ING

ING is an Innovation Grid transfering knowledge from Central to South Europe.

The Worldwide Large-Hardon-Collider Computing Grid (WLCG) at CERN is a global collaboration of more than 170 computing centers in 40 countries, linking up national and international grid infrastructures; Europe is the biggest provider. Eastern Macedonia and Thrace Institute of Technology (EMT) is one of the computing centers; the biggest in Greece. World wide grid (wwg) is already being described as the successor of www. It would give users access to the computing power of all the machines connected to a network no matter where they are in the world; turning thus desktop computers into supercomputers. ING is a thematic application of this technology.

In a nutshell ING offers a network where experts, facilities and data in this zone will operate within a powerful system that will become day after day more and more cleaver. This is a new generation of networking. It is not only confined to register thematic instruments and apparatuses but it is also looking for creating a communication protocol between them and again a data base with all necessary tools to operate, model, simulate, and validate the experimental results. Moreover the development of an artificial intelligent skin that will be regulated (or educated) in order to compare the results, outline methodologies and theories, process the data in a large scale and virtually manage the network is the hub of this project.

The functioning of ING provides services by combining three levels of processing: a) the system data base (SDB), b) the artificial intelligent layer (AIL), and c) the facilities (FAL: instruments, apparatuses, interfaces, etc). To this end, ING is a super-tool that creates a strong and innovative ecosystem ; Fig.1 illustrates ING.

Let a Product Owner (PO) requires services on nanomaterials. It comes to ING where first AIL asks for a users story; e.g.: As a [PO], I want [nanobubbles] so that [I will accelerate plant growth]. Then it asks for key words. After that AIL is educated by looking inside to SDB and outside to the existing repositories for scientific publications (SPR) and research data (RDR). Once it gathers enough information the virtual scrum master (VSM) pick-up the correct instruments and/or apparatuses and the corresponding personnel for this specific user story (or break it to tickets) and organize an agile scrum sprint. At the end of the run calculations based on certain methods that accompany the involved instruments are conducted. Models and simulations as well as validations and tests are followed. For large data and/or many customers wwg is employed. Then VSM presents the results to the PO. If accepted it uploads them; if not iteration is repeated.
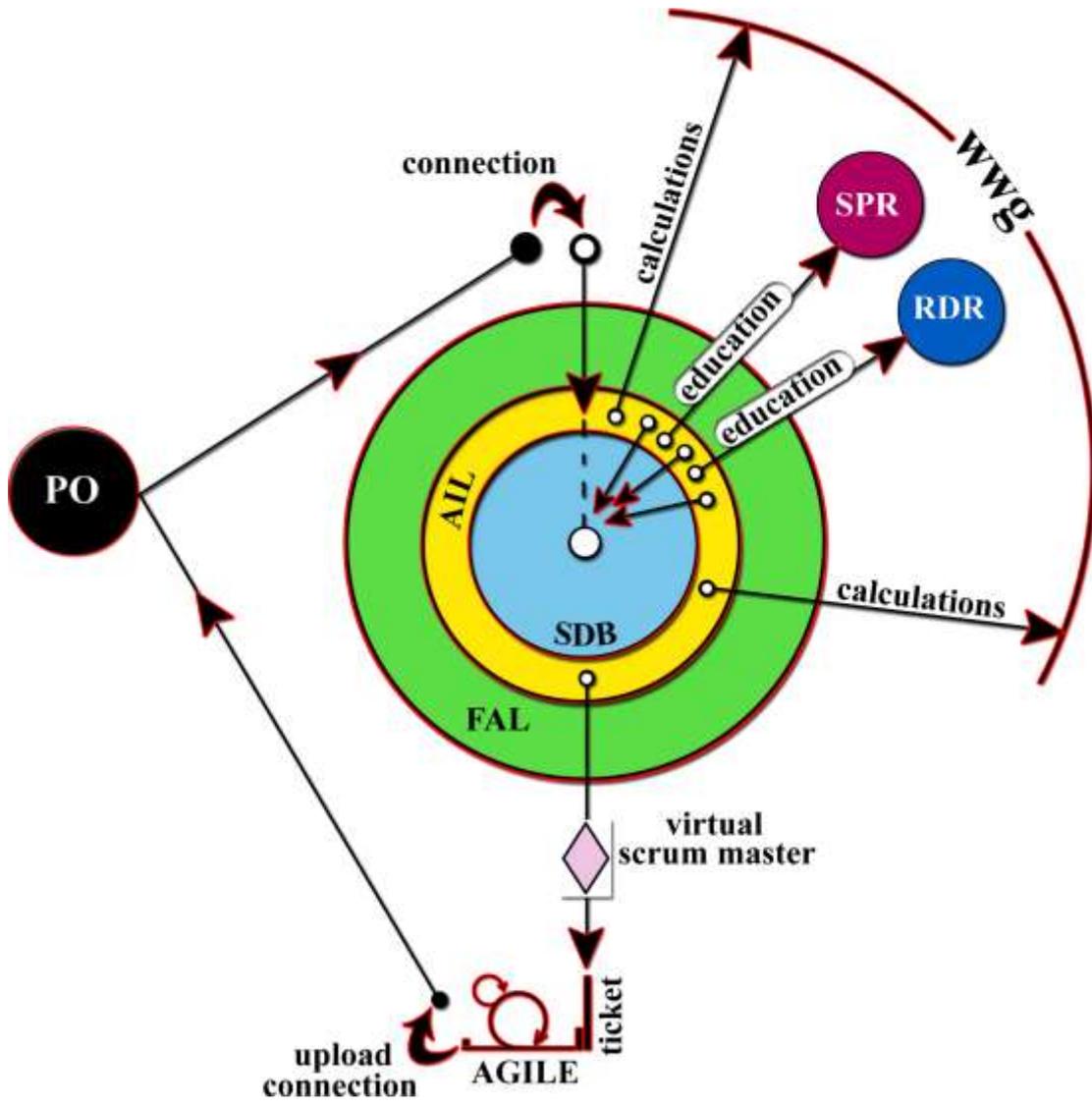
Fig.1 ING