

A New System with Auditory Stimuli to Evaluate Spatial Memory

PhD in Computer Sciences

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Motivation

To understand the development of memory and spatial orientation. Both processes have relation with academic performance. This system could help in the detection of difficulties in learning.

General Objective

To develop systems with auditory stimuli. These systems will use environmental devices that will enable the assessment of spatial short-term memory in children without identified pathology.

Specific Objectives

1. To research and evaluate auditory stimuli with interactive environmental devices.
2. To study, develop and validate alternatives to evaluate the spatial short-term memory.
3. To develop a system with Karotz devices for children and adults. These systems will include auditory stimuli and interaction with users' own movements.

Concepts

Short-term memory

The ability to maintain a small amount of information in mind for a short time in an active way and easily accessible.

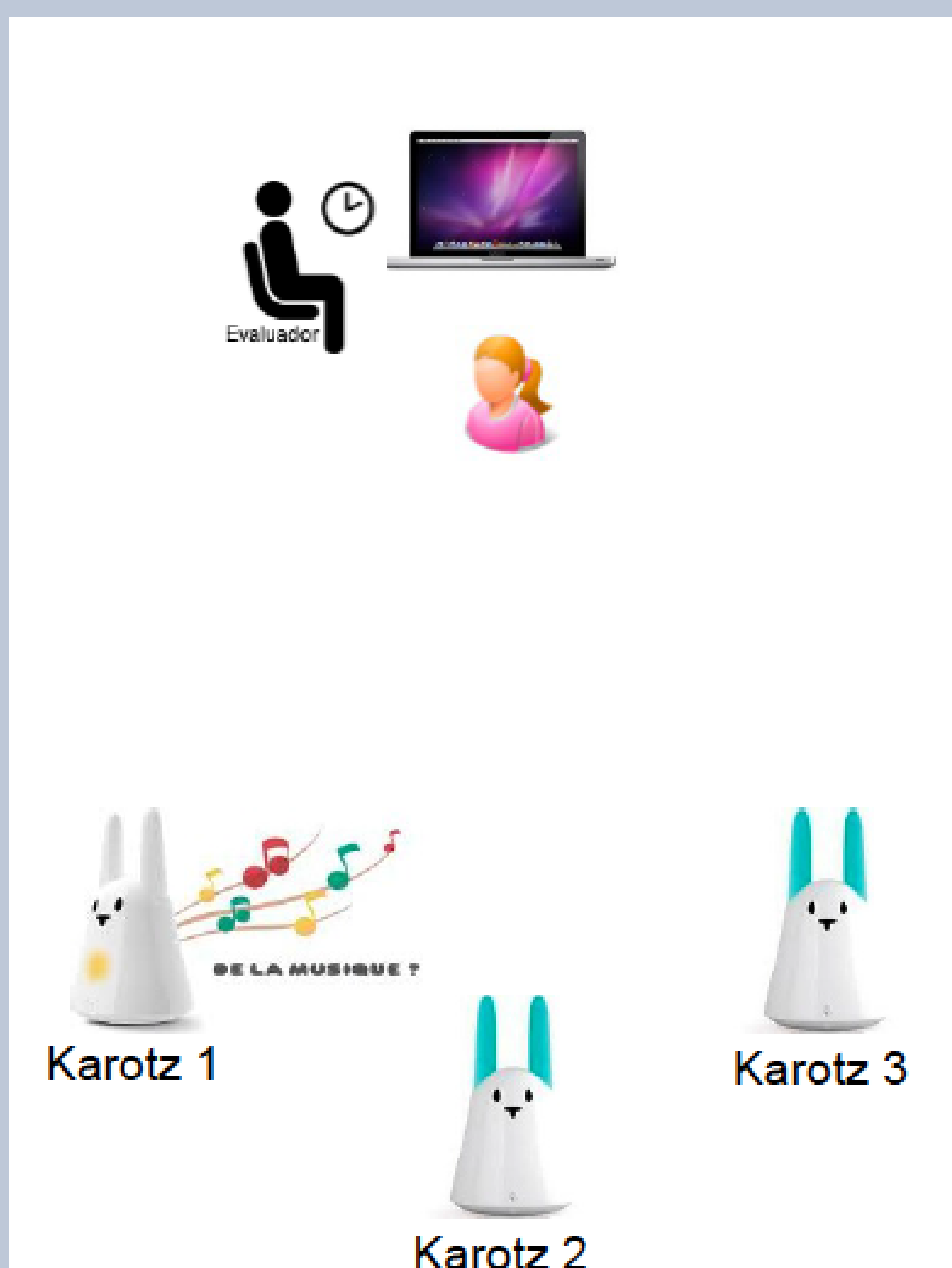
Auditory stimuli

They are the basis of learning and behavior. The auditory information is assimilated by brain areas in speech processing and perception.

