

INTRODUCCIÓN A LAS ACTIVIDADES DEL INSTITUTO

Elisa Cauhé Martín

Gijón, 29 de abril de 2014



Instituto Universitario de Investigación
**Biocomputación y Física
de Sistemas Complejos**
Universidad Zaragoza



Investigación en el BIFI



- La investigación del BIFI se estructura en varias líneas dentro de las áreas correspondientes, con fuerte colaboración entre ellas.

BIOCHEMISTRY & MCB

Protein folding and molecular design
Flavoenzymes: action mechanisms and biotechnology
Genetic regulation and physiology of cyanobacteria
Stem cells and apoptosis
Studies on microcystin and its technology
Drug delivery

BIOPHYSICS

Protein folding and molecular design
Biomolecular interactions
Glycosyltransferases and hydrolases involved in human disease
Complex systems and networks
Physical modelling of biomolecules
Molecular dynamics and electronic structure
Flavoenzymes: action mechanisms and biotechnology

PHYSICS

Spin Glasses
Physical modelling of biomolecules
Complex systems and networks
Molecular dynamics and electronic structure
Econophysics, nonlinear models and complexity

COMPUTATION

High Performance Computing
Grid & cloud computing
Citizen science
Special purpose computers

Computación en el BIFI

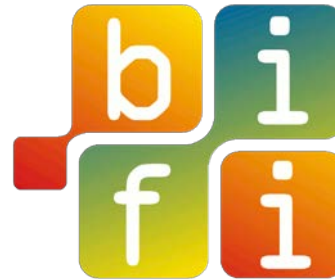


Memoria Compartida

*Red Española Supercomputación
Caesaraugusta
512 PPC, 24TB, 4'5TFLOPS
Memento, 3072 cores, 12TB*

