

EMERGENCY EVACUATION SIMULATOR

General Description of Functionality

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More than 15 000 Europeans were injured in fire at their workplace in 2000-2005

EES is an interactive 3D client-server multi-user application with high degree of realism that simulates different emergency situations requiring urgent response and (or) evacuation

Emergency Evacuation Simulator (EES)

While many companies have invested heavily in reviewing and upgrading security measures, far less attention is often given to ensuring that proper fire safety processes are in place.

Ironically, while few companies close down following an act of theft or vandalism, recent overseas studies reveal that more than two-thirds of organizations that experience a fire never open their doors again or close down for good not long after trying to re-establish their business.

Emergency situation can catch you anytime and anywhere. Fires, floods, hurricanes, toxic gas releases, explosions, chemical spills threaten our life every day - and it is better to be prepared to face the disaster. Realizing that emergency drills in many cases are very costly and sometimes even impossible to organize (when it is necessary to support undisturbed operation), Program-Ace developed 3D Emergency Evacuation Simulator (EES) that would replace real-life training.

EES is designed exactly to solve the problem of inefficiency of real trainings, its expensiveness and in some cases impossibility of running any training at all. EES is developed for large companies, which resides in multistory office building, for industrial objects like factories and plants, for ships and other special objects where emergency safety is instrumental in the whole security.

It is a common known fact that any training becomes efficient only if the number of repetitions is big enough. So, for many companies, EES provides the only possibility to lead emergency action training, as the functioning of these companies couldn't be stopped even for an hour due to extremely high costs of downtime.

Emergency Evacuation Simulator is specially designed to help people cope with all types of emergency situations, encourage them to think logically and quickly take the deliberate actions that would save their life during actual danger.



Key Target Groups

Administration and employees of

- Large office buildings;
- Plants and factories;
- Ships and other special objects;
- Airports, railway and subway stations;
- Shopping centers;
- Research institutes and scientific laboratories;
- Also governmental and non-governmental organizations responsible for fire safety, rescue teams and police.



The main GOAL of the application is to perform evacuation training among employees in any business and placement

Main purpose

Emergency Evacuation Simulator helps the training participant to effectively memorize the safest and fastest exit routes. Once participant had observed a virtual emergency in a safe situation without panicking, he is likely to repeat the same actions quickly, accurately and automatically in case of real danger. Time spent is crucial when it comes to safety, and any delay may force the person to inhale poisonous fumes, get into the zone of ceiling obstruction or become isolated in burning room. In emergency situation there will be no time to search, examine and contemplate.

Everybody knows that trained person can do the same set of tasks quicker and better than untrained one. So, this person will be able to think not only about his own life but also about saving other peoples' lives and the property of the company. EES exercises these skills too and this is the second level of training.

The third and the highest level of training is a 'cooperation of the trainees' to cope with an emergency situation as a team – a brand new way of emergency response. EES encourages its users to cooperate with each others to achieve better results – there are some tasks and problems that could be resolved only by a group and not by a single person.

Emergency Evacuation Simulator is designed precisely to save time: so that the person in danger would not have to think, but be ready to immediately perform required actions. This software will teach your employees life-saving skills, rather than simply help you to check off a box on your safety training list.

Features of EES

- Realistic disaster development models;
- Different models of emergency: fire, gases and smokes, earthquake, tornado, flood;
- Unlimited list of goals and objectives of the training;
- Arbitrary appointment of the additional scores for accomplishing special objectives and goals (e.g. calling fire rescue team);
- Ability to organize cooperation and perform group actions during the training;
- Unlimited¹ number of concurrent training participants;
- Voice communication between the trainees;
- Active indicators of health;
- Ability to use different objects during the training (like wet-rags to cover mouth and protect lungs from inhaling smoke);
- Centralized rating system enabling the evaluation of skills improvement for each trainee;
- Personal statistics available right after trainee exits the training session (shows the quantity of people taken out of the building, health condition, time, different objects usage and the overall scores gained);
- Full statistics stored in the application database. It is always available for administrator and can be reviewed anytime after the training.

¹ See 'Product Delivery' section.

Advantages of the EES

Executive's view

EES grants top managers many valuable advantages. Among them you will discover that application :

- Saves lives of employees in case of emergency events;
- Improves emergency response skills of the personnel;
- Reduces the risk of accidents during evacuation;
- Provides the possibility to train people any time it is convenient avoiding the necessity to close the office;
- Reduces the expenses required to arrange the evacuation training in real life;
- Reduces the risk of property damage and the loss of confidential information caused by disaster;
- Allows to hold training in separate groups of employees replacing the rest of the staff with robots;
- Gives the opportunity to emulate random visitors;
- Provides the possibility to run the training as many times as required in order to polish evacuation skills if something does not work out as desired from the first time;
- Evaluate the progress of your organisation's evacuation skills by comparing the overall ratings of several trainings held over certain period;
- Tune the organization's Emergency Action Plan (EAP).