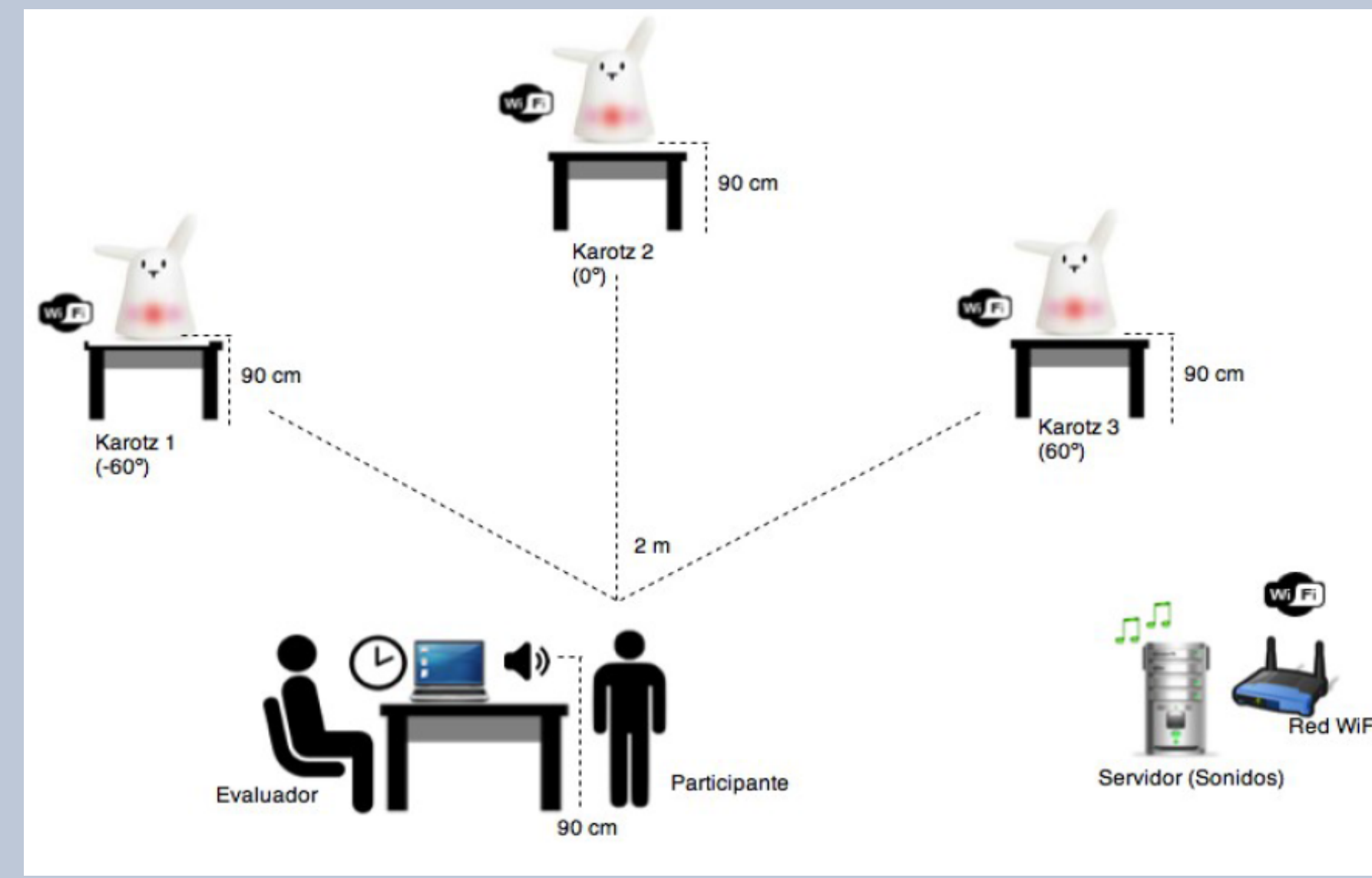
Process

The process simulates a game in which the participant interacts through his own movements while he is listening auditory stimuli and he these stimuli are saved in his short-term memory.