Cluster

*Terminus
815 cores, 3TB*



Ordenadores dedicados

*Janus I , 256 FPGAs, 22TB
Janus II



Grid

*Aragrid, 1000cores, 80TB
Piregrid, 248cores
EGI
EDGI*

Cloud

*OpenStack
500 cores*

Computación voluntaria

*Ibercivis
35000 voluntarios
10000 cores diarios*

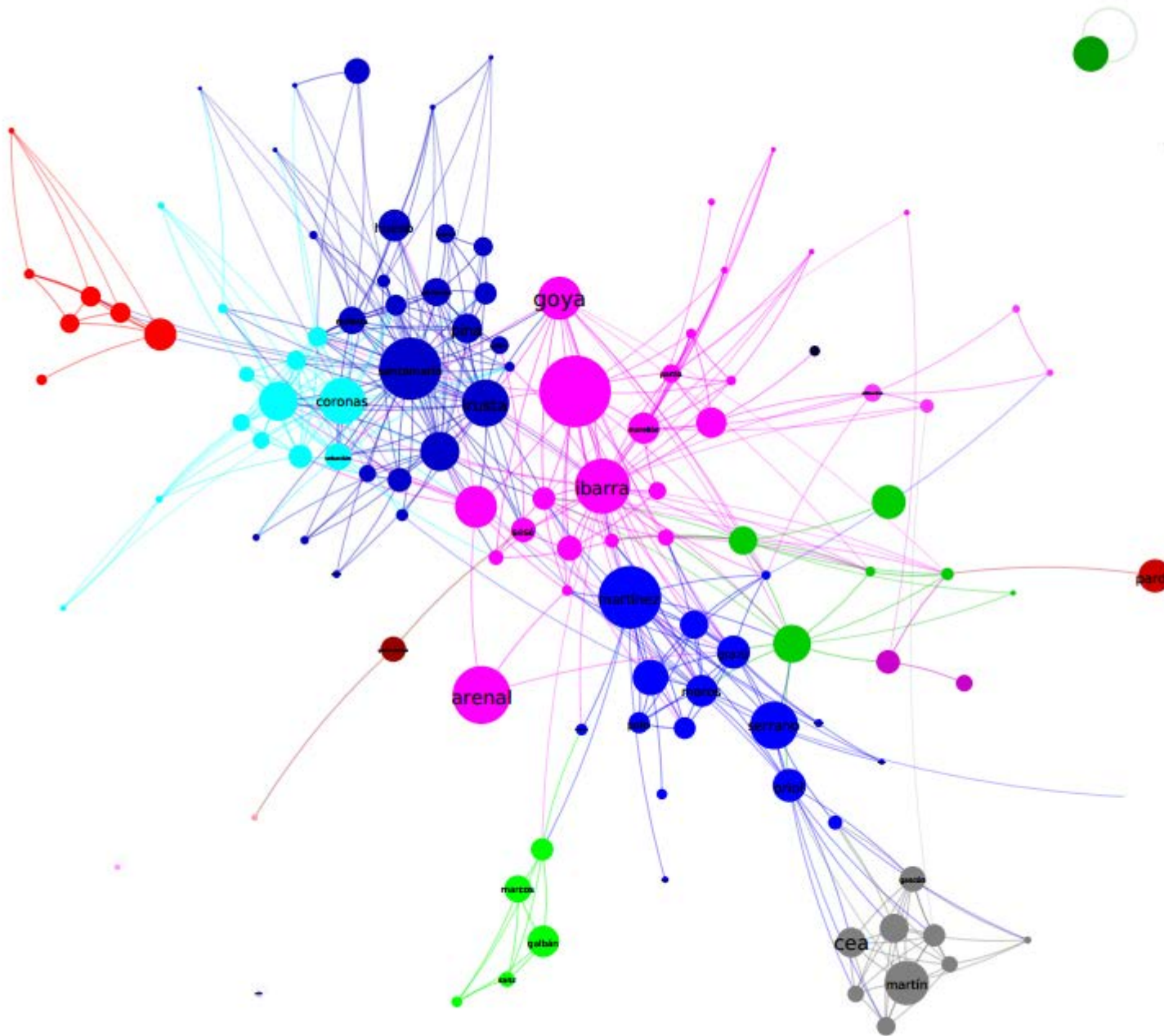
Oferta tecnológica en computación



- Infraestructura
- Visualización 3D y Realidad Aumentada
- Diseño de algoritmos complejos.
- Desarrollo web.
- Análisis de datos. Big data.
 - Spin-off KAMPAL. Estudio y visualización de mapas de investigación.



