

## Press Release

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### AIT MOBILITY SOLUTIONS IN THE SERVICE OF COVID-19 CONTROL

Optimising care for people in quarantine and anti-corona measures // Reducing contact times between people in transport facilities and shops // AIT mobility research

AIT mobility researchers have provided solutions that can now help optimise mobile care for people in quarantine or the control of anti-corona measures. The methods also make it possible to reduce the contact time between people in public spaces or supermarkets.

Dealing with the Corona crisis poses major challenges for emergency services. With limited resources, many more tasks have to be managed - and the challenges can change very quickly. This makes, for example, planning for mobile medical teams to visit patients, home care and care for vulnerable people in home quarantine a real challenge. Due to the increasing number of cases, this can hardly be managed manually anymore. Mobility researchers at the AIT Austrian Institute of Technology can support the emergency services with proven technologies: A route planning system that has been used for years in parcel logistics, for example, makes it possible to avoid long detours or an unfavourable and to maximise the supply per unit of time (e.g. Covid-19 samples taken per unit of time). This system can allocate care teams to demand sources (e.g. patients), calculate the optimal sequence and routes of the trips and determine a probable time of arrival. Current requirements (e.g. a new suspected case) can be integrated into the planning at any time. Moreover, all parties involved receive precise information, so that long waiting times and repeated calls to the - already overloaded - Corona hotlines are avoided.

#### **Logistics support for emergency forces and supply teams**

Similar systems are also of interest for the police. In order for the executive to show the greatest possible presence in the public space for the control of exit restrictions, the patrol tours have to be planned efficiently. The goal is to minimise vehicle turnaround times and maximise frequency on the ground. A system developed at the AIT is up to this complex task, which has so far been used, among other things, for planning ASFINAG's winter service. After defining the streets/alleys/places to be checked, the system calculates the shortest (fastest) tour in which each section is visited at least once. It is taken into account that not every street section actually has to be driven along, as a check by line of sight may be sufficient (e.g. cross alleys). In addition, the system determines the minimum number of vehicles required to achieve a certain presence (e.g. twice per hour).

#### **Maintaining the minimum distance**

Another important issue that AIT mobility solutions can help with is maintaining the minimum distance of one metre between people in public spaces or in retail. This is crucial, especially in the coming weeks, when the previous restrictions will gradually be relaxed. The basis for this is the SIMULATE solution, which simulates flows of people in concrete environments. This makes it possible to analyse structural or organisational measures to guide pedestrian movements. For

example, a solution was found to avoid visitor congestion in certain rooms (such as Emperor Franz Joseph's bedroom) at Schönbrunn Palace. The SIMULATE software tool can also be used to evaluate measures in underground stations, for example, to ensure that a minimum distance of one metre is maintained. By cleverly directing people at platform entrances, the direction in which escalators move, or the provision of walkways when changing trains, contact times between passengers (the time it takes for people to get closer than one metre) can be greatly reduced. In the case of an interchange between two metro lines, SIMULATE has estimated that the average contact time can be reduced from 50 seconds previously to less than five seconds. And this without increasing transfer times or dwell times in the station investigated by means of simulation.

### **Reducing contact times between people in public spaces or supermarkets**

Such simulations are also highly relevant in supermarkets and other shops. There are numerous possibilities to direct flows of people in order to minimise the contact time between customers. Customer frequency, for example, can be regulated by the number of shopping trolleys and baskets available - those without a trolley have to wait outside the shop until one becomes available. One-way streets and barriers can be realised by means of belts, such as those found in waiting areas at airports. In a simulation of customer flows in a supermarket with SIMULATE, it was assumed that the customer frequency would be halved and a one-way system would apply in the shop - with the time customers spent in front of the shelves remaining unchanged. The status quo without these measures was that practically no customer had less than three minutes of contact (less than one metre distance) with other customers. When the measures were implemented, the contact time was drastically reduced: almost two thirds of the customers then had less than ten seconds of contact with others, and 90 percent of the customers had less than 30 seconds.

#### **Press contact:**

Mag. Michael Hlava  
Head of Corporate and Marketing Communications  
AIT Austrian Institute of Technology  
T +43 (0)50550-4014  
[michael.hlava@ait.ac.at](mailto:michael.hlava@ait.ac.at) | [www.ait.ac.at](http://www.ait.ac.at)

Mag. Florian Hainz BA  
Marketing and Communications  
AIT Austrian Institute of Technology  
Center for Mobility Systems  
T +43 (0)50550-4518  
[florian.hainz@ait.ac.at](mailto:florian.hainz@ait.ac.at) | [www.ait.ac.at](http://www.ait.ac.at)