

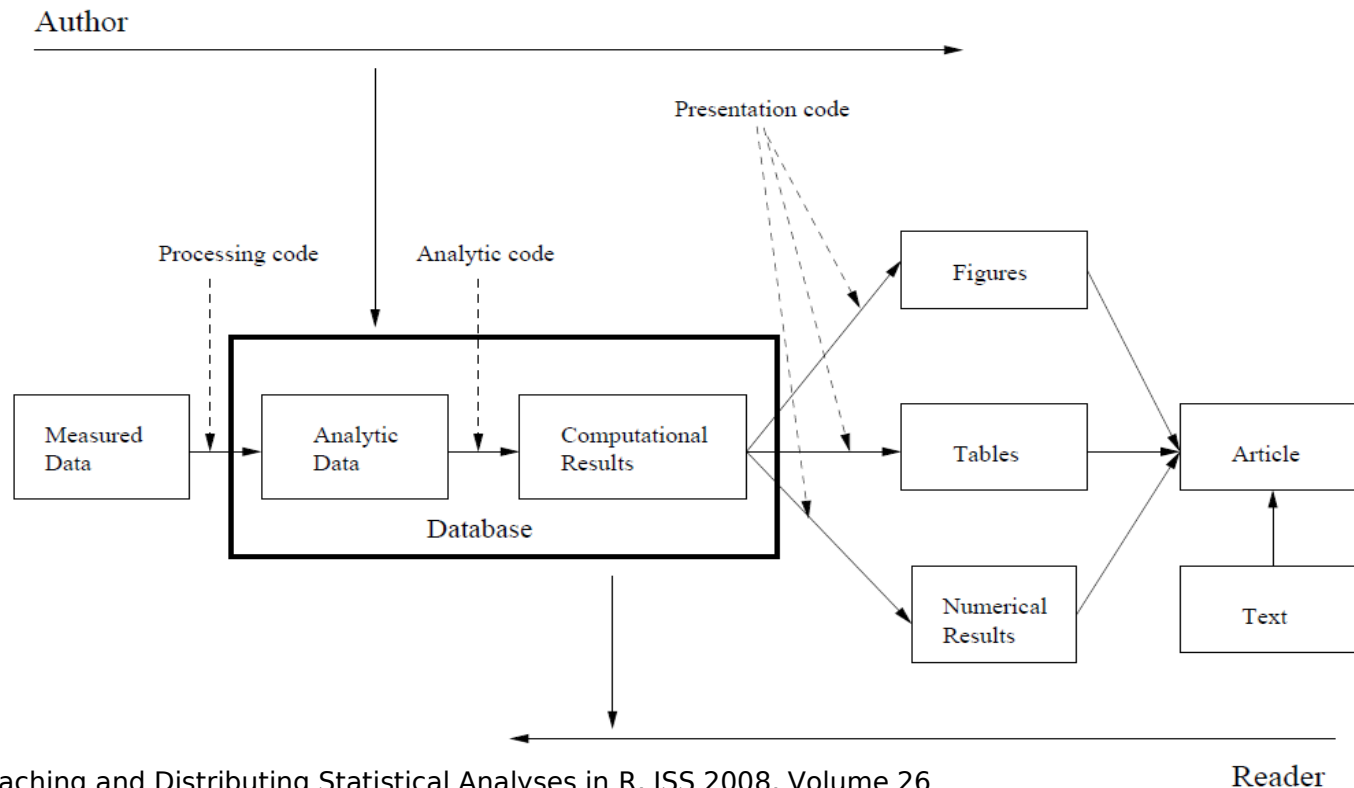
Is Cloud Computing a new way for Reproducible Research?

