

# Extracting Service Process Models with Teams

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**Abstract.** This work continues our former study on extracting service process models from location data. We extend our former work for teams of professionals working in the process. A model for the teams is required in our analytics for the optimization of team based processes.

**Keywords:** Service process modelling, location-based, teams of people

## 1 Automated Process Modelling Approach

In the current study we extend our wireless process measurement approach [1] for service processes where customers are served by teams. The teams include complementary professionals, such as dentist, dental hygienist and dental assistant. We call such teams as multiprofessional teams.

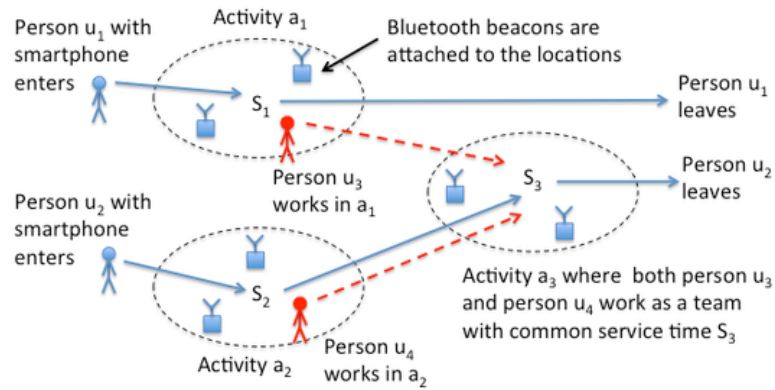


Fig. 1: An example of a modelled process

In Figure 1 we present an example with three activities  $a_1$ ,  $a_2$  and  $a_3$  in corresponding locations with two Bluetooth beacons. The customers are marked as blue and the service personnel as red, and they all carry a mobile receiver when the process is measured. In activity  $a_3$  both persons  $u_3$  and  $u_4$  work

together as a team. The resource allocation in teams plays an important role in the analysis [2], which is described in [4–6].

## 2 The Measurement System

The measurement system is shown in Figure 2. The Bluetooth beacons are sending periodically their identities, and the Smartphone application is collecting the measurement RSSI values. The results are sent to the Server which calculates the model. We tested the system and the analytical approach for process model extraction in a laboratory case study based on typical real dental service centers in the City of Tampere [3]. The original Tampere project was during 2013-2016.

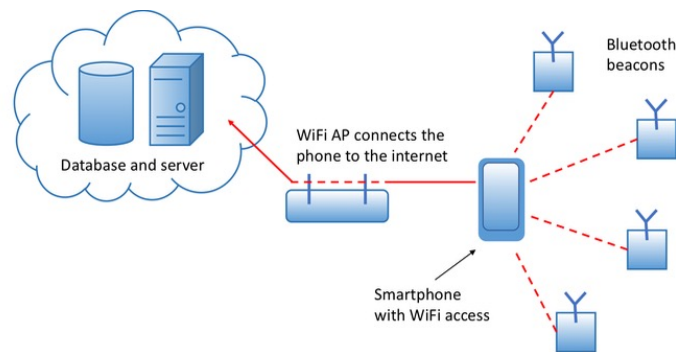


Fig. 2: The measurement system

## References

1. Ye Zhang, Riku Saikkonen, Olli Martikainen and Eljas Soisalon-Soininen: Location-Based Automated Process Modelling, SIMPDA 2016 (2016)
2. Halonen, R., Martikainen, O., Juntunen, K., Naumov, V.: Seeking efficiency and productivity in health care. In 20th Americas Conference on Information Systems. AMCIS-0251-2014.R1. (2014)
3. R. Halonen, O. Martikainen, S. Rsnen, M. Uusi-Pietil: Improved Dental Services With Process Modelling, The 11th Mediterranean Conference on Information Systems (MCIS), Genoa, Italy, 2017, 1-15.
4. Naumov, V., Martikainen, O.: Method for Throughput Maximization of Multiclass Networks with Flexible Servers, ETLA Discussion Papers, The Research Institute of the Finnish Economy nro 1261 (2011)
5. Naumov, V., Martikainen, O.: Optimal Resource Allocation in Multiclass Networks, ETLA Discussion Papers, The Research Institute of the Finnish Economy nro 1262 (2011)
6. Naumov, V., Martikainen, O.: Queueing Systems with Fractional Number of Servers, ETLA Discussion Papers, The Research Institute of the Finnish Economy nro 1268 (2012)