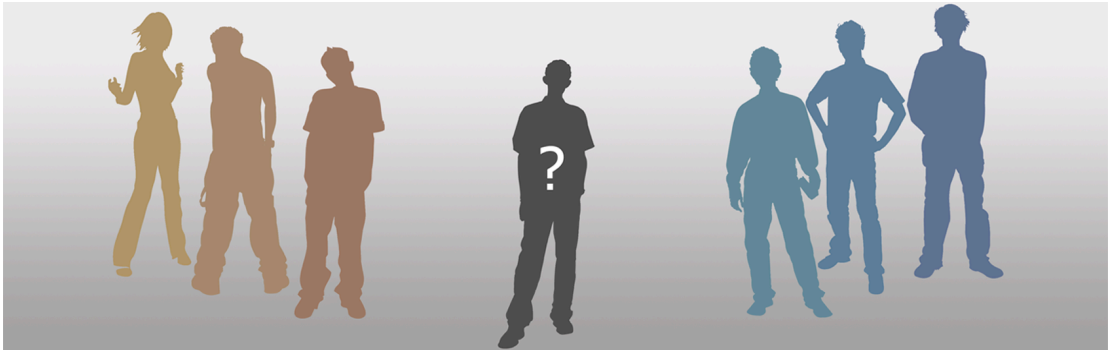
INESC-ID
**Instituto de Engenharia de Sistemas e Computadores Investigação e Desenvolvimento em Lisboa**

Rua Alves Redol, 9
1000-029 Lisboa Portugal
Tel. +351.213100300
Fax: +351.213145843
Email: info@inesc-id.pt

# Intelligent Agents and Synthetic Characters Group
# INVITE




## Social Identity, Social Dilemma and Anticipation.

To be perceived as believable and to perform as expected in complex social situations with different social groups, agents should have the ability to take into account social identity, anticipate others and behave rationally.

**Believability.** Performing in complex social situations is a challenge for intelligent autonomous agents. A social situation implies the presence of other agents and is influenced by the characteristics of the society where the agents are situated; this includes its norms and values, the common interests and goals, its members and its social structure.
In order to be believable, agents need to be socially aware and get a good understanding of the social situation, as it defines their context of action and interaction. To do so we propose that agents should not only take into account social bias, as found in social identity theory, but also individual rationality in their decision making. Finally, in order to achieve social intelligence, it is important for agents to be able to anticipate and take others in consideration. It is important to establish beliefs about the personality, intentions, plans and strategies of others. These will support predictions of behaviour of others that allow agents to adapt their own behaviour and cope better with the social situation.

**Social Identity** is part of an individual's perception of a social situation. It is the identity ascribed with basis on the perception of membership of social groups and the attachment to that membership. It implies the categorization of the agents (including the self) in terms of the belongingness to social groups. Thus, apart from all individual characteristics that build a personal identity each agent should have a social identity comprised of all social groups they belong to. Social identity often leads to a social bias in decision-making, especially in situations where it is more salient. This social bias influences the collaboration attitudes of the agents and the way they deal with their social commitments.

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# INVITE - social Identity and partNership in VIrTual Environments

**Social Dilemma** is a situation in which individual rationality can be at conflict with social rationality. Individual rationality is a concept commonly used in game theory and economics, which explains and predicts human behaviour in terms of the attempts of an individual to maximize his expected utility, that is to say, the expected satisfaction according to his own particular preferences. Conversely, social rationality measures rationality exerted in the name of the whole group of individuals.
Because social dilemmas are scenarios of conflict between individual and social rationality, they are suitable to analyse the behaviour and decision processes of real persons as well of socially aware artificial intelligent agents.

**Anticipation** is the process of inferring future world states. By explicitly taking into account predicted future world states in the decision process agents are able to not only make better decisions but also more believable ones. This is particularly important in social situations where the actions of a participant influence others. Also, knowledge about a particular participant, such as its personality and social identity can be exploited for more accurate predictions about its intentions, goals and plans.

**Scenario**. To study the above we propose a multi-player game that takes place in a 3D environment where both humans and virtual agents participate. After the story introduction, players begin the game after their plane crashed on a deserted island. Since there is an active volcano at the centre of the island, they need to search for wood in order to build a raft and escape. As such, everyone agrees to collect wood on a daily basis so that the raft may be built. However, as each player finds out when exploring the island alone, gems can also be found scattered all over the island. The passengers are then faced with the dilemma of either helping everyone by collecting wood or gathering gems and thus become rich when they are saved. If everyone collects mainly gems then the raft will not be built in time and everyone will die when the volcano erupts. Although this description explains the overall game, several variations are to be considered in order to study their impact on the behaviour of players.

INVITE

INVITE project is a research project on the themes of multimedia, artificial intelligence and games. The main topic explored is the development of artificial intelligence mechanisms to create artificial players (autonomous agents) that can perform well in complex social situations, such as social dilemmas, provided in games and virtual environments. INVITE is financed by the UTAustin – Portugal cooperation agreement (ref. UTA-Est/MAI/0008/2009).