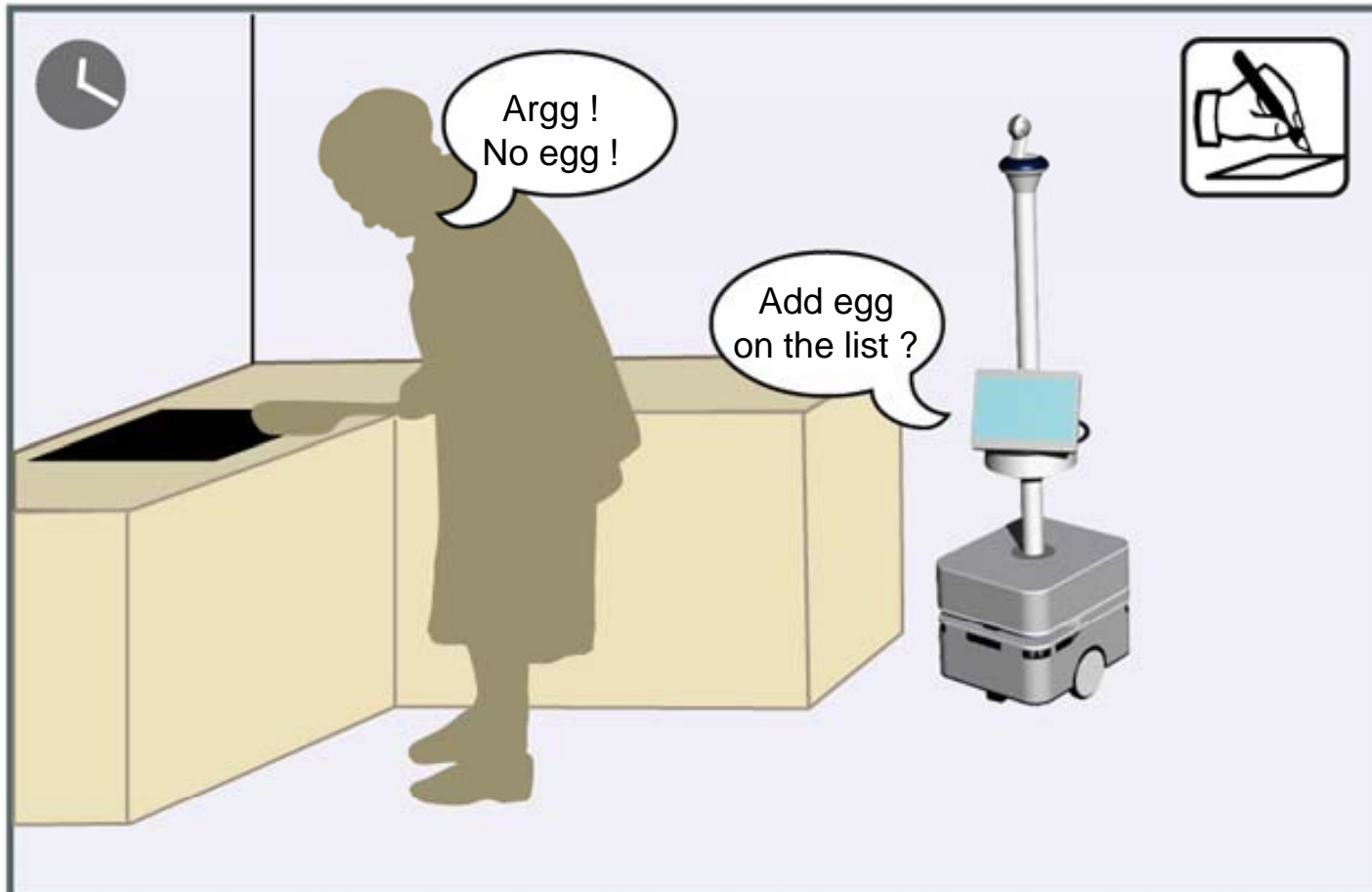


Robot guides Sylvie through the residence to her friend's flat.  
"Where are we going?" "We are going to Françoise's place."  
"I remember now!"

