

Community Account Request

Fill the data in to request for a Community Account, you will receive a confirmation email for each step of the process. If not please check your SPAM inbox or contact the helpdesk: fiware-lab-help@lists.fi-ware.org.

- **User Full Name Required**
Your full name as by your ID
Iris Andrea Pantle
- **User Account Email Required**
Insert the email associated to the main responsible for the project
pantle@nuberisim.de
- **Are you already registered in FIWARE Lab? Required**
Confirm that you created a main account for you project in FIWARE Lab. You should be able to register a "basic" account without any issue. In case of problems, the Help Desk will support you in the creation.
Yes - check
No
- **Company Required**
Falquez, Pantle und Pritz GbR
- **Department**
Management
- **Number of developers Required**
How many developers are involved in the project?
3
- **Organization or additional accounts associated to the project**
Please provide accounts of further team members, or the main organization to which all accounts are associated. As defined in the guide, if you provide "tenants id", this will simplify the work of infrastructures.
Falquez, Pantle und Pritz GbR; Carlos Falquez (falquez@nuberisim.de); Balazs Pritz (pritz@nuberisim.de); Iris Pantle (pantle@nuberisim.de).
- **Startup/Project name Required**
NUBERISIM
- **Accelerator Programme name**
Start typing to get a list of possible matches or press down to select.
- **Accelerator submission name**
Help us to find out the name of your submission to the Accelerator Programme
- **Startup/Project Description**

h3. *Nuberisim = Numerical High Performance Simulations for fluid flow and noise prediction as Cloud-based web application*.

h4. *Project*

Fluid flow is noisy, annoying and health critical for people continuously exposed

to it. Examples are aircraft, wind turbines, automobiles, climatization, household devices like hovers or kitchen hoods. For the latter low noise devices are a competitive advantage. For others like wind turbines restrictive noise regulations are in place, particularly when operated close to settlements. Low noise design principles need integration in the design and construction phase of devices as early as possible, in order to reduce costs, failures, and improve energetic impact. This can only be reached by numerical simulations. So far the computational demand of fluid flow simulations coupled directly with acoustical predictions inhibited establishing appropriate and efficient workflows. Particularly, engineering houses (simulation service suppliers) or SMEs require access to appropriate flow and noise prediction software plus high performance computing architecture. In contrast to available solutions the Nuberisim platform is solving both issues: providing specialized software for coupled fluid flow and noise prediction as a web application with intuitive access to a high performance computing infrastructure (provided by computing centers or Cloud).

h4. *Urgent Need of FIWARE Lab and Generic Enablers*

This project is both in need and ideally suited for running on the FIWARE Cloud. The start-up Falquez, Pantle and Pritz GbR (founded in 2014) has developed the Nuberisim platform concept. Nuberisim consists of the software for fluid flow and noise simulation, largely developed at the Karlsruhe Institute of Technology (KIT), and the platform environment. After successful deployment of the prototype (see URL of proof of concept and "Success stories" below in this box), three elements are required, where the FIWARE Cloud and the FIWARE Enablers will leverage significantly development time and time-to-market. The latter is expected to be performed within the next weeks instead of the next half year. The three elements are:

- # Use 3 different Generic Enablers (see box "Additional Comments");
- # Use the FIWARE Lab Cloud for free test accounts for our professional pilot customers;
- # Expand the service drastically at a second stage after testing through professional customers.

The Enablers are needed to integrate efficient 3D visualisation of the simulation data (grids, results), to efficiently render them for the customers and stream them to their browsers. Next to testing the Enablers, the FIWARE Lab Cloud is urgently needed at this moment for offering free test accounts for professional first time customers. Only recently a successful "mass test" with students of the basic Nuberisim functions (login, configuration of simulations, starting parallelized simulations through 30 people at the same time, receiving convergence data streamed plots) has been performed and first pilot customers are currently testing Nuberisim. However, since the prototype is running on AWS instances which need to be kept online for testing, this causes substantial costs per month. The limited resources of the start-up limit heavy customer testing and therefore delay the time-to-market significantly.

h4. *Technology*

The software is a Navier-Stokes solver for compressible Computational Fluid Dynamics coupled with fieldwise (acoustic perturbation equations) and integral (Ffowcs Williams and Hawkings) acoustic prediction. The platform environment consists of web servers, data bases, cluster scheduling and management along with dynamically allocated virtual computing instances. Flow induced noise and its prediction is in comparison to other simulation methods the most challenging in terms of demand of computing resources (mainly CPU power). This demand is met by using external High Performance Computing (HPC) infrastructure as Cloud service.

