Partner search – Offered Competency

Date (23-03-2015)

- **(*) Relevant topic in work programme**

- DRS-01-2015,
- DRS-03-2015,
- DRS-09-2015
- DRS-10-2015,
- DRS-12-2015,
- DRS-15-2015

- **Quick description of your compentcies**

MASA Group, SME, is specialized in the development of solutions based on Artificial Intelligence (AI) technologies for the modelling and simulation of autonomous and adaptive human or operational behaviors.

- **(*) Description of the expertise offered (up to 1000 characters)**

MASA can provide
– A simulation platform for crisis management and evaluation of resilience and safety plans;
– An integration platform for the results of others research activities;
– A realistic stimulation component for external environments or application (crisis cell, operational tools

Including

– Decisional models of human behaviors or operational missions;
– Physical data of actors in security context;
– Urban area models including population, buildings infrastructure, resource networks (water, electricity, gas, …), …

- **Keywords describing the expertise offered (up to 10 words)**

- Human behavior
- Agent-based simulation
- Crisis Management
- Integration platform
- Equipment simulation
- Safety plan evaluation
- Urban model
- Resources network
- First responders missions
- Resilience evaluation

Organisation information

Organisation and country:
MASA Group France

Type of organisation:
□ Enterprise X SME □ Academic □Research institute □ Public Body □ Other: Association
Former participation in FP European projects?
X Yes □ No
Web address: www.masagroup.net

Description of the organisation:

MASA Group is a high-tech SME incorporated in Paris in 1996, spin-off of the bio-computing lab of ENS-Ulm and specialized in the **development of solutions based on Artificial Intelligence (AI) technologies for the modelling and simulation of autonomous and adaptive decisional behaviors**. Currently, MASA develops two products:

- MASA SWORD, an aggregated constructive **simulation** for **training and analysis in Defense and Security domains**, integrating automated entities;

- MASA LIFE, **a cross-cutting AI-platform** for the design and execution of decisional process.

Check this video : https://www.youtube.com/watch?v=2fzowtv_MU4

MASA SWORD uses an **agent-based approach** to simulate entities which evolve and dynamically **adapt their behaviors** to the environment. Each simulated entity uses its own decisional process to execute credible behaviors. These entities are able to take into account the current situation and its evolution, including changes in the environment, interaction with other entities and their own capabilities and internal states.

Check this video : https://www.youtube.com/watch?v=U9WZvBqbHGY

Check this video : https://www.youtube.com/watch?v=4UcbeSBup-o

One of the most important references of MASA Group is the **SCIPIO** project, the new command post training system for the French Army brigade and division-levels, co-developed with THALES. SCIPIO is based on SWORD to simulate the behaviors of all the military units deployed on the terrain, the population and civil actors, and the infrastructure.

Check this video : https://www.youtube.com/watch?v=Mg13u6OoqrI

Moreover the simulation SWORD has been used in **several projects to develop the situation or to stimulate external environment** or application (crisis cell, operational tools…) according to given scenarios. The simulation can be also a solution to **integrate and visualize external data** (e.g. resulting from external numerical simulations), to assess and render the impact of an event (natural disaster, terrorist attack…) on the environment and on the simulated entities. For example, we can mention the project CASAVA (ANR-RiskNat 2009) in which MASA develops with SWORD various complete scenarios in order to simulate the effects and the impact of a volcanic eruption in Guadeloupe, on the environment (physical and logistics infrastructures) and on the population. This project helped to **raise awareness among the security actors** on the difficulties to put safety plans in place in this critical context.

Check this video : https://www.youtube.com/watch?v=1Hkr9sVyyyc

MASA participated in the CRIMSON project (PASR-2004-011500) on **urban crisis management training** using virtual reality and simulation, where MASA developed the **behavioral simulation** module for **urban traffic and first-responder units** based on MASA SWORD. Last three years, MASA was participate in the IMOSHION project (FP7-SME-2008-2) on safety and health improvement in European SMEs through simulation and virtual reality tools, and was responsible for the development of a workplace simulation for **experimenting and training on occupational safety and health issues**.

Concerning French national projects, MASA participated in the project DESCARTES (FUI 2008), which results in an operational prototype of **Emergency Management Information System** including a suite of tools for decision making with virtual, constructive and augmented reality solutions. In similar security context, MASA was the coordinator of the project TARANIS (ANR 2007) to provide a training platform for **crisis management** including solutions to build, simulate and visualize crisis complex scenarios. This platform is always used by the end-user involved in the project for his training program (La CODAH). These projects used the SWORD simulation.

In 2014, SWORD has been used by the parisian firefighter and by the french electricity company ErDF for the simulation of centennial flood in order to **evaluate the safety plans**.

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