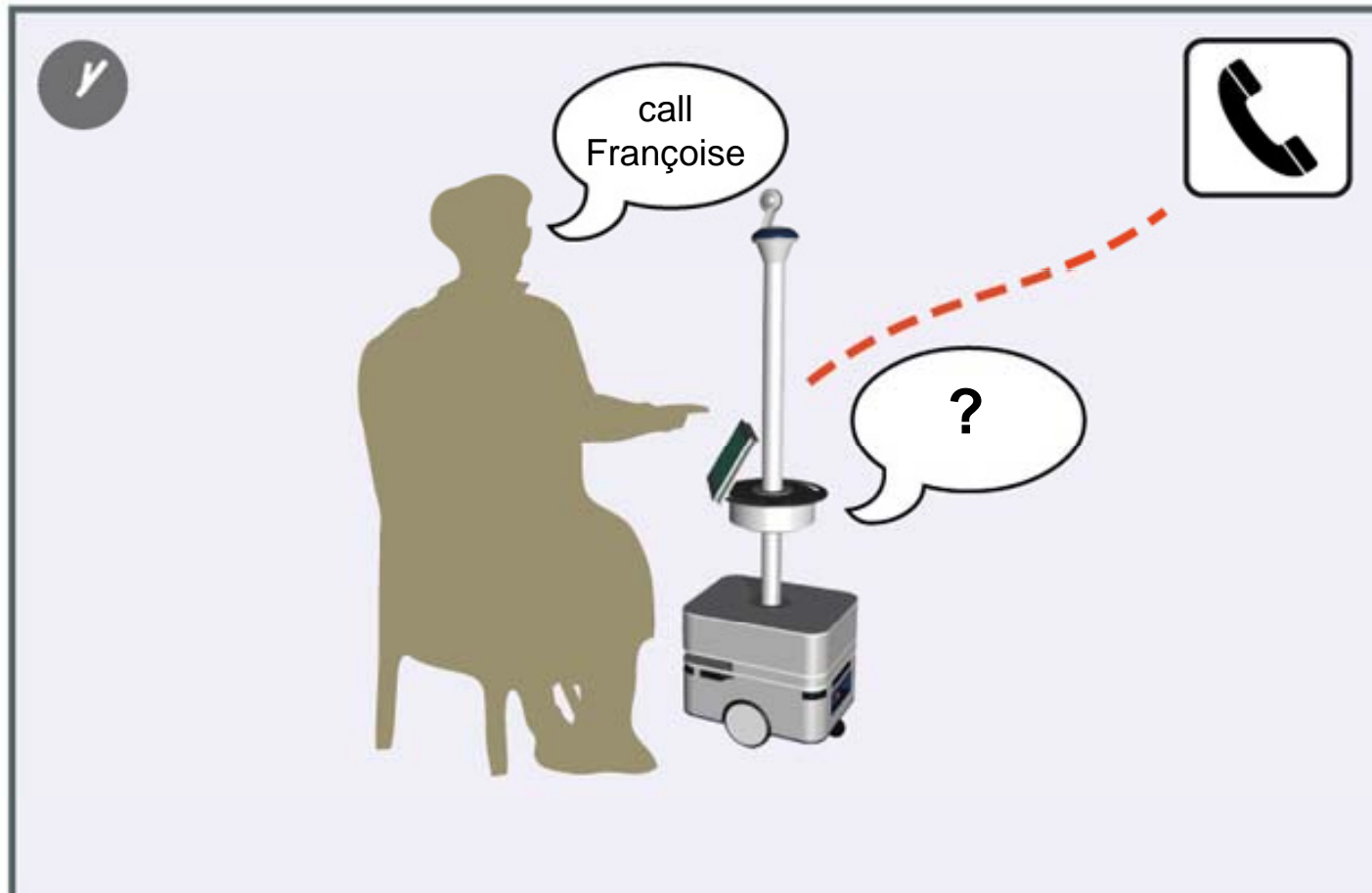


At Françoise's place.  
Robot keeps close to Sylvie but does not disturb the two friends.