Staff's view

Your personnel will find out through the use of EES that they:

- Will be able to leave the dangerous environment quickly and safely avoiding panic;
- Will freely and easily navigate the whole neighborhood under the conditions of low visibility;
- Will memorize and be able to use all evacuation routes that may lead them out of the building from their working places;
- Will have a clear understanding of their own EAP;
- Know and perform the exact sequence of actions in case of different emergency events.

Security officer's view

Employees who are responsible for the safety of others in case of emergency will be able to:

- Efficiently coordinate human traffic during the evacuation;
- Know about and prevent the accidents that may be caused by unorganized evacuation;
- Understand clearly their responsibilities and EAP;
- Know and perform the exact sequence of actions in case of different emergency situations.

Training process

Training fully imitates events during real-life emergency situation. The typical goal of each participant is to evacuate to the safe place as soon as possible with the least health damage. When trainee goes through smoke, he loses coordination and sight, and therefore needs to be very careful when picking the evacuation route.

Participant has to choose the direction of movement by using the 'Exit Diagram' hanging on the wall of each floor; he should memorize the path and find the exit.

Trainee will face different dangerous obstacles on his way like fire, smoke, obstruction, etc. He has a possibility to rescue other people and use different objects on his way (like alarm system, telephones, boiler, etc.). Also participants can cooperate and act as a group.

Before a training starts, administrator chooses whether to teach participants or test their skills. In 'practice-mode' there are different hints and help messages for the participant while playing (eg. 'Objectives', 'Voice hints', 'Usable object highlights', 'Timer'). 'Test-mode' has no help information for the player and he/she must react on his/her own.

Extra features

Generating Action Video

Sometimes objectives assigned to a participant of the training are too complicated to be understood after simple reading the description. In this case a third-person presentation video can be created to explain the desired actions to the participant. Video is rendered as standard avi-file and could be shared among the participants or be treated in any other way.

Besides rendering video files EES has built in tools to replay trainees' log-files. Administrator observes user's actions in '3D-mode' (first person view) and in '2D-mode' (schematic view on the floor plan). This feature is useful for post-training analysis, as it allow revealing details and nuances of the situation.

Secure building plans

Sometimes two or more organisations that occupy the same building have to train together (eg. 'Achieving more reliable information about escape time of the building'). It is possible to hide floor plans of the company from outsiders for the security reasons. EES allows hiding single interior objects as well (eg. 'safe' or 'server'). It is also possible to close access to the specified area (eg 'development laboratory' or 'server room'). Unauthorized persons can't see hidden areas and objects neither during training as a participant, nor during post-training analysis.

Control of the Training Process

Each training is supposed to have its coordinator – a person who will supervise the whole process; if something goes wrong coordinator shall interfere and help trainees.

Training coordinator will have extra rights, such as:

- to see the status of all training participants;
- to see dynamic statistics for all trainees;
- to kick/hide participant(s) and bot(s);
- to follow any participant using 'God's Eye';
- to send text message to participant(s);
- to send voice message to participant(s);
- to speed up/slow down/pause/stop/restart the training;
- to allow/block voice communication between participants;

- to move freely around the whole building, even walk through the walls and ceilings, if necessary;
- to change states of any of the environment objects;
- to use any available in the virtual environment phone.

Data management and Analysis

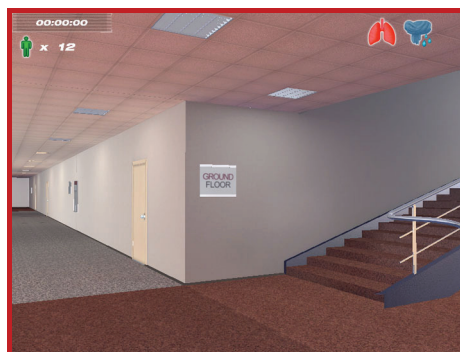
EES has its own Web-server to manage information flow among its users. It allows:

- file management (eg. *'Loading and storing building files', 'Loading and storing exercise files'*);
- user management (eg. *'Registration of the users and granting of the rights', 'Configuring user avatars and 3D models, also initial parameters of the users'*);
- training arrangement (eg. *'Sending notifications to the users about future training'*);
- training analysis (eg. *'Decomposition of the .log files of the training and storing data in Database'*);
- data analysis. (eg. *'Calculate user rating and dynamic in time comparatively with others', 'Make report of the training and publish it'*);
- data management (eg. *'Archiving', 'Deleting'*).

Internal phone calls

EES allows voice communication of users by using microphone and headphones. If the distance in virtual environment between two participants is close enough they can hear each other voices. Otherwise they may use phones. Phones, as in real life, allow speaking through long distance.