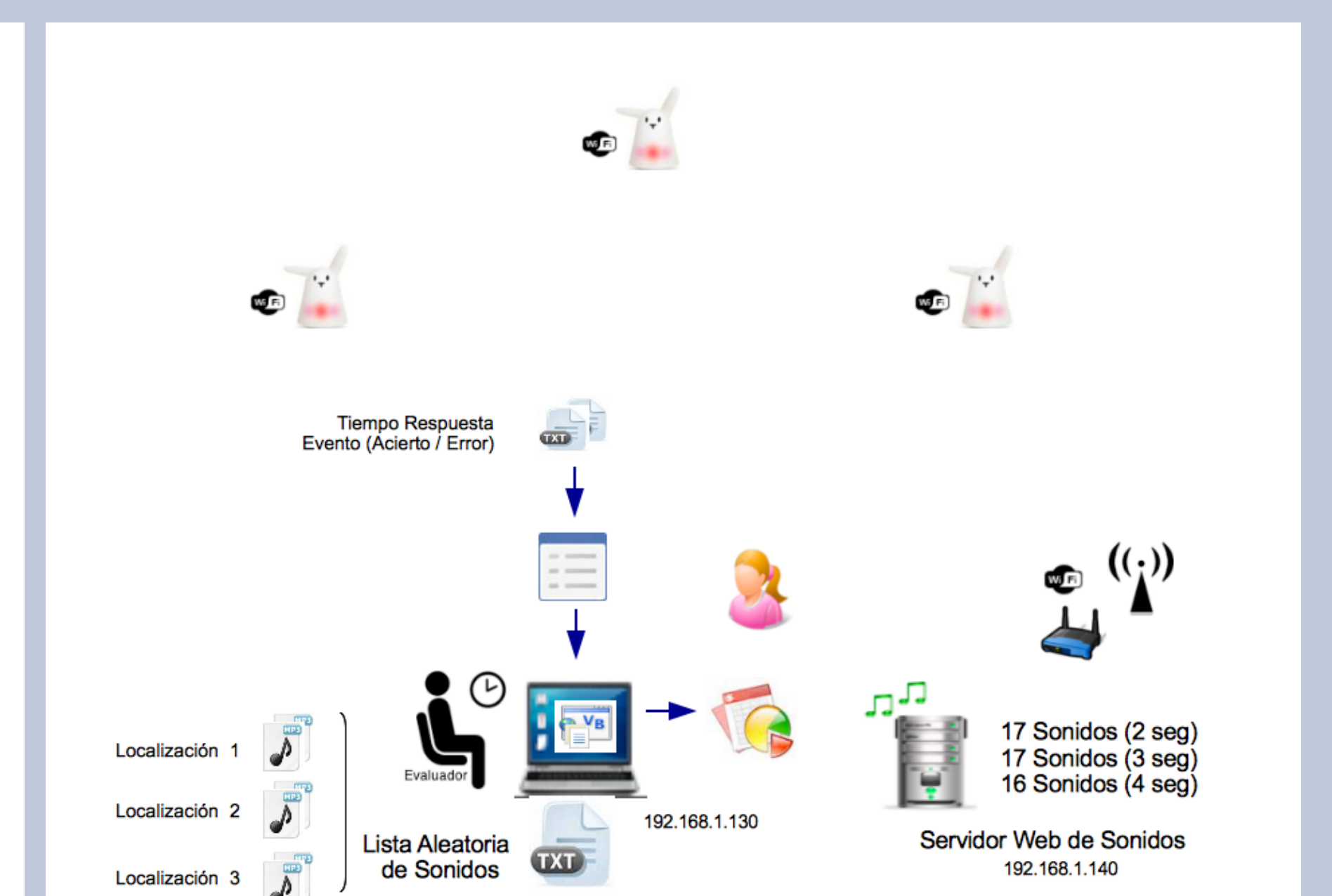
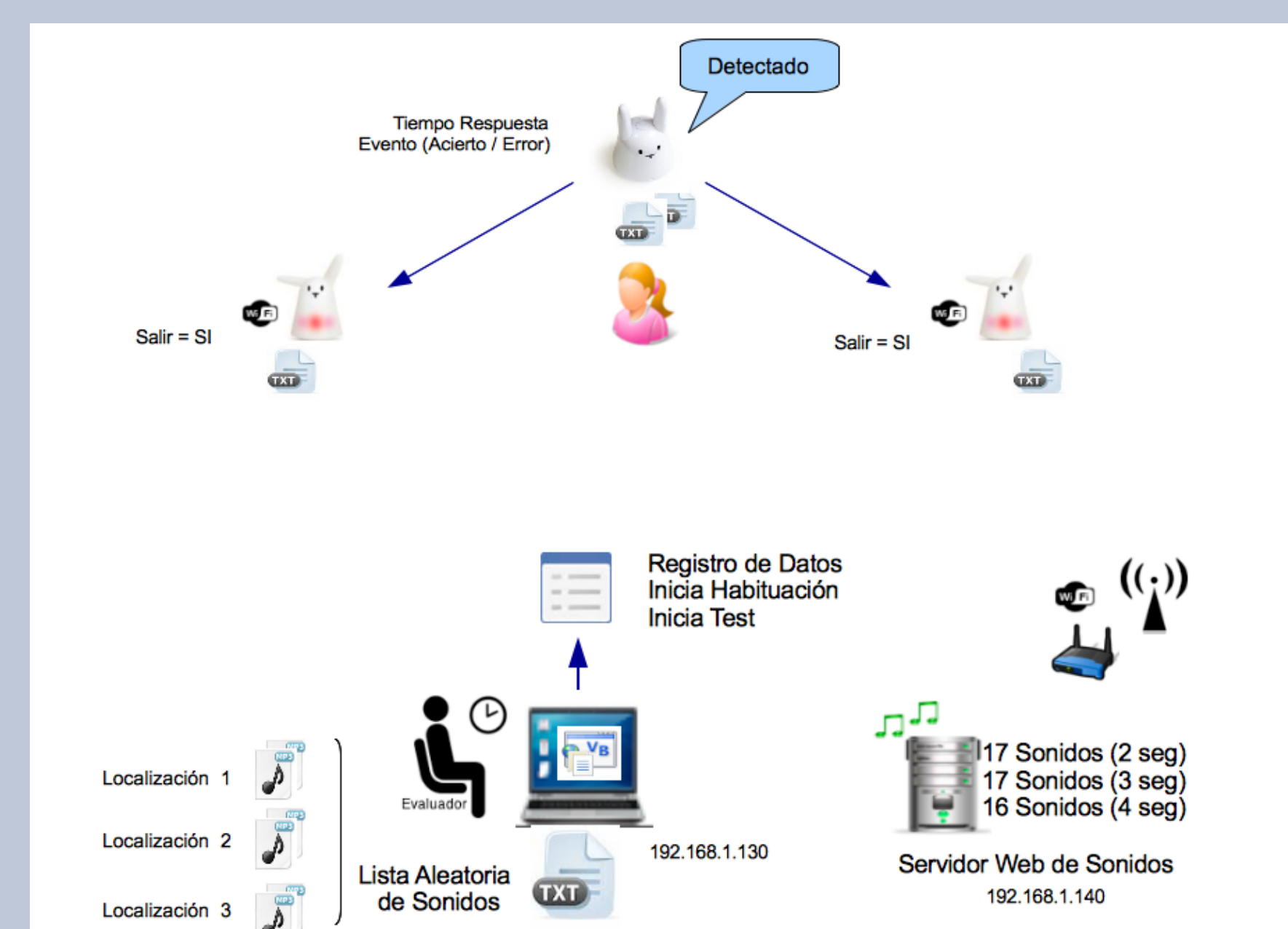
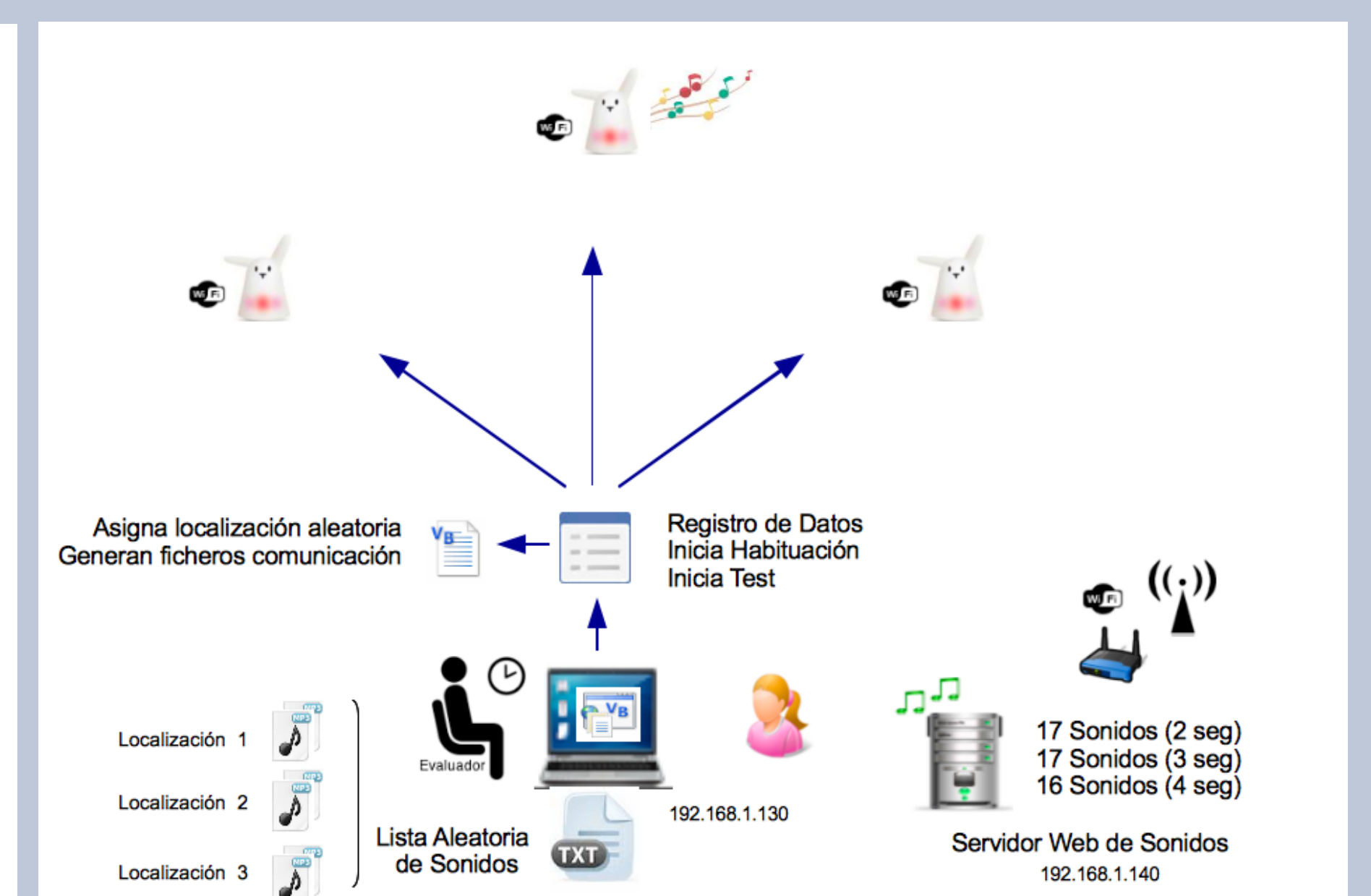
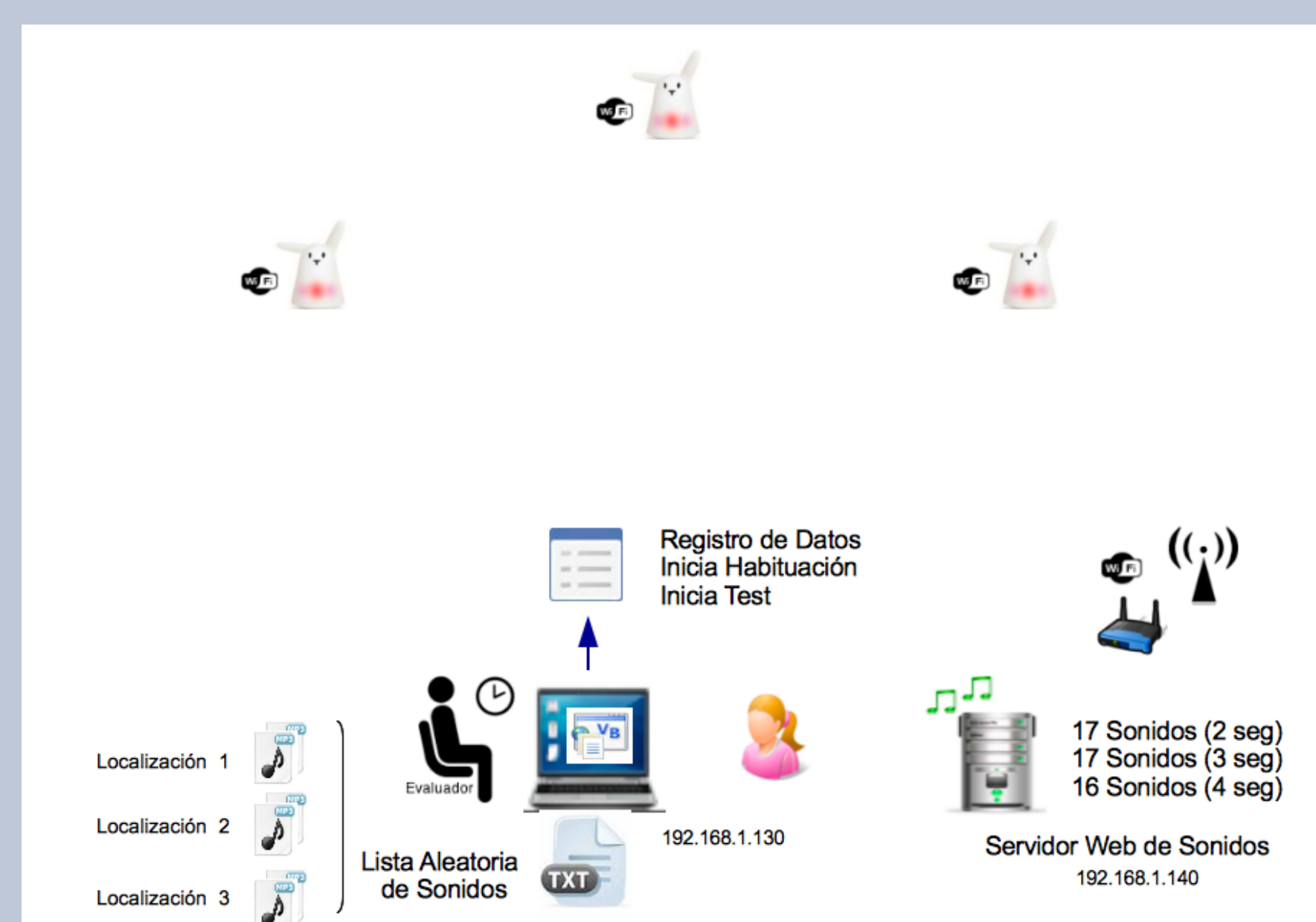
- What (auditory stimuli)
- Where (location of karotz)



Functionality



1. The evaluator starts the test.
2. The speakers give the instructions.
3. A Karotz device emits an auditory stimuli.
4. The participant listens and locate stimuli.
5. The system asks which Karotz did the auditory stimuli.
6. The participant walks close of the Karotz, he has to press the button on the head of the Karotz that emitted the stimulus.
7. The Karotz registers the time and sends the message "DETECTED".



Expected results

- To contribute to the CHILDMNEMOS project.
- To obtain an indication of participants' ability to identify acoustic stimuli depending on their location, duration of sounds and based on the number of successes or failures.
- To develop alternatives applications for groups with some kind of visual or motor disabilities.
- To design a to a new interactive evaluation method of spatial short-term memory using environmental devices and auditory stimuli.

References

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