KAMPAL del INA

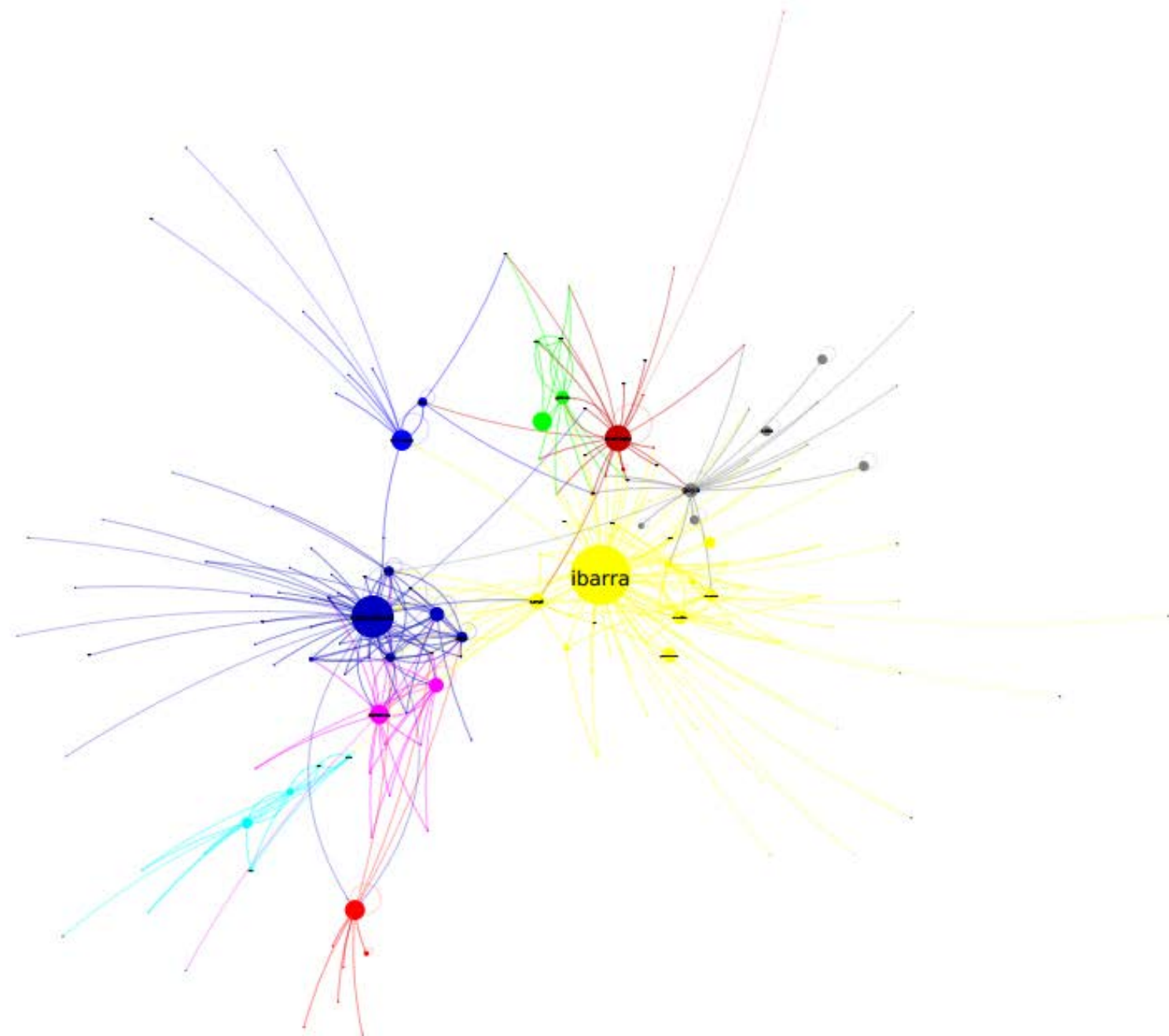


GRUPO: INSTITUTO DE
NANOCIENCIA DE ARAGÓN
(INA)