Phones allow as well communicating with persons who are not actually in the virtual environment (eg. '911 service', 'CEO') but training rules require that somebody inform them. 'EES phone' makes it possible for 'outsiders of the training' to send (and receive) voice message into the training.



Trainee's appearance

Each person is unique, so it would be wrong that everybody has the same appearance in the virtual environment. That's why EES encourages its users to personalize avatar's appearance and characteristics. Users can change:

- Gender;
- Height;
- Weight;
- Skin color;
- Age;
- Clothes.

Product delivery and costs

EES is a complex of several software modules. Different combinations of these modules allow satisfying all the variety of customers needs. The whole list of EES modules is the following:

- Client Part – stand alone application that runs on the trainees' PC's and is connected to EES server via LAN or Internet, thus, allowing person to take part in the training. It shows on trainee's display dynamic 3D content of the current training; allows him to move around the virtual environment and perform different actions, like launching fire alarm or talking with other participants. This module makes it possible for employees to train without leaving their working place.
- Building Administrator Console – this module is designed for granting and revoking user rights thus allowing/banning usage of the modules by them.
- Training Administrator Console – is a module designated for control of the training process. Administrator console helps instructor to communicate with different participants during the training and help them when needed. With the help of this module Administrator can also put additional obstacles on trainees' way right during the drill.
- Application Server – stand alone application that runs on the dedicated PC and delivers training data to client computers. This module allows multi-user training process.
- Voice Server – complementary to the Application Server module that allows voice communication of the trainees.
- Web Server – important module of the EES-complex responsible for data management and analysis, trainee's configuration and granting/revoking rights to the users.
- Database – stores all the information, about virtual environment, scenarios, participants and its properties etc. EES database is built on the existing database management systems – DBMS - (eg. 'MySQL'). The choice of DBMS depends on the peculiarity of the customer, his wishes and abilities.

To start with, we offer some 'packs' that depends on the number of concurrent participants:

Modules		Pack				
		50	100	150	200	250
Client Part	Applications	free	free	free	free	free
Building Administrator Console	Applications	1	1	1	1	1
Training Administrator Console	Applications	1	2	3	4	5
Voice Server	Applications	1	1	1	1	1
Application Server	Applications	1	1	1	1	1
	Number of concurrent trainings	1	2	3	4	5
	Total concurrent participants for all processes	50	100	150	200	250
Database Server	Applications	1	1	1	1	1
Web Server	Applications	1	1	1	1	1
Price¹ (USD, thousands)		80	125	150	175	200

Information about packs for bigger numbers of concurrent users available upon request².

¹ Doesn't include purchase of Database Management System.

² See 'Contacts' section.

There are additional upgrades available on existing packs:

Upgrade's name	Units	Price (USD)
Building Administrator Console	Installation	500
Training Administrator Console	Installation	1 500
Application Server + 5 concurrent users	Patch (once)	5 000
Application Server + 10 concurrent users	Patch (once)	10 000

Any combination of pack and its upgrades composes a '*base EES platform*'. This base platform will be then modified and customized for the customers purposes.

Typical customization includes:

- Reconstruction a virtual environment upon customer's floor plans, and photos;
- Creation a set of scenarios in accordance with customer's training plans and requirements;
- Actualizing database-structure and tuning web-interface;
- Creating a set of reports for analysis and publishing.

A cost of customization fully depends on customer purposes, wishes and peculiarity. Contact us for more information.



System requirements

Application/Voice Server:

Operating System: OC Linux core 2.4 or higher
Processor: Intel/AMD 2 GHz. (2 CPU)
Memory: 4GB RAM
Hard Disk Space: SATA 120 GB,
DVD -R drive
LAN 100/1000 Mb

Database Server:

Operating System: OC Linux
Processor: Intel/AMD 3GHz
Memory: 2-4GB RAM
Hard Disk Space: SATA 250 GB,
DVD -R drive
LAN 100/1000 Mb

Web Server:

Operating System: OC Linux
Processor: Intel/AMD 3GHz
Memory: 2-4GB RAM
Hard Disk Space: SATA 120 GB,
DVD -R drive
LAN 100/1000 Mb

Client Part/Building Administrator Console/Training Administrator Console:

Operating System: Microsoft Windows® 2000/XP/Vista
Processor: 2.0 GHz Pentium 4 or AMD 2000+
Memory: 512 MB RAM
Hard Disk Space: 1.0 GB Free
CD-ROM or DVD drive
Graphics card: GeForce 3 or higher (excluding GeForce 4 MX), with the support of pixel shader 2.0+
ATI Radeon 8500 or higher, 64 MB
Sound: DirectX® 9.0c compatible sound card
Microsoft DirectX® 9.0c (included)



Contacts

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