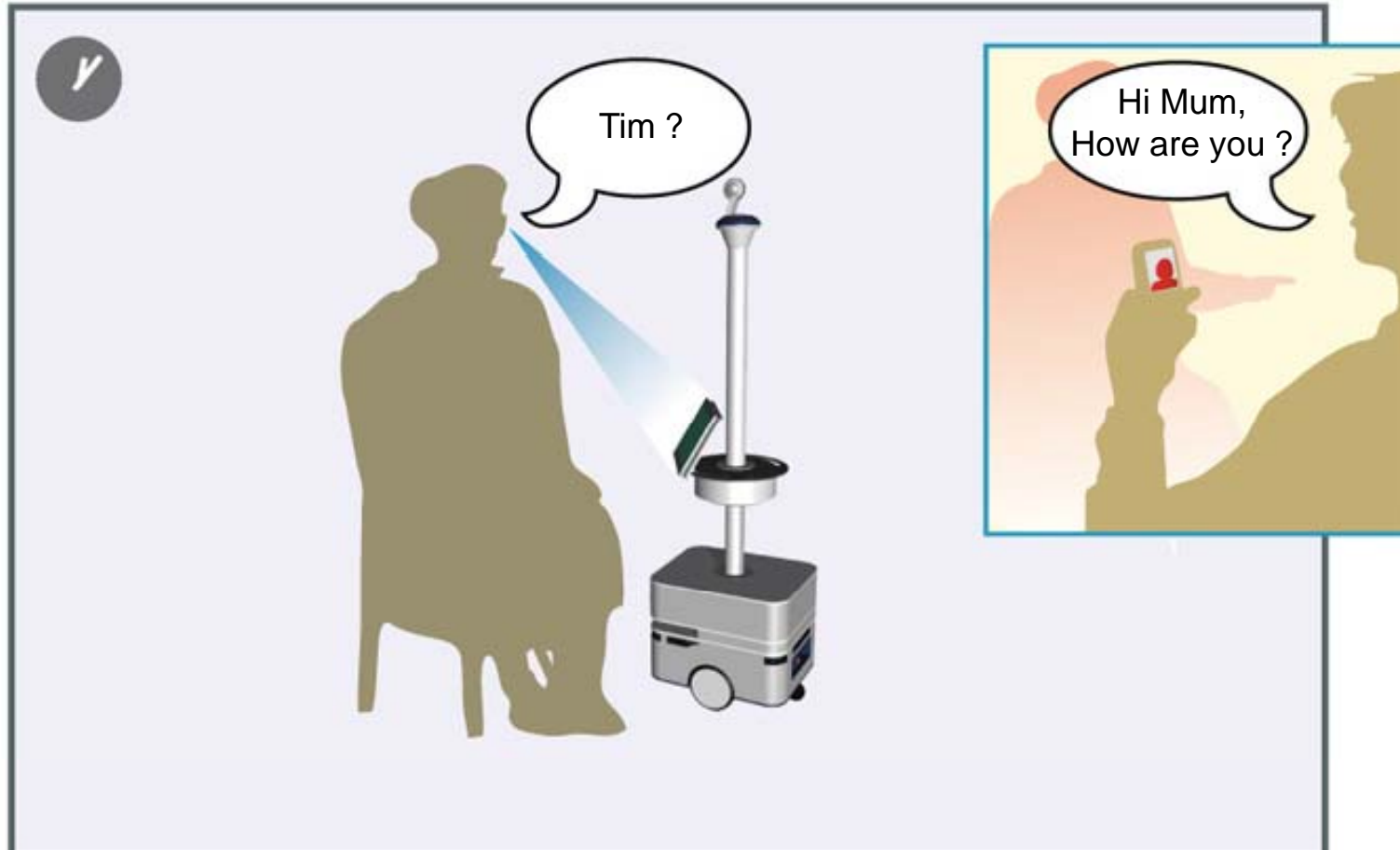




Back home, Sylvie wants to cook an omelette but there is no egg left. "Argg, there is no more egg!" "Should I add eggs on the shopping list? We are going shopping this afternoon, after your nap." "Yes please"