TIPO DE RED: Artículos por
impacto

COLOR: Automático

KAMPAL del INA

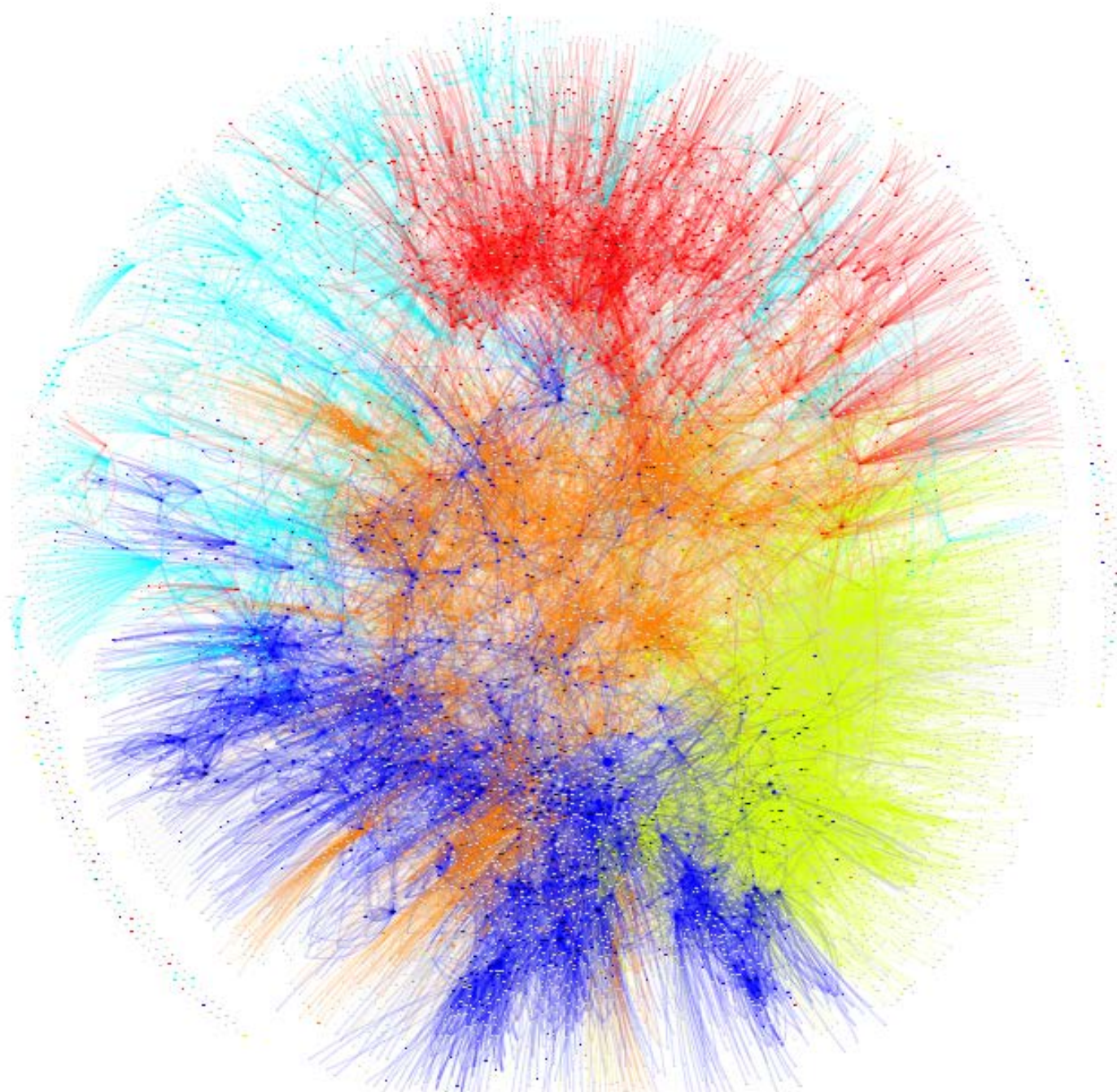


GRUPO: INSTITUTO DE
NANOCIENCIA DE ARAGÓN
(INA)

TIPO DE RED: Fondos de
proyectos

COLOR: Automático

KAMPAL UNIZAR



GRUPO: **Unizar**
TIPO DE RED:
Colaboraciones
COLOR: **Por macroárea**

- SCC-COMPUTING is establishing a strategic collaboration with China in computing
- SCI-BUS creates a generic-purpose gateway technology
- Global Excursion provides young citizens and educators with access to e-Infrastructures across Europe
- SOCIETIC will set the basis of citizen science paradigm
- EGEE-II and EGEE-III deployed a great GRID infrastructure for scientific use
- EGI-InSPIRE, to establish a sustainable European Grid Infrastructure (EGI)
- EDGeS, int.eu.grid, EDGI, DEGISCO are other projects on Grid Technology
- PIREGRID, to promote the use of Grid & Cloud technologies by the companies
- JANUS, special-purpose computer mainly devoted to material science
- CloudSME, cloud simulations closer to manufacturing and engineering SMEs

Gracias por su atención



CloudSME

Cloud based Simulation Platform for Manufacturing and Engineering

Elisa Cauhe

Manu-ket, 29 de abril de 2014 (Gijón)



This Project is funded by the European Union under grant agreement no: 608886





CloudSME details

- * **Work Programme** : FP7-2013-NMP-ICT-FoF - Factories of the Future (FoF)
 - * Challenge 7: ICT for the Enterprise and Manufacturing
- * **Objective addressed** : Objective FoF-ICT-2013.7.1 Application experiments for robotics and simulation
- * **Coordinator Person**: Dr Tamas Kiss (University of Westminster)

Factories of the Future

I4MS



European
Robotics
Challenges

iNTEFIX

LASHARE



*Simulation for
manufacturing & engineering*

Cloudflow

appolo

ff

FORTISSIMO



Background and motivations

- * Simulation solutions are widely used in engineering and manufacturing, but...
- * SMEs in particular face many hurdles to effectively utilise such advanced tools
 - * purchase software licenses of the simulation software
 - * purchase advanced hardware to run the simulations
 - * Require system engineering to setup and operate hardware, operating systems and the simulation software itself
 - * require qualified staff to use the simulation software
- * Cloud computing provides a solution here
 - * characterized by on-demand self-service, internet access, resource pooling, elastic scalability and pay-per-use accounting
 - * cloud infrastructure services can only help to address the issue of the hardware capital expenditure, while the other issues still remain
- * A one-stop-shop for the simulation software service is required to solve all these issues