The Nuberisim prototype is running on the HPC instances of the Amazon Web Services (AWS) and can easily be transferred to FIWARE.

h4. *IP*

The platform was developed by the founders and the IP fully belongs to them. Part of the software was developed freely by the founders and the IP fully belongs to them. Other parts of the software are developed by the founders and third parties within their employment at the KIT. Here the KIT holds the legal user rights. A license agreement between KIT and the founders has been signed in 2015.

h4. *Success Stories*

EXIST founders' fellowship (EXIST-Gründerstipendium) 05/2013-05/2014; April 2014 presentation of first prototype on HannoverMesse as co-presenter of the German Ministry of Economics and Energy (BMWi); February 2015 signing the licence contract with the KIT for the software and becoming official _KIT Spin-Off_; March 2015 presentation of second, strongly improved prototype at HPSC conference; May 2015 "mass test" with 30 students at State University of Cooperative Education Baden-Württemberg in Karlsruhe (Duale Hochschule BW); Ongoing/scheduled tests of the Nuberisim platform by professionals (June/July 2015 ++) from KSB/Bosch/Harman-Becker.

- Preferred FIWARE Lab Node
Please select among the available, your favourite node for resource reservation. Be aware that if you have already things deployed on a node, you should pick that node. You can check status of available nodes in the FIWARE Lab Infographics. We defined as well predefined nodes in support of accelerators, you can check them here.
Spain
- Proof of concept URL
if you have a demo we can look at, please enter the URL here
<https://youtu.be/p5SSD9iAUFPS>
- Number of VMs
please provide the number of VMs your APP will need
3
- total # vCPUs
The total number of vCPUs that your VMs will use (e.g. 1 vCPU per VM x 3 VM = 3 vCPUs). If not information is provided, you will assigned the default quota. Refer to the guide for maximum default resources granted to a community account.
8
- total RAM
How much RAM (in GB) your application need (e.g. 2GB per VM x 3VM = 6GB). If not information is provided, you will assigned the default quota. Refer to the guide for maximum default resources granted to a community account.
16
- total harddisk
How much harddisk will you applicaiton need (in GB). (e.g. 30 GB per VM x 3 VM = 90 GB). If not information is provided, you will assigned the default

quota. Refer to the guide for maximum default resources granted to a community account.

64

- # public IPs
How many public IP would you need optimally (please consider that it's a scarce and expensive resource, and using solutions as proxies, you can mostly use 1). Refer to the guide for maximum default resources granted to a community account.
1
- Object Storage
If you need object storage, how much space do you need (in GB)? be aware that not all nodes have Object Storage service.
1
- Additional comments/requirements/essential questions
e.g. I need 3 regions, I need a vm with very large flavour... ect
Resources

The mentioned resources are for the first stage, i.e. providing test accounts for professional pilot customers. At a later stage, a substantial extension is foreseen.

Generic enablers

We want to include into the Nuberisim platform the following three Generic Enablers:

1) Cloud Rendering

<http://catalogue.fiware.org/enablers/cloud-rendering>

Use: 3D Rendering of simulated flow fields.

2) Data Visualisation - SpagoBI

<http://catalogue.fiware.org/enablers/data-visualisation-spagobi>

Use: Visualization of Simulation 2D data, such as convergence charts.

3) Object Storage GE - FIWARE Implementation

<http://catalogue.fiware.org/enablers/object-storage-ge-fiware-implementation>

Use: Cloud Storage of uploaded project files.

- Name
Iris Pantle
- Email
pantle@nuberisim.de

Close