Group Retreat 2011
4. April – 6. April 2011

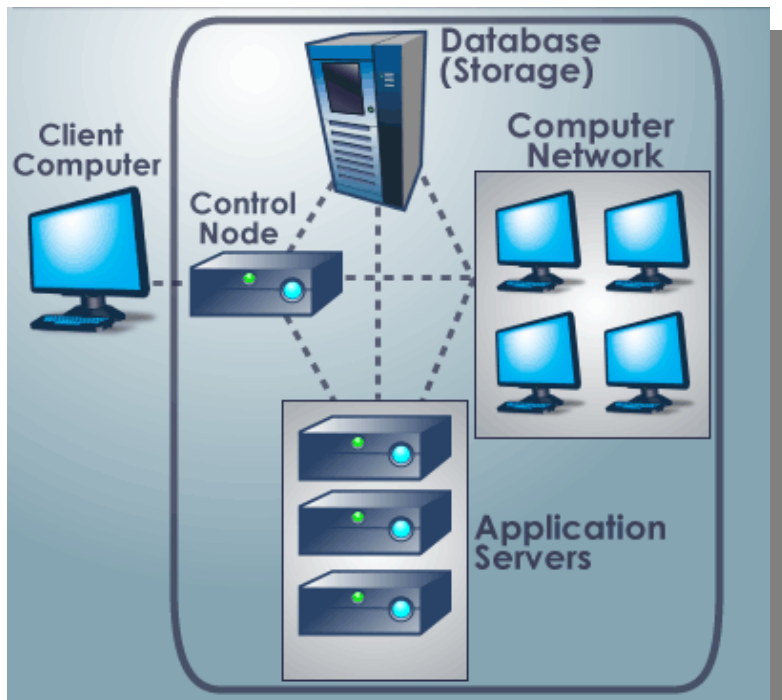
BLSV-Haus BergSee,
Schliersee, Germany



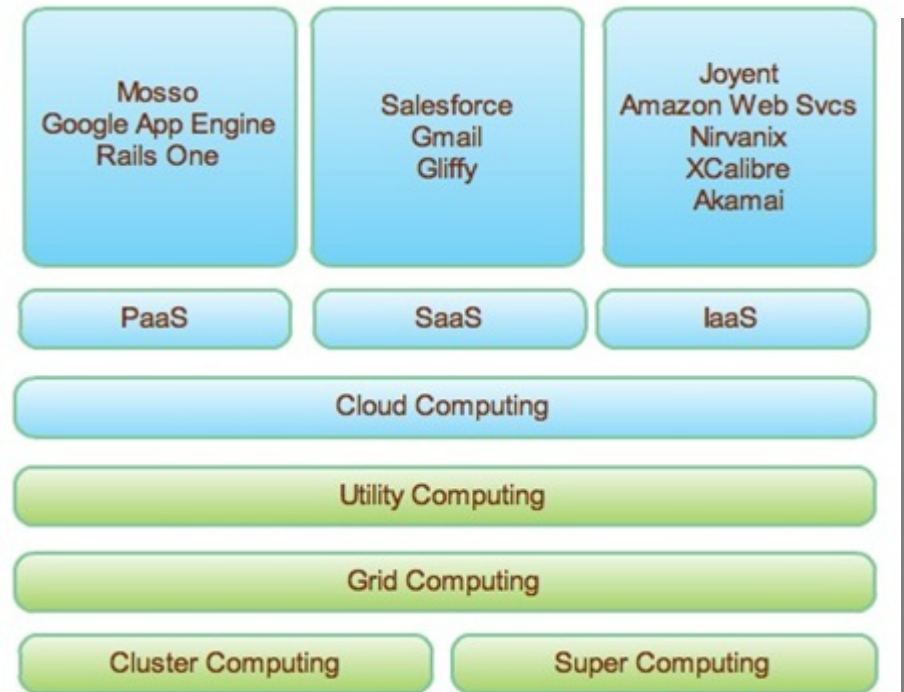
- Jon Claerbout 2000: “*the ultimate product of research is the paper along with the **full** computational environment used to produce the results in the paper such as the code or data*”



- Access and request for access via the Internet
- Web services manage a pool of computing resources
- User cannot see the physical location and organization