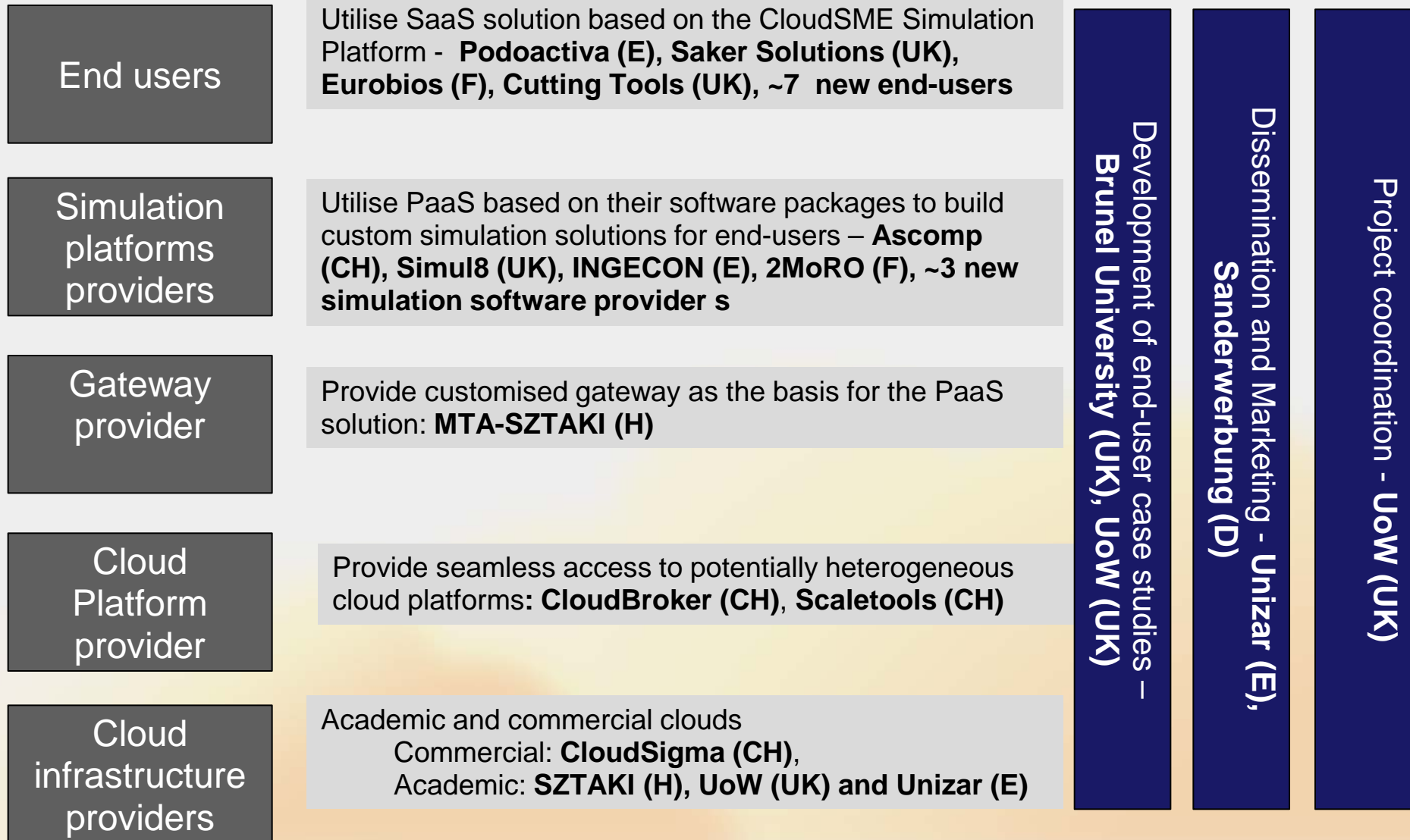


Project objectives

1. Build a simulation platform that allows seamless access to multiple heterogeneous cloud resources and provides a high level of abstraction to users when accessing these resources for simulations in a one-stop-shop solution.
2. Provide a Platform as a Service (PaaS) solution
3. Create a generic simulation platform for engineering and manufacturing.
4. Enable simulation software providers to offer cloud-based SaaS simulation solutions
5. Implement the CloudSME Simulation Platform in a way that is independent from the underlying cloud infrastructure

