SERIOUS GAMES 3D FOR THE ENERGY SECTOR

More than 140 Utilities companies worldwide make use of Indra Solutions
**What are the “Serious Games”?

**A “Serious Game”** is a game designed for a primary purpose other than pure entertainment mainly oriented to training. They consist of software applications to convey messages or relevant ideas to the user about different reality aspects while keeping the amusement usually associated to games.

They can be applied to the whole knowledge and training cycle in company environments.

They have been used in industries like Defense, Education, Health Care, Scientific Research, Engineering, Equipment Maintenance, etc., proving to be very effective to motivate, train and educate the users in all those sectors.

E-learning, simulation and videogame techniques are used in their development.

**“Serious Games” in the Energy Sector

Due to their numerous advantages the Serious Games have long been employed in the Energy Sector through the use of training simulators, mainly aimed at training control room operation personnel.

Training of maintenance personnel or field operators in charge of the local operation on the equipment has resulted in so-called “3D Serious Games”. These games make possible an immersive training for the trainees using a detailed 3D representation within a virtual reality environment. These games are classified into the “First Person” category, in which the user can carry out actions requiring a certain degree of skillfulness on a detailed 3D environment and into the “Point and Click” category more focused in Health and Safety practices where the user is able to visualize his location in a simplified version of the industrial facility.
Main applications of Serious Games

- Realistic environments to maximize training impact
- Skill improvement in infrequent operations (i.e., emergency shutdowns or accident scenarios)
- Evaluation of operation procedures and evaluation of operators in the application of those procedures
- Facility evacuation rehearsal in emergency situations
- Decrease in occupational hazard

POTENTIAL APPLICATIONS OF SERIOUS GAMES 3D

- Training in infrequent or dangerous operations
- Simulation of maintenance operations in high-radiation areas in nuclear facilities
- Connected to training simulators they enable jointly training the shift personnel thus improving coordination and communications between control room and field operators

ADVANTAGES OF SERIOUS GAMES 3D

- Possibility of being integrated in corporate training platforms (e-learning), enabling the specialists to design and follow-up training sessions.
- 3D modeling with a varying degree of physical fidelity depending on the customer’s needs.
- Training in an immersive environment with freedom of movement and action simulation

SERIOUS GAMES 3D FEATURES

- Training and learning through the combination of different skills
- Real-world scenario simulation for a better knowledge, training and improvement
- Self-training process implementation
- Certification and evaluation processes
- Support and reinforcement of task execution
Use cases examples

**Conventional Power Generation**
- Environment for field personnel orientation and equipment location in power generation facilities.
- Local system, equipment and component operation: actions to shutdown rotative equipment (pumps, compressors, mills, etc.), valve operations, visual inspections, etc.

**Renewable Power Generation**
- Equipment and component maintenance (wind turbines, solar panels, etc.).
- Local equipment operations, electrical or other.

**Transmission and Distribution**
- Substation isolator operation.
- Substation switch operation.
- Operation sequences for equipment lockout and re-activation.

**Oil&Gas**
- Environment for field personnel orientation and equipment location in upstream and downstream facilities.
- Maintenance and operations on local equipment in wells, platforms, refineries, compressor stations, etc.

**BENEFITS OF SERIOUS GAMES**

- **Improves the understanding** of job procedures and environment.
- **Guarantees the efficiency** of the training cycle, minimizing the trainer factor risk.
- **Allows self-training**. guarantees content reuse and homogeneization.
- **LOW development costs with a high return**.
- **Supports the follow-up** of training activities with the user activity reports.

In an immersive environment the user gets involved.

- Allows a detailed knowledge of work environments without being physically present.
- Organized and dynamic trainings aimed at objectives, contents and professional competences.
- Provides motivation, education and training in a amusing and supportive environment.
Indra’s experience

As a result of the collaboration between those two areas, Indra is able to develop a full spectrum of Serious Games 3D for different activities in the Electrical (Generation, Transmission and Distribution) and Oil&Gas Sectors (Upstream, Midstream and Downstream).

Indra’s experience, confirmed by international studies, shows that the training based on Serious Games 3D enables the reduction of time and cost of new entrants in a factor between 30 and 40%. Additionally, a better training for field personnel means a reduction in start-up time after an outage that can go beyond 10%. This also means that the estimated ROI for this investment is about 1 year.

Indra’s collaboration in a project like this (from its conception to its deployment) guarantees a successful implementation according to the needs of each company.
Indra reserves the right of changing these specifications without noticing in advance.

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