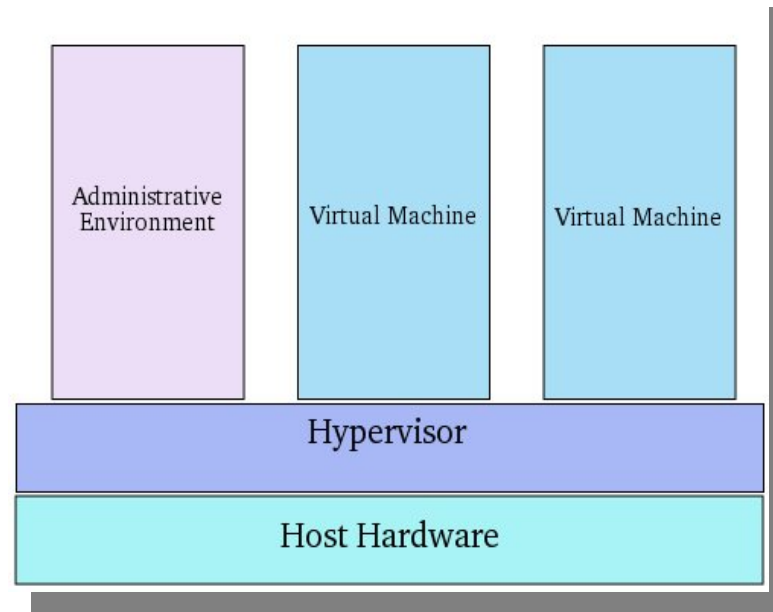


<http://computer.howstuffworks.com>



<http://www.salesforce.com>

- Virtualization is seen as an enabler for cloud computing



- Hypervisor provides a uniform abstraction of the underlying physical machine

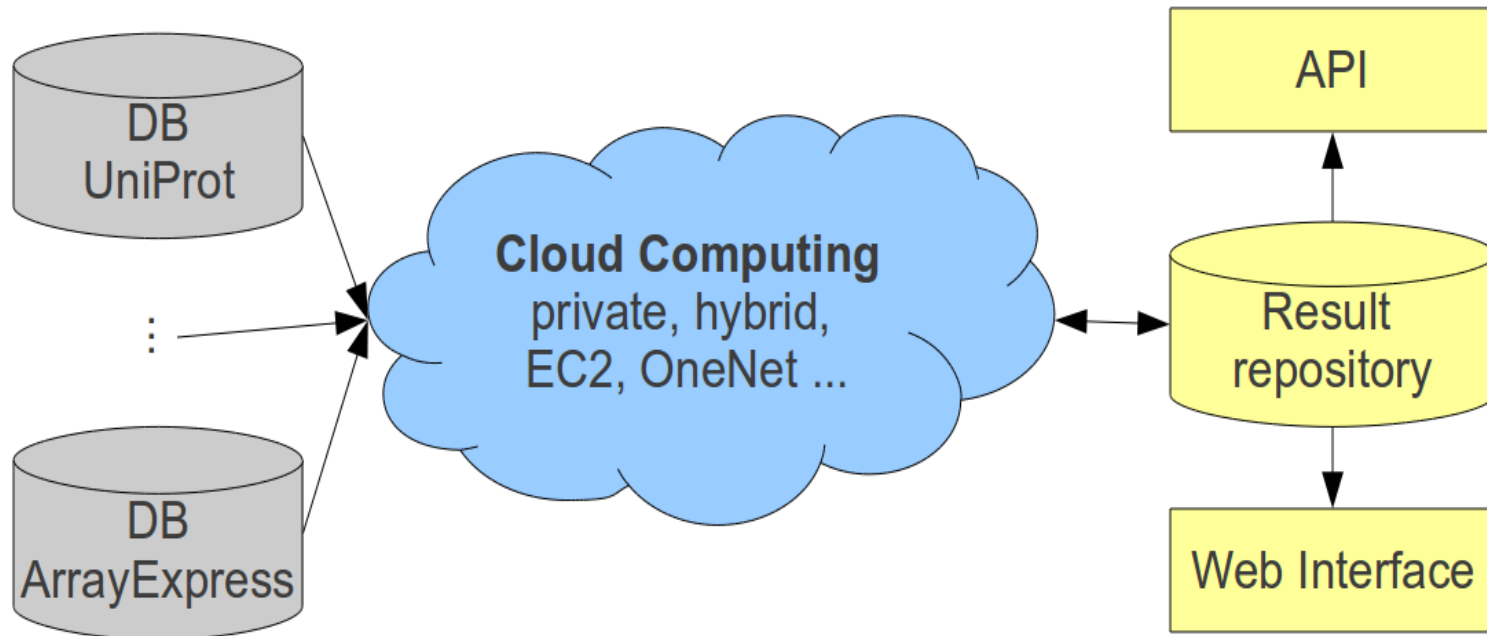
- Amazon teaching grant
 - 30 x 100\$ student AWS vouchers
- MNM – CloudLab (LMU + LRZ)
 - Eucalyptus
 - 5 x 12 cores (→ LRZ Linux cluster)
- StratusLab (European initiative, Greek)
 - OpenNebula
 - 40 x 12 cores
- CSC (Finland)
 - ??
 - 10 x 24 cores (→ 30 nodes)

~ 600 cores
(2010)

~ 2000 cores
(>2010)

- Virtualization technology supports the idea of the *full computational environment*.
- A virtual image can host all your data, source code, methods, ...
- Takes only minutes to get the virtual system with the full research environment running.
- VM image is one big (GB) file.
- Cloud Computing can improve reproducible research for all computational areas

Cloud Computing drives Reproducible Research, Markus Schmidberger, Burkhard Rost, ISMB 2011, submitted



- Extend the cloud computing concept
- And start cooperating!

Cloud Computing drives Reproducible Research, Markus Schmidberger, Burkhard Rost, ISMB 2011, submitted

- Burkhard Rost and Rostlab
- MNM – Team, Nils Gentsche Felde
- LRZ – Prof. Kranzlmüller
- CSC – Tommi Nyrönen & Group
- StratusLab – Vangelis Floros & Group
- Amazon AWS
- AG Statistical Computing – Harald Binder
- Several European Grants

- Journal 'Methods of Information in Medicine', *Special Issue "Grid and Cloud Computing in LifeScience Applications"*, Guest-Editor: Markus Schmidberger, Submission Deadline: 1. October 2011