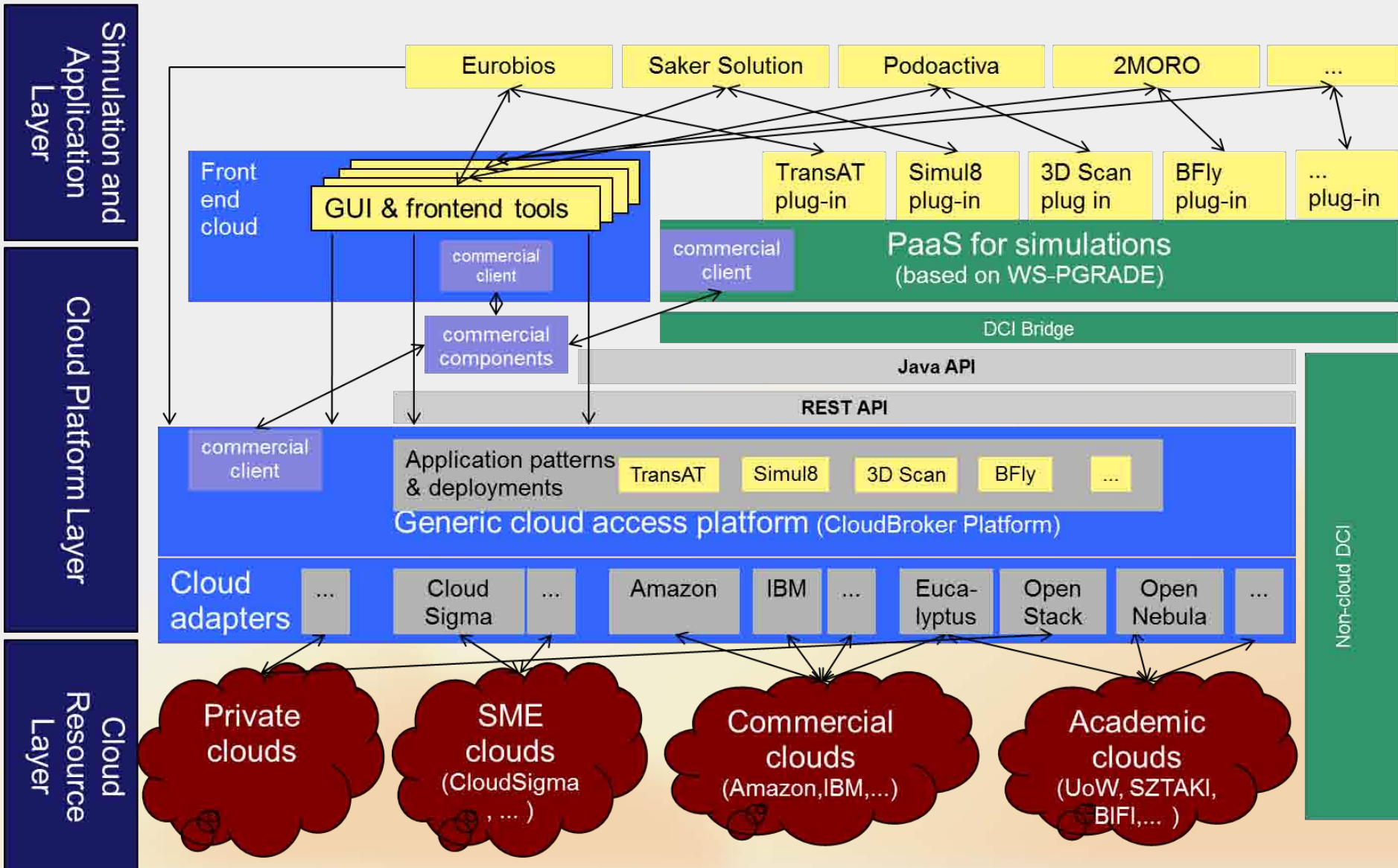


Partnership





The CloudSME Simulation Platform





The CloudSME Simulation Platform II



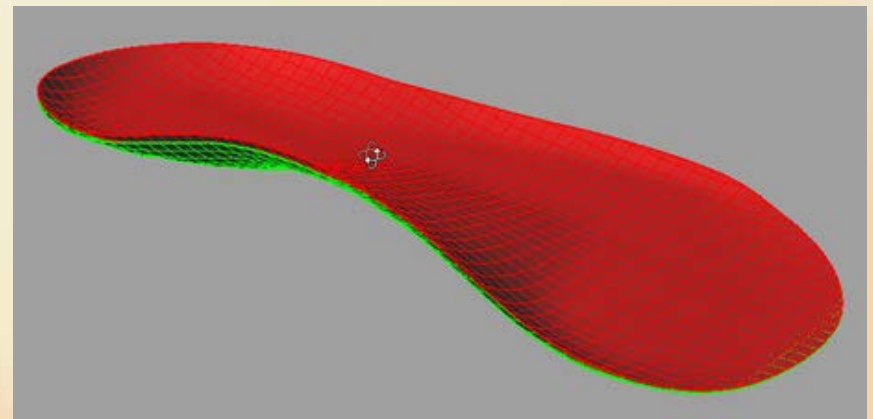
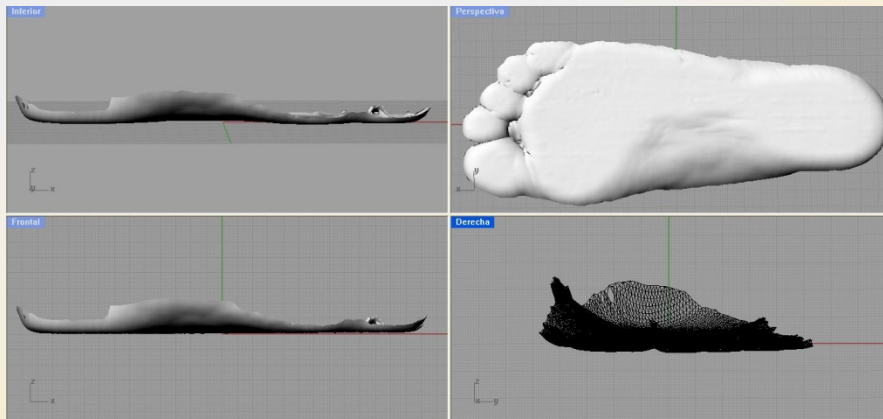


