Optimizing the process of recovery after road network break-up

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A functioning road network provides accessibility to municipalities, important services and facilities. This basic role of the network can be disrupted by natural disasters which usually affect large areas and cause temporal blockages or even destruction of many roads at the same time. This often leads to road network break-up, when a number of disconnected parts emerge. These parts are often of varying importance to society. Some of them may contain large cities or important facilities such as hospitals. This should be reflected during reconnection works when the most important parts of the network should be reconnected among the first in order to reduce the impact of the event. Decision makers and crisis managers, however, do still not have any dynamic tool which might help them with prioritizing the necessary steps. In our presentation we introduce an algorithm and examples of suitable loss functions which enable us to rapidly identify isolated parts of the network, evaluate them and consequently establish an optimal ranked sequence of interrupted links which have to be repaired to reduce the consequences of the disasters.