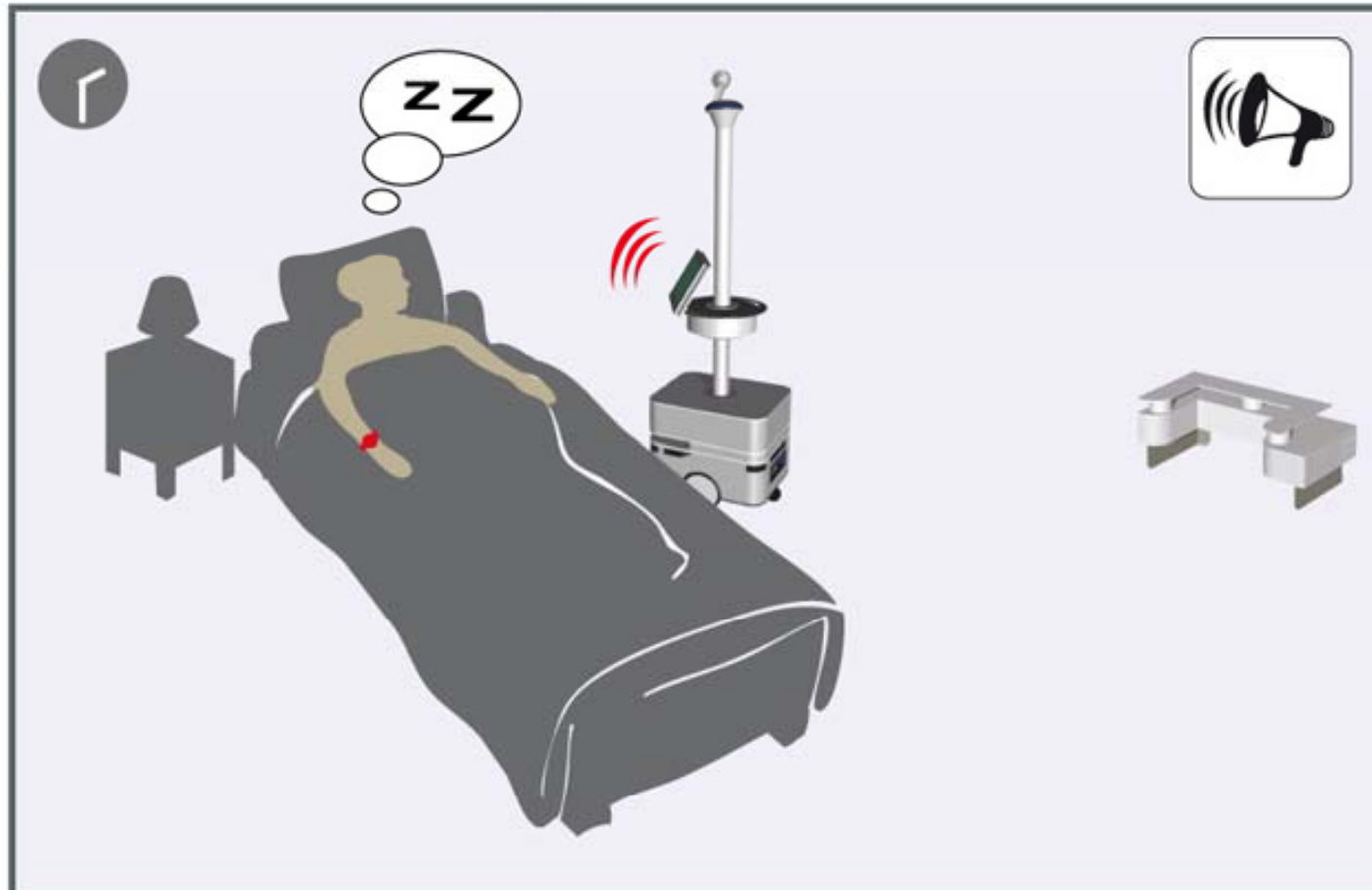
As she finishes her meal, Sylvie wants to call her friend Françoise. "You saw her this morning, you played scrabble together, do you want to call her anyway ?" "No, I'll call my son please"



