The operators can visualize the list of all the users or can perform specific researches if they know the Username, the First Name or the Family Name of a specific user. Once they have found the required user they can read all his personal data and all the information concerning the parking periods. Finally they can register new users.

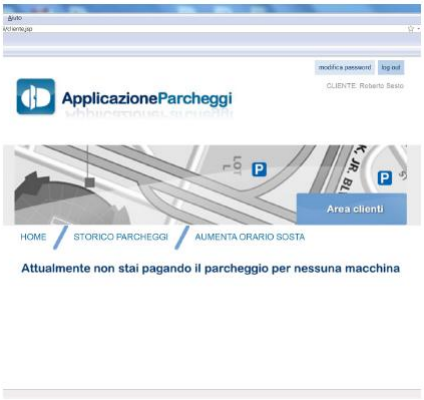

Figure 7. The end-user section

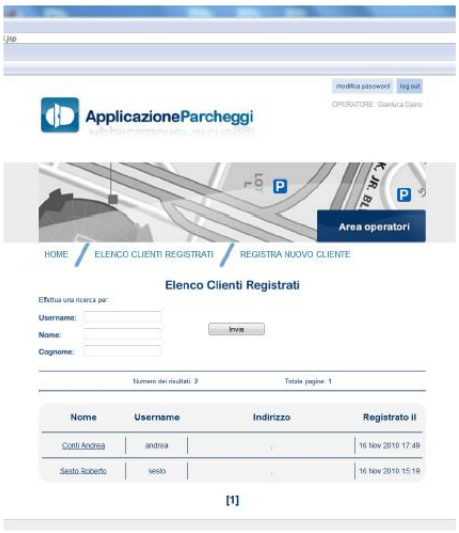

Figure 8. The operator section

6. Conclusions

The proposed solution appears to be interesting because it gives an answer to all the problems listed in the introduction. The closed car parks solution notably reduces the timing for two main factors: the user has not to go to the ticketing machine and when he enters and exits the car park the reading operation either of the NFC device or of the RFID Smart Card is notably faster that the collection and introduction of the standard parking tickets. This solution is also useful to speed up the payment operations because the user is not forced to search for the required amount of money. The solution for the street car parks also solves the underlined problems. The timing of the payment operation is in fact reduced with all the proposed solutions: while the solution using the GPS-GPRS module is evidently the fastest (only the time to press twice a button), also the other three significantly reduce the timing if compared with the traditional protocol. Anyway, the Mobile solution has the interaction with the phone as the delaying factor, while the NFC and RFID solutions are delayed by the necessity to go to the ticketing machine. The problem of the payment is solved in the same way by the four solutions because the payment of the parking is in all the cases performed remotely by bank transfer of by Credit Card.

The problem of the exact fare is solved in all the cases communicating both the beginning and ending times of the permanence, and then calculating the exact fare at the end of the permanence. All these solutions have then proven to be efficient when tested in laboratory. Anyway, the final test could only be done with a real implementation. For this purpose experimentation is going on in the city of Siena, even if currently this test only deals with the street car parks question and is based only on the development of the Mobile solution. Anyway, further experimentation is required for all the other contexts.

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