Does the Cloud provide more science for dollar for the researchers?

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Addressing review comment #6 – "Verify that VENUS-C eases the adaptation".

- Performance

- Error management

- Scalability

- Completeness

- Interoperability

- Learning curve

- Convenience

- Robustness

- Based on Speed-up comparing with local resources
- Clarity of error messages and easy availability of logs
- Performance penalty with the increased number of resources
- Full implementation of the requirements
- Flexibility to switch between different platforms and support of standards
- Easy to learn how to adapt the applications
- Qualitative evaluation of the failure ratios.

1-5 scale: 1-poor, 2- low, 3- medium, 4- good, 5- excellent.

Validation Scores

- Average evaluation was in the interval 4-5 in 81% of the cases
- Interop, Completeness and Learning Curve got the highest scores

	GW	COMPSs	CDMI	Accounting	Avg
Performance	4.50	3.75	3.67	4.40	4.08
Error management	4.00	3.20	4.00	4.00	3.80
Scalability	4.40	4.67	2.00	4.33	3.85
Completeness	4.17	4.60	4.67	4.40	4.46
Interoperability	4.00	4.60	5,00	4.60	4.55
Learning curve	4.17	4.33	4.67	4.60	4.44
Convenience	4.33	4.17	4.00	4.25	4.19
Robustness	4.33	3.67	3.33	4.40	3.93
Average	4.24	4.12	3.92	4.37	4.14

More science for $$$

- Public funding agencies tend to allocate a non negligible part of their grants to provisioning of compute services:
  - Typical HPC users are well served by Surper Computer Centres, Private Grids (HEP LHC) and dedicated computing solutions
  - Everybody else (the long tail of the computational scientific community) ends up buying local clusters and storing data results in Silos
- Faster to deploy than conventional HPC in emerging scientific and business communities
- Distributing, managing and curating data is better served by a virtual, scalable and elastic Cloud infrastructure
- Economy of scale, energy costs and environmental impact are better addressed by Cloud computing
- Virtualisation of computing infrastructures can support funding agencies in developing new funding models:
  - Moving from CAPEX to OPEX
- Leading to more science per tax payer €

Resources

European Cloud Computing Strategy

Vice-President Neelie Kroes, responsible for the Digital Agenda

Three Pillars for Cloud

- *Legal frameworks*
- *Technical and commercial fundamental elements*
- *Development of the cloud market by supporting pilot projects of cloud deployments*

Official opening of the Microsoft Cloud & Interoperability Center, March 2011

Cloud Power

Neelie Kroes on international standardisation & open specifications
"I count here on the further support and commitment of Microsoft and all the other participants."

Microsoft Research Connections

VENUS-C Success Stories

- Interactive computation of fire risk and fire propagation estimation
- Access to burst-scalable cloud compute and storage
- Web-based GIS based on Bing Map

  Wild Fire Demo

- Collaboratorio & its new start-up Green Prefab
- Collaborative platform for the design of ecofriendly & affordable buildings
- Selected by INTESA SAN PAOLO Start-up intitiative; expanding to US
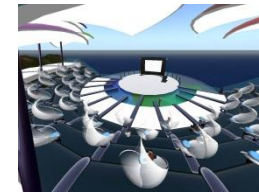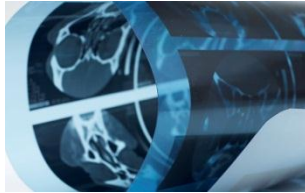
"We feel like pioneers in the right direction to the still untouched gold mine," Furio Barzon

Extending VENUS-C with Pilots & Experiments

Engineering & Science
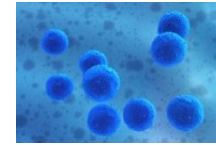
Architecture & Civil
Engineering
Biology

NEW DISCIPLINES

Earth Sciences, Healthcare, Maths, Mechanical Engineering, Physics, Social Media, Education

Start-ups

Computer resources can be scaled as required without committing to large capital purchases, which is critical to the success of our small business. **Molplex UK**

DFRC is part of the EU Flagship project PERSEUS on maritime security. Scaling our platform with VENUS-C will enable us to support future growth in terms of vessels monitored in real time & usability by operators.