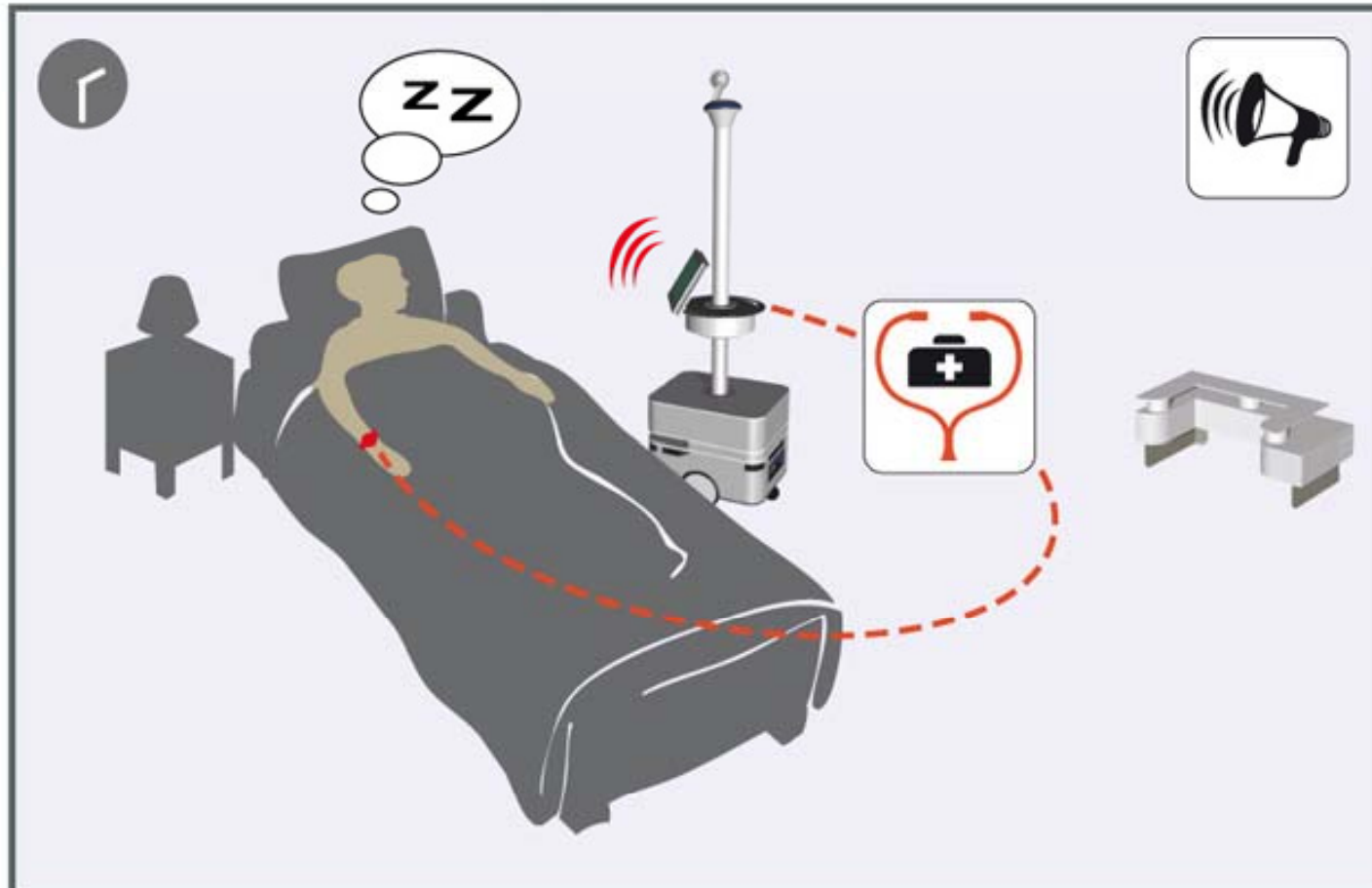
The connection is made between Sylvie and her son via his cell phone.



