QSMSR Principal Model

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**Introduction**

The relationship between architecture and requirements of a system to be is neither clear nor understandable, stakeholders may have contradictory goals nor expectations, non-functional requirements are tough to be mapped to an architectural entity, etc Chung et al. (2000) [1].  
Software architecture requirements engineering are well-known fields of research, education and practice in the software engineering society.

Because of the significant progress on these two fronts, we still need the solid basis, technique and tools to support the synergism achievement of architectural objectives within the context of complex stakeholder associations.  
The basic concepts of security in computing, and some characteristics of agents and multi-agent systems that introduce new threats and ways to attack. After this, some models and architectures proposed in the literature are
presented and analyzed Cavalcante. R, (2011) [2].

These requirements are often vague, unfinished, incompatible, and usually expressed unceremoniously. By contrast, requirement activities focus on the totality, reliability and confirmation of the requirements. Early stage requirements engineering activities have objectives and suppositions that are different from those of the later stage. Alencar et al, (2001) [3].

The QSMSR Framework emphasizes the organizational environment and helps to reduce the gap among Multi Agent Systems (MAS) requirement models and architectural models. To eliminate the gap between these two fields its

follow the i* format for doing this basically its gets traditional and modified requirements and then produce the design of that system.

Figure -1 The QSMSR Framework

Figure -2 The QSMSR Process Activities
its consist of two models principal model and qualitative. The principal model gets the requirement and refines the raw requirements into pure requirements. And provide the architecture catalog for qualitative model. In QSMSR model use different architectural styles for the end results .there are some famous architectural styles are structure-in-5 and joint venture style. Both are the famous architectural style.

**Principal Model**

In QSMSR we are focusing on the principal model. The principal model gets the requirements model as the input and than produce architectural catalog. This catalog is further use for much purpose but QSMSR use it for purposing the architectural design of the system. The principal divided into three sub task goal task refinement and role identification and then at the last selection of the architectural selection. These are three main tasks of the principal model of QSMSR model.

**Figure-3 Principal Model**

In the goal refinement firstly we analysis the actors and their role after that we refine these goals by their contribution of the system. In this we check which actor involved which type of role and how he interact with the system for this purpose we use the OR Decomposition, AND Decomposition and contribution. As show in the below figure how a actor contribute to the system. It show how contribute it positively or negatively according to that we select the contribution and refine it. It is root of the sub system.

In the role identification we define the role of the actors of the system. In MAS the scenario is totally different its too much complex to having the role identification. For this there is some specific tasks are followed by the role identification. Tasks are group together and show depends of these to each other’s and similar task are group into one and different task are group in different group. In this we define the roles and define the relation between the roles how roles are interact to each other .in this we check the low level of coupling of the roles. The groups are refining her again as per role and iteration to each other and these are the selected goals that are we accomplish further. The process is processed as further.

The architectural selection has two sub task centrality equivalence and similarity equivalence.

**Figure-5 Architectural selection**

Architectural selection depends on two task centrality equivalence and the similarity equivalence. In first task we find out the centurial actor of the given problem. For this purpose we draw the role interaction graph and for that graph we calculate the in degree and out degrees of our actor and the actor mostly have the in and out degree we consider it as the as our centurial actor. In second we check...
is there any similar actor existed which doing the same task in the system if exist than we eliminate that actor.

**Results and Discussion**

In below figure we have input SR model and shoe the results to refine the figures of our goal we refine our goal and the refine goals are our out put.

In this figure the refinement of goal process by the recursively and used as a input of the system and the results are the roles of the system.

In below figure the roles used as the input and the resultant is the role iteration graph.

In below figure the role integration graph and architecture style is used as the input and the resultant role interaction matrix of architectural style.
Conclusion

The QSMSR principal model gets the requirement model as the input than convert thesees requirement in to sub tasks after that applying correlation on these sub modules. It provides the catalog architecture for the QSMSR Qualitative Model.

References


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