In this section, we expose the results obtained for the pricing model.

At the launch of the project, we wanted to calculate the price of the service offered by the grid as a standard service. In this case, the theory teaches us that the pricing of a service should be based on the three following components: the cost structure, the competition and the perceived value by its users. This is the famous tripod presented by Lovelock. Recently, a new method has been implemented in different fields (see e.g. references [3]-[5]) and we intended to apply this method to our grid. We also envisaged developing this theory in order to take into account the fact that users are selfish. This would have called to game theory approaches.

However, our project involves only non-profit institutions. For non-profit institutions, competition and cost structure aren't the most important components. Furthermore, contrary to most services, the quality of a service offered by a grid is stochastic. This stochasticity, which describes the load of the grid, is even the core of the model. We therefore decided to develop a new model in order to describe specifically the services quality of a grid of computers. To sum up, the new model takes into account the stochasticity but not the cost structure and the competitions. This model is based on a Markov Decision Process (MDP).

Using this new paradigm, we have developed a first model, where the service is segmented according to the priority level. Last year, we presented this model at the IEEE International Conference on Service Operations and Logistics, and Informatics, in Chicago and an article was published in the proceedings (see Ref. [2]). An extension of this preliminary paper has been published recently in the Journal of Service Science and Management (see Ref. [1]). However, managing different priority in a decentralized grid is not an easy task. It is more efficient to segment the service according to the quality of the computers. We are on the way of implementing this second model. When the definitive results will be available, we intend to write an article.

In order to take into account the selfish behavior of each user, we incorporated in our MDP model additional constraints. However, this method is only an approximation. To perfectly describe this behavior, we should incorporate in the model game theory. However, this would lead to big difficulties as we discovered that the equilibrium may not be unique.

To summarize, the model we intended to use is not adapted for our grid. We had to develop a new paradigm using MDP. A first model using this new paradigm has been built. This first model segment the service according to the priority level. We currently develop a second model using the same paradigm and where the service is segmented according to the quality of the computers. We abandoned the game theoretical approach as it leads to serious issues (the equilibrium may not be unique).

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[5] E. Fragnière, F. Moresino and T. Visentini, *"What is it worth to you?": Shadow pricing in the holiday business,* **Proceedings of the INFORMS International Conference on Service Science**, 2009.