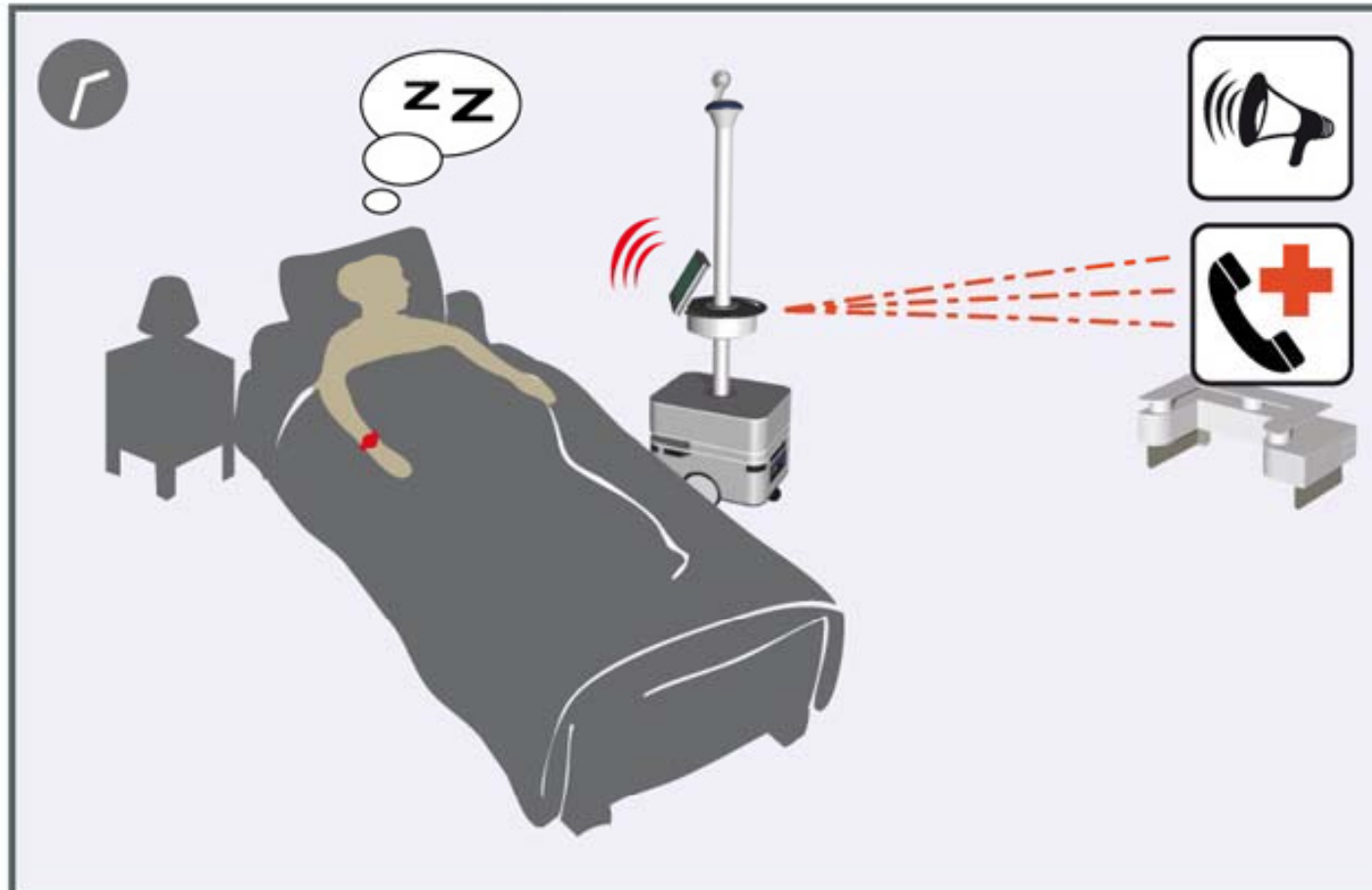
Sylvie lies on her bed for a short sleep  
and asks robot to wake her up an hour later.  
Robot goes to recharge its batteries at the docking station.



