EscapeSim. Beyond the emergency drills

Platform for developing and evaluating emergency management services into intelligent environments

Researchers of the research Group on Intelligent Systems (GSI) at the Technical University of Madrid in collaboration with the Intelligent Systems and Telematics Group of the University of Murcia have developed the EscapeSim platform. This platform allows the development and evaluation of open emergency management services into intelligent environments.
EscapeSim allow developers to (1) define emergency scenarios; (2) use predefined emergency management strategies; (3) implement new strategies; (4) build user profiles, such as handicapped or emergency managers; and, (5) conduct an evaluation of emergency plans though a batch of simulations. After this, the leap from an agent-based social simulation to a multi-agent system implementing the emergency plan is straightforward.

Technology solution supported by the Technical University of Madrid

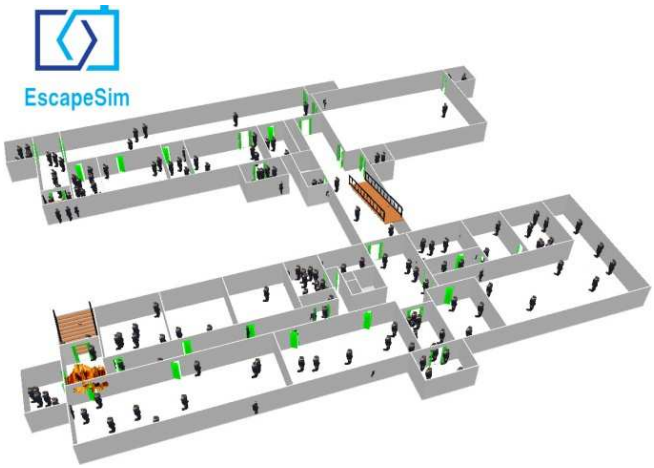
Technology solution

One of the most promising fields for Ambient Intelligence (AmI) is the implementation of intelligent emergency plans. By using AmI, it is possible to improve the collaboration and coordination strategy of response efforts in emergency situations.
Designing and testing emergency plans in intelligent environments is a must. But drills are expensive and cannot cover the great variety of possible situations. EscapeSim employs Agent based social simulation as a technology to provide developers with a decision support system in this scope. An emergency plan can be easily implemented and evaluated in millions of scenarios at the expense of little time. Moreover, after pure simulated tests, participatory simulations where real users interact with the simulation through mobile devices such as smartphones are possible.

Areas of application

- IT and Communications applied to Intelligent environments

"The leap from an agent-based social simulation to a multi-agent system implementing the emergency plan is straightforward"



Market demands

• Intelligent Environments (IEs) use networked computing technology to create environments that are sensitive and responsive to the presence of people.
• Ones of the most demanded features in smart spaces are emergency management services.
• Globally, there were nearly 22 million wearable devices in 2013 generating 1.7 petabytes of monthly traffic [Cisco Visual Networking Index., 2013]

"Several recent catastrophes, such as the Madrid Arena and the Brazilian Santa Maria, have demonstrated the necessity of improving emergency plan strategies"

Market potential

• Emergency management and incident management market will worth $93.39 Billion by 2018 [Market Forecasts and Analysis, 2013]
• By 2020 the market of intelligent spaces could be worth between 22 billion and 50 billion dollars and made up of some 16 billion connected devices [Arthur D. Little Report]
• High penetration of smartphones, chosen by many users as their personal electronic device. In fact, the number of smartphones will grow from 1,500 million in 2011 to 2,000 million in 2015.
• By the end of 2014, the number of mobile-connected devices will exceed the number of people on earth, and by 2018 there will be nearly 1.4 mobile devices per capita. There will be over 10 billion mobile-connected devices by 2018, exceeding the world's population at that time (7.6billion) [Cisco Visual Networking Index., 2013].

Competitive advantages

• Emergency simulators are usually "closed" and for specific services, i.e. they cannot be parameterized to adapt them to other cases beyond the studied case.
• EscapeSim uses semantic web technologies as a powerful tool to reuse, extend, and combine different simulation components.
• The cooperative development is enhanced since terms and relationships can intuitively be shared by emergency experts, modellers and developers.
• Participatory simulations where real users can interact with the virtual environments through smartphones are also possible.
• Last but not least, using ontological domain knowledge as base for simulations, developers can automatically check the relations and dependences between the simulated models and obtain guidelines in their implementation.

References

•Escape has been used in THOFU - *Technologies for the Hotel of the Future*, a R&D project which focuses on new tourism concepts and the way exclusive and innovative hotel services could be delivered.
•EscapeSim video: goo.gl/b9JIuM

IPR

- Code under GNU General Public License v3.0
- Software in registration process [M-2615-2014]

Development stage

- ◯ Concept
- ◯ R & D
- ⊕ Lab Prototype
- ◯ Industrial Prototype
- ◯ Production

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