

MiReCol: effective decision making in complex situations

During major incidents, events and development projects many stakeholders are involved, each with their own protocols, goals, insights and sources. These factors contribute to a significant risk that suboptimal decisions are taken. As time is often of the essence an efficient working modus enabling stakeholders to experience each other's reality becomes very important.

TNO's MiReCol ('Mixed Reality for Collaboration') research programme makes this possible. TNO will be working with interested parties in the next few years to continue the development of MiReCol technology.

18

Fire!

Imagine that a fire breaks out in a large urban complex. When this happens different stakeholders, like the police, fire brigade and ambulance, hasten to the scene.

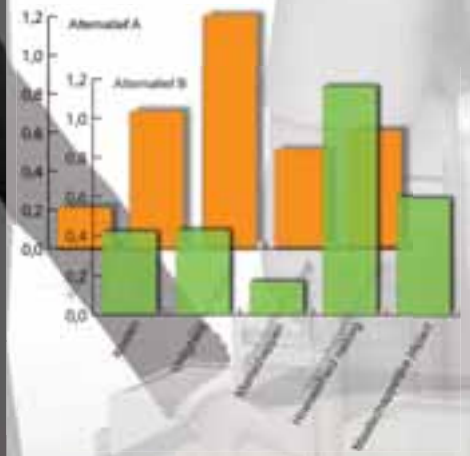
The emergency services each have different tasks and responsibilities; the fire brigade is geared to extinguishing the fire, the police focus on safety around the scene while ambulance personnel have to get through the masses to reach the scene of the disaster and the Mayor has the difficult task of taking difficult decisions. In the heat of the 'battle' a conflict of interests could arise. In such a complex situation the involved decision-makers need as much contextual information as possible presented and visualised in such a way that consequences can be experienced from different viewpoints and perspectives.

Interface

MiReCol ensures that the decision-makers are able to take the right decisions through mutual consultation and on the basis of the same information and shared understanding. MiReCol puts all the relevant data at their disposal. The reality is presented on a so-called simulation table and a fast-forward button allows integrated models to be used. This unique MiReCol component shows the results of a particular decision. This means that the respective decision-makers can quickly experience the different scenarios and then take a well-founded decision.

Consideration

Will a number of fire engines and ambulances suffice, or is it necessary to bring in substantial equipment? By comparing various scenarios, combining these with, for instance, information from the land registry, permits files and accessibility data, then running simulations using the faster than realtime function ('fast-forward button'), a well-founded decision can be taken in an intuitive way. This will not only result in better decision but also shorten the time needed to come to these decisions.



Simulation table

Images and dynamic forecasts are projected on the simulation table; it is not, therefore, a static scale model.

Field data

Officials at the scene provide additional information that is clearly visible in the MiReCol interface. Such as the police using mobile phones to send through images of the scene of a fire. However, data from citizens that make photos or videos on the spot with their mobile phones or witness statements that are taken can also be incorporated.

The MiReCol architecture

MiReCol is based on the integration of scenarios and protocols of all the respective stakeholders in a complex situation. MiReCol uses all the sources that are relevant at that moment, such as land registry data, the hazardous substances manual and associated scientific models, realtime data of roadblocks and information about the surroundings (such as storage depots of hazardous substances adjacent to the scene of an incident).

All communication relating to a project or incident runs via MiReCol, which gives the decision-makers a good overview and people in the field the best possible knowledge of the situation.

MiReCol is not only for deployment in incident management but can also be used in planning to explore possible risks relating to major events or in logistical operations.

19

Mixed reality

MiReCol projects the simulations onto the actual situation so the decision-makers are able to see in an instant where, for instance, the evacuation routes are, where the mass of people are and what situational factors could pose a risk. The 'fast-forward button' calculates and shows how the fire will develop should, for example, the wind direction change, what the evacuation options are and how much time this will take. It constructs the different 'what if' scenarios (what happens when a particular measure is taken).



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