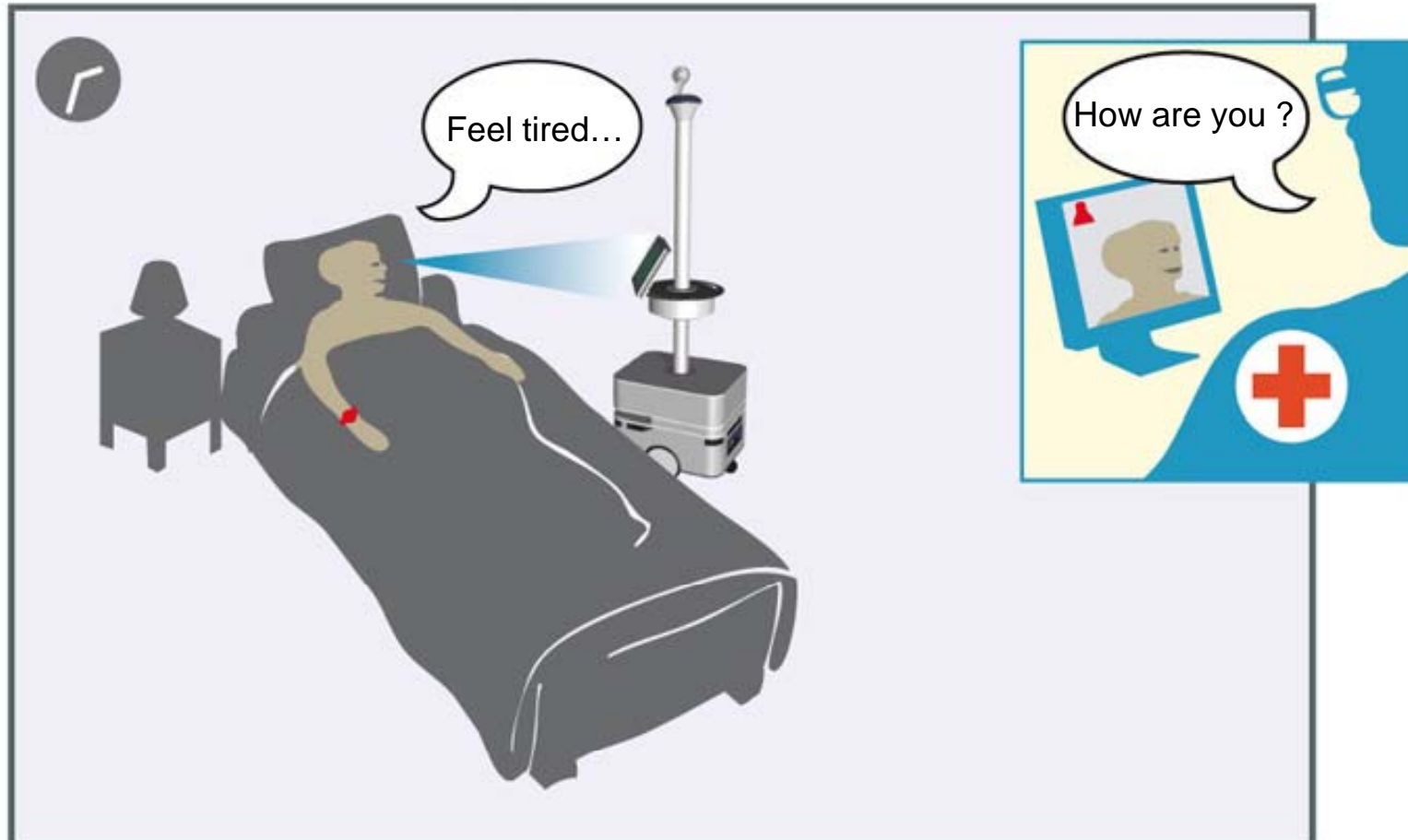
An hour later, robot tries to wake Sylvie up.  
It does as much noise as possible but Sylvie still remains asleep



