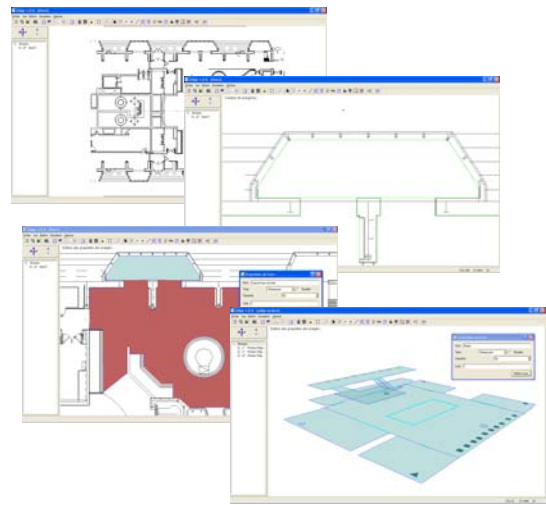


ODIGO

Crowd motion simulation software

ODIGO is a tool to simulate crowd movement onboard ships. It is an integrated tool including a pre-processor, a simulation engine, and a post-processor. The model describes areas representing public spaces created on decks and related staircases.

The simulation engine uses a multi agent method of a cognitive/reactive hybrid type. The simulation uses an exact geometry, i.e. agents may move anywhere in areas provided that they respect margin distances between themselves and walls. The agent definition (features and starting position) is made using a random way. The agents act upon objectives (join cabin, move to craft) and they may chain several objectives.



Applications

The main field of application of ODIGO is evacuation simulation. Nevertheless, it can be used to simulate crowd movement in other situations:

- Embarkation or disembarkation
- End of a show
- Queues in restaurants

ODIGO has been developed for shipbuilding area, but is also adapted to other areas (aerospace, civil engineering).

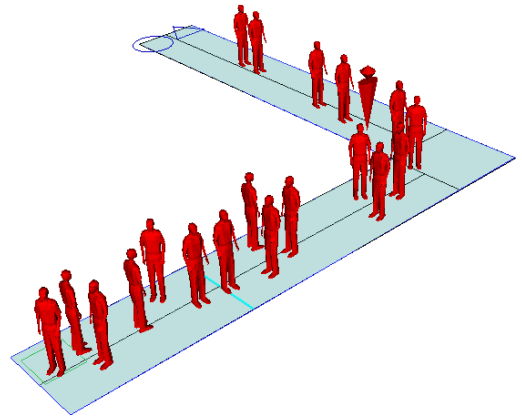
User interface

ODIGO uses a typical Windows™ user interface driven by menus and buttons to launch immediate actions or, as a maximum, a settings dialog box. It is easy and fast to learn. A two days course is enough to learn both pre/post-processing and simulation functions. The interface is available in French and English languages.

Modeling

The pre-processor allows creating quickly the geometry of public spaces of the ship from DXF files describing general arrangement of the decks. Other model entities (spaces, cabins, lifeboats and muster points) are created with mouse in the graphical view of the model.

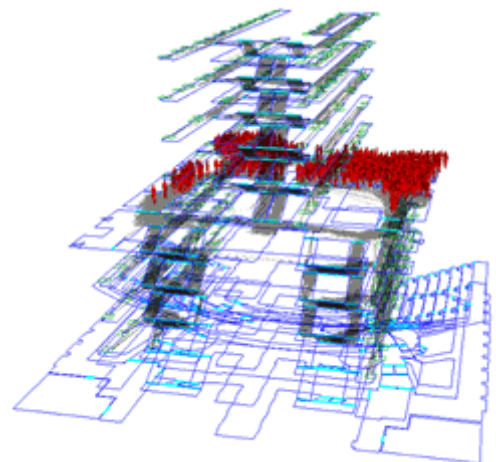
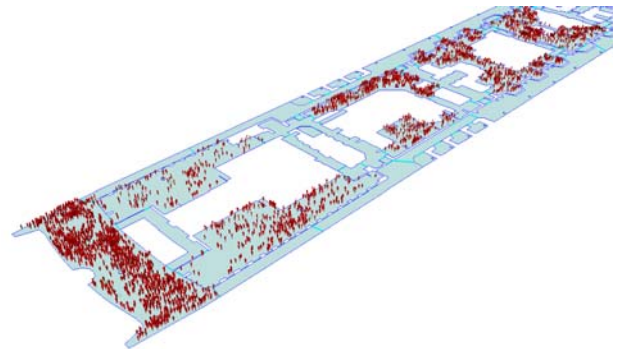
Population data are created a random way from dialog boxes in which agent groups and default values of features are extracted from IMO's recommendation MSC/Circ. 1033.



Results

When simulating human behavior, many random items must be integrated to take into account the stochastic aspect of the problem. Two simulations of a same scenario will provide the user with different results due to discrepancies in agents' features and starting positions. This is why such a full simulation needs to be executed using an iterative process (usually 50 simulations of a same scenario). Consequently, actual results are a statistical exploitation of a set of iterations. The results that are directly available for post-processing are:

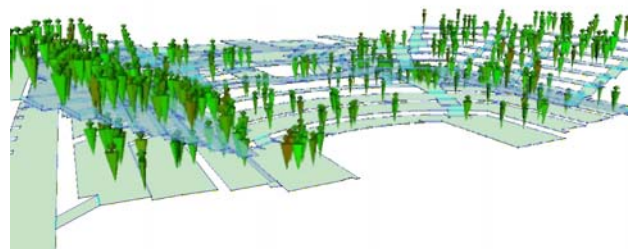
- Lowest density of area
- Highest density of area
- Mean density of area
- Mean routes of agents
- All routes of agents
- Time history of flows through passages, cabins, lifeboats



References

ODIGO was developed to comply with the IMO requirements. As such, ODIGO passes the IMO benchmark test cases.

ODIGO is used by the project department in Chantiers de l'Atlantique (AKER YARDS France). It has been used in simulation studies for Queen Mary II and for other ships for Chantiers de l'Atlantique.



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