Development of Industrial Cloud-based Simulation Software and Applications

- * Porting simulation software products of current partners to the CloudSME platform
 - * TransAT by Ascomp
 - * Simul8 by Simul8 Corp.
 - * Bfly by 2MoRO
 - * 3D Scan by Ingecon
- * Implementing use-cases of current partners
 - * Environmental fluid mechanics by Eurobios and Ascomp
 - * Discreet event simulation by Saker and Simul8
 - * Aircraft maintenance by 2MoRO
 - * 3D Scan insole design by Podoactiva and Ingecon
 - * Use-case of a newcomer to simulation software - CTOOLS

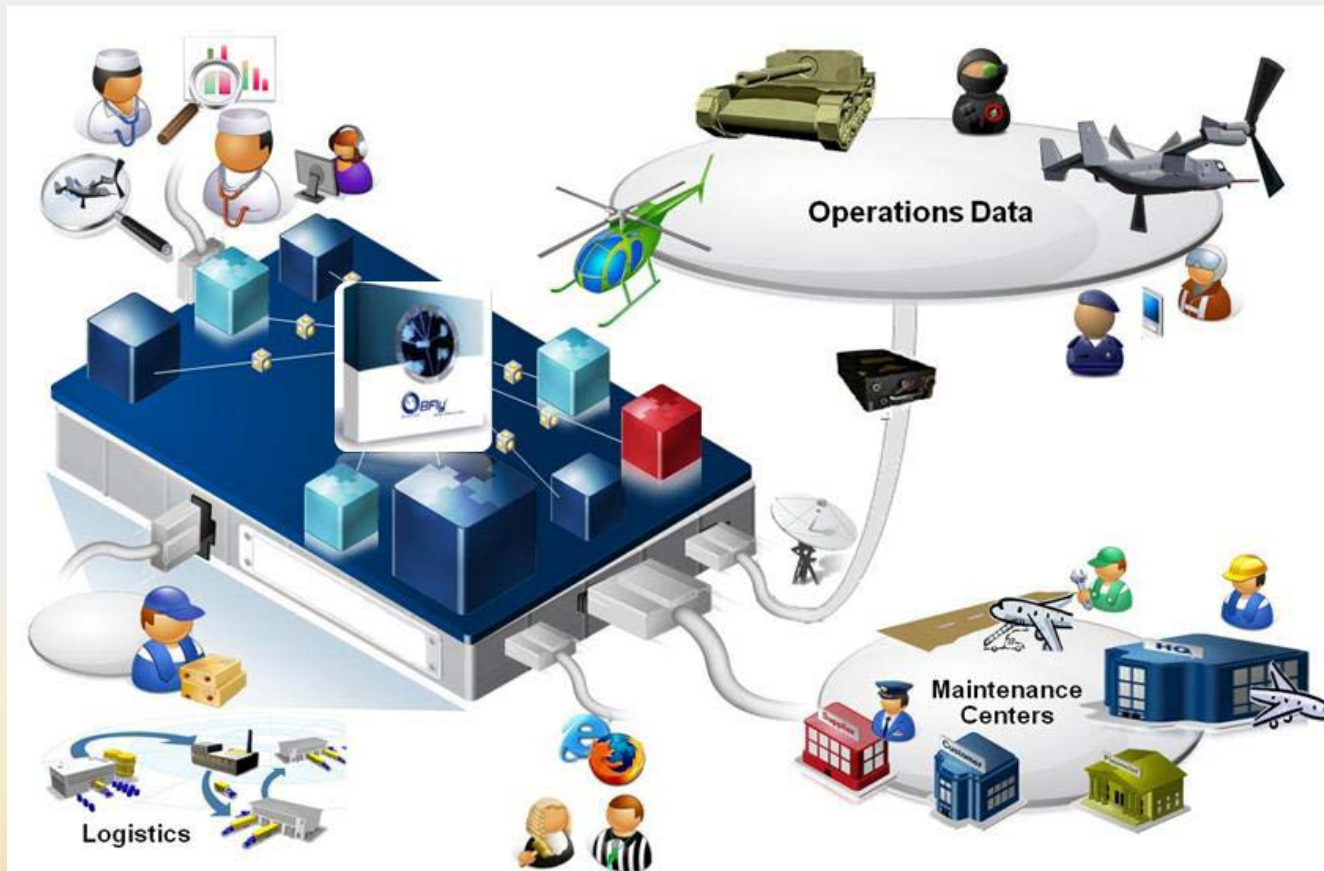


Podoactiva + Ingecon use case



2MORO use case

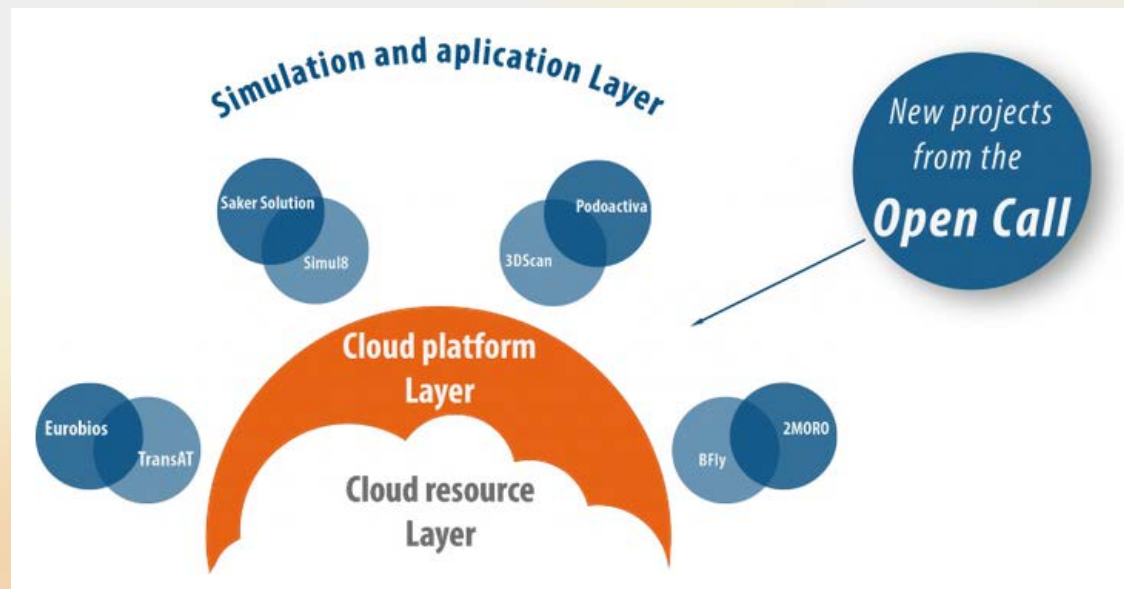
- * Aircrafts maintenance BFLY





Open Call for new partners

- * Deadline: 25th June 2014 (17:00 Brussels time)
- * Submission via email to: opencall@cloudsme.eu
- * Expected duration: 1st January 2015 - 31st December 2015
- * Call budget: 400.000 Euro for 10 new beneficiary companies
Submission Language: English
- * Further information: G.Z.Terstyanszky@westminster.ac.uk





Open Call dates

- * New beneficiaries should be either
 - * an engineering and manufacturing SME needing simulation software to improve efficiency of their activities, and who will use simulation software services supported by CloudSME, or
 - * a consortium incorporating at least one simulation software provider SME and one or more engineering/manufacturing SMEs who will use the provider's simulation software.



Contact

* *Coordinator*

* Dr. Tamas Kiss

Email: T.Kiss@westminster.ac.uk

Phone/Fax: +44 79115000 ext 64526

* *Administrative and Financial Coordinator*

* Prof. Stephen Winter

Email: S.C.Winter@westminster.ac.uk

* *Marketing*

* Andreas Ocklenburg

Email: a.ocklenburg@sanderwerbung.de

Phone: [+49 \(0\) 203 - 99 3 77-64](tel:+49(0)203-99377-64)

URL: <http://www.sanderwerbung.de>



*Solutions for
manufacturing & engineering*

Thank you very much for your attention

elisac@bifi.es

Cloudsme.eu