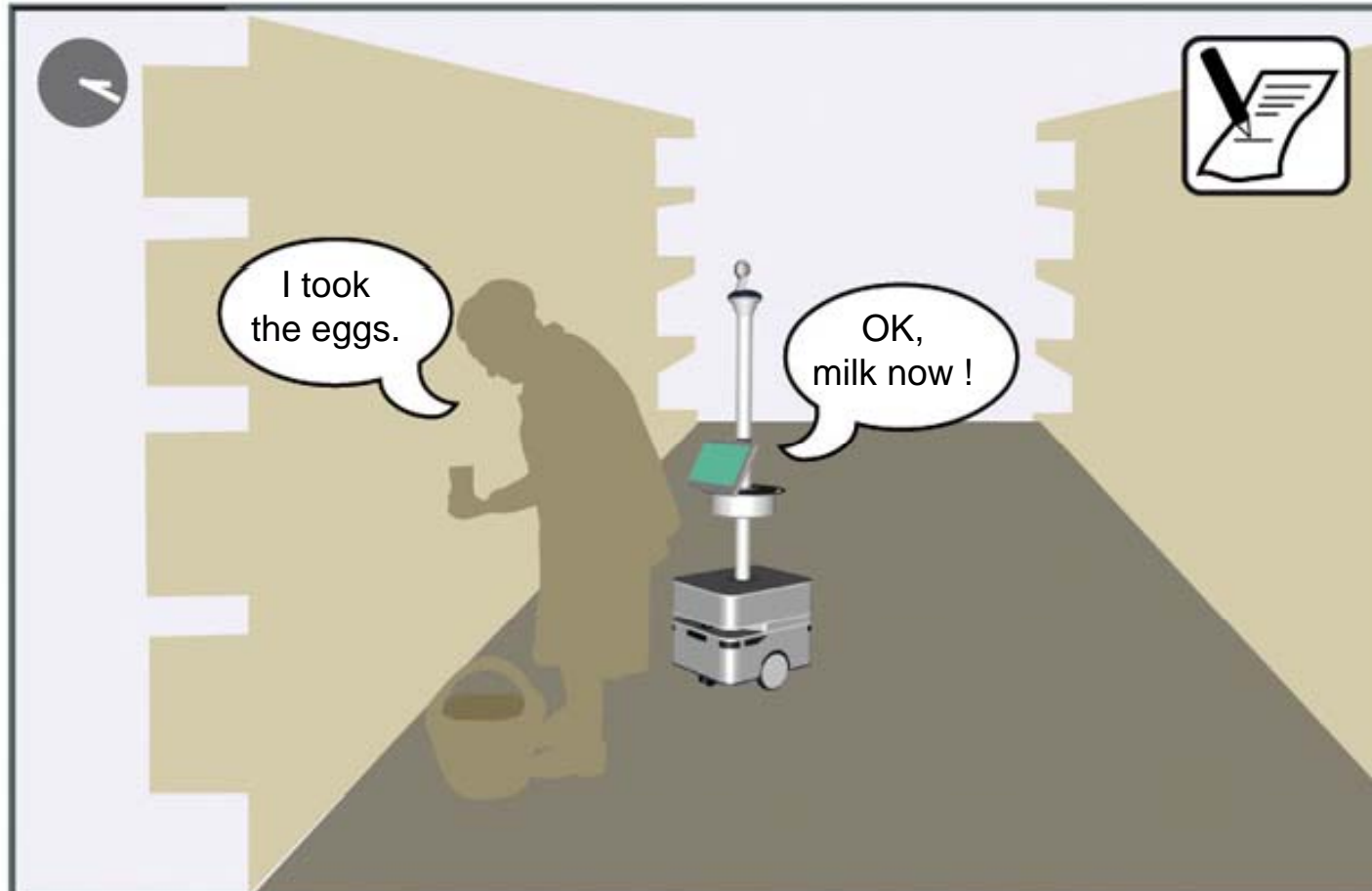
Robot checks her vital signs via a wrist medical device.  
Everything seems normal.



5 minutes later, Sylvie is still sleeping.  
Robot sends an alarm to the medical center in charge of her.  
It gives an explanation of the situation and the report on her vital signs.



The medical center switches robot into a manual mode.  
The caregiver controls robot's position and camera in order  
to check Sylvie's condition and communicate with her.



Robot guides Sylvie to the shop. In the shop, Robot follows Sylvie and reminds her about the shopping list. It makes sure everything on the list is being bought.

## Current status of Robulab10 Healthcare...

- Mapping and navigation
- Voice recognition and synthesis
- Calendar management
- Shopping lists management
- Medecines management
- Visio-conference





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