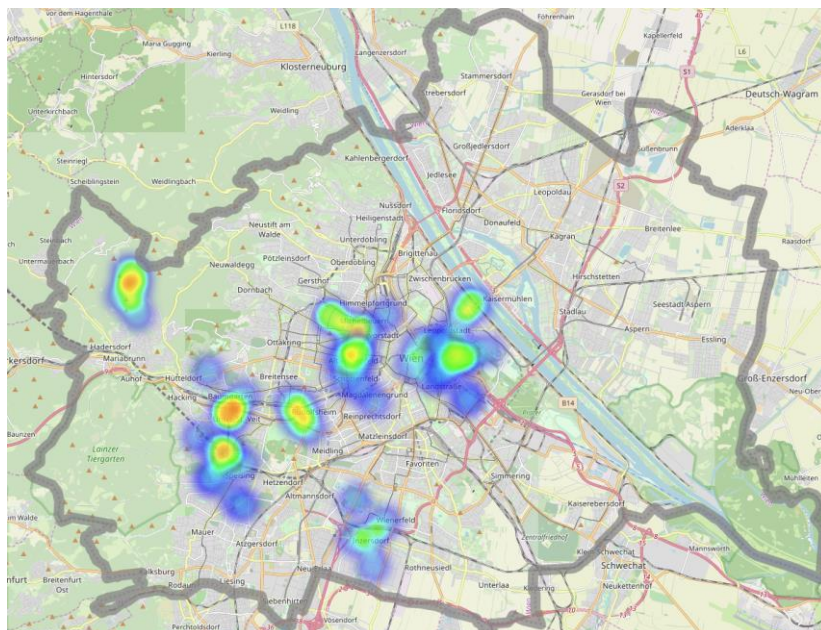


**Know-Center | Know-Center
GmbH – Research Center for
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CORONA HEATMAP

SOFTWARE SOLUTION FOR ANALYZING HEALTH DATA WHILE PRESERVING PRIVACY

Knowing the exact location where more people become infected is an important factor in managing the COVID19 pandemic. The Corona Heatmap shows where Corona patients were located in the past. This knowledge can help the health authorities to take specific and effective measures. A new type of encryption ensures the necessary data protection.

Two sets of data are required in order to create the Corona Heatmap. First, the Corona patient's cell phone numbers at the health authorities' disposal. Second, the location data held by the mobile phone providers. The problem at hand: the mobile phone provider can identify who has tested positive for Corona based on requests made by the health authorities. Conversely, the health authorities are able to identify individuals' movement data. Therefore data

protection cannot be guaranteed, since the patient data can be leaked and individual monitoring is possible.

Know-Center and the Institute for Applied Information Processing and Communication Technology (IAIK) at Graz University of Technology have joined forces and succeeded in finding a solution to this problem. Cell phone numbers of patients are encrypted before they are sent to the mobile phone provider. The provider calculates the movement profiles without decrypting the patient data. Since movement profiles are aggregated, individual monitoring or conclusions are impossible. The patient data are protected using a new type of homomorphic encryption.

SUCCESS STORY

Sending and storing encrypted data is already standard procedure. However, homomorphic encryption makes it possible to calculate with encrypted data without having to decrypt it first. Only simulated data were used to develop this technology.

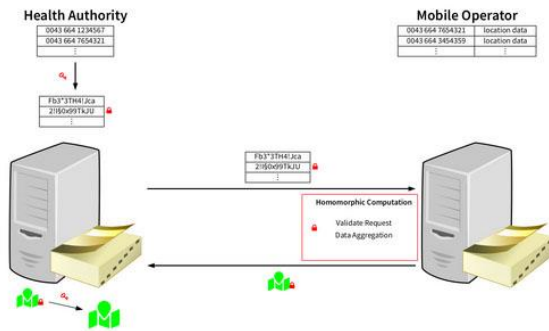


Figure 1: Homomorphic encryption makes it possible for the mobile phone provider to calculate the Heatmap, without decryption of patient data.

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Outcome and effects

The Corona Heatmap makes an important contribution to identifying contagious hotspots and guarantees the highest level of data protection. The only key is held by the respective health authority. Thus, only health authorities are able to read the Corona Heatmap.

Diese Success Story wurde von der Zentrumsleitung und den genannten Projektpartnern zur Veröffentlichung auf der FFG Website freigegeben. Die Know-Center GmbH wird im Rahmen von COMET – Competence Centers for Excellent Technologies durch BMK, BMDW gefördert. Das Programm COMET wird durch die FFG abgewickelt. Weitere Informationen zu COMET: www.ffg.at/comet