

# RINF Tech Quotation for Honda Research Institute Europe

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## 1 Document purpose

The present document describes the offer for HRI-EU's **Avatar Receptionist** project concerning the development of a virtual receptionist. RINF bases its estimations on conversations and documents exchanged with HRI-EU representatives.

## 2 Technical Solution

The goal of this project is to extend HRI-EU's **Avatar Receptionist**, a 3D entity on a computer terminal which leads visitors through a registration process in an interactive speech-based fashion. The system calls the contact person of the visitor directly by phone. Within this process the system is capable to take care of GDPR-related formalities and allows face learning and reidentification of visitors.

The core technologies used are Java Script, Node.js, SQL, HTML, CSS, WebGL.

### 2.1 Scope of work

#### 2.1.1 Integration with the Smart Lobby

- Organize a design workshop with HRI-EU representatives to define a solution to integrate the Avatar Receptionist with the existing Smart Lobby infrastructure
- Implement the solution based on the design defined during the workshop
- Implement a test suite that will validate the implementation

#### 2.1.2 Execution Analysis tools

- Design a solution for real-time visualization of the dialog system's internal state
- Implement the designed solution

#### 2.1.3 Statistics tools

- Design a tool for generating statistics on the dialog branches used by visitors based on log files
- Implement the designed tool and integrate it with the supervisor

#### 2.1.4 Maintenance and quality

- Finalize improvements to some hardware related modules
  - Implement a camera overheating protection
  - Assist HRI-EU in increasing the robustness of the led control module
- Software repository refactoring
  - Refactor several modules to allow them to be decoupled from the Avatar Framework
  - Split the code into different repositories and projects
- DB Robustification
  - Improve the way database entries are changed and deleted via the Web-UI
  - Implement a feature that automatically deletes database entries according to the Avatar Receptionist Privacy Policy
  - Assist HRI-EU with implementing a database backup system
- DB Security
  - Assist HRI-EU with encrypting the Avatar Receptionist Database
  - Test the database as a separate server and evaluate the possibility of moving it in a separate machine

### 2.1.5 System improvements

- Enhance the miron system with natural language processing
  - Integrate the miron system with NLP.js to allow state of the art natural language processing
  - Implement a cross-miron validation test to determine a confusion matrix and use it for testing NLP.js
- Integrate the new GSM dongle provided by HRI-EU
- Ultra-sound visitor presence detector
  - Assist HRI-EU with the hardware development
  - Implement a driver
  - Implement other necessary software
  - Assist HRI-EU with the integration of the solution with the dialogue system

### 2.1.6 Testing with real people

- Assist HRI-EU with developing a testing procedure using Mechanical Turk

## 2.2 Services Repository and communication

A Confluence wiki will be provided by RINF. The project will be hosted via Gitlab Repositories provided by HRI-EU. HRI-EU representatives will be responsible for planning a weekly status report call. Besides the weekly talks, the communication within the team will be facilitated via Email, Microsoft Teams and Slack (*hri-eu.slack.com*).

## 3 Effort Estimation

Project component	Effort (man-days)	Localization of service provision
Integration with the Smart Lobby	11	RINF
Execution Analysis tools	18	RINF
Statistics tools	17	RINF
Maintenance and quality	40	RINF
System improvements	36	RINF
Testing with real people	4	RINF

RINF will assign the project team according to resource availability and inform HRI-EU before project start. RINF reserves the right to modify the project team - any modifications need to be approved by HRI-EU.

## 4 Financial estimates

Item	Description	Total
Software development and consulting services	126 man-days @ 420€/man-day	52.920 €
Infrastructure costs	Confluence: 150\$	124 €
TOTAL		53.044 €

**Payment schedule:** Monthly (infrastructure costs will be invoiced in the first month)