

## **Determination of Relevant First Aiders within a Volunteer Notification System**

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During a Sudden Cardiac Arrest (SCA), an untreated time interval of only a few minutes usually means the victims' death. While professional emergency medical services (EMS) are working on shortening the time needed for arriving on scene, there are parameters that limit potential performance increases regarding this topic; e.g. current traffic, the travel distance and the delay between an incoming emergency call and the march out of the professional helpers. Given this premise, it is necessary to find alternative ways for providing immediate first aid treatment to victims suffering SCA. One approach is the implementation of a Volunteer Notification System (VNS) – integrating laypersons and medically trained volunteers into the EMS, by notifying those potential helpers who are, at the time of incident, close to the scene. Whereas the term 'close' is suitable for describing the general concept of a VNS, a social valuable system implementation requires an algorithm that analyses and determines which volunteers are to be alarmed. False or unnecessary notifications might have a negative effect on the user acceptance or system performance, whereas not alarming potential helpers who are actually close enough can greatly decrease the system's value. While the actual distance is an important parameter to be considered, it does not necessarily determine the time of arrival at the scene. Due to possible obstacles, the beeline calculation obviously does not offer a suitable background for estimating the traveling time; but even considering up-to-date roadmap material in order to calculate the shortest way does not provide sufficient information without some assumptions. Thus, the type of movement, the physical performance of a volunteer and the traffic situation directly influence those calculations. Furthermore, limiting the relevant decision parameters to merely distance seems inadequate and secondary criteria apply; e.g. medical expertise, knowledge of the area or general engagement. In addition to giving a brief overview to the "EMuRgency" project, this paper will introduce the main criteria for determining the relevant volunteers within an ongoing emergency scenario.

**Keywords:** Notification-System, Emergency-Medical-Services, Telemedicine, First-Aid