

Clouds or Grids?:

The evolution of computational infrastructures in higher education and research organisations.



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Cloud Computing



- **Computational Resources*** where the Boundaries are determined by **Economic Factors** rather than Technical Limits
 - On-demand Computing
 - Metered Utilities Model
 - Software as a Service
 - Business Units not Licenses
 - Internet as a Platform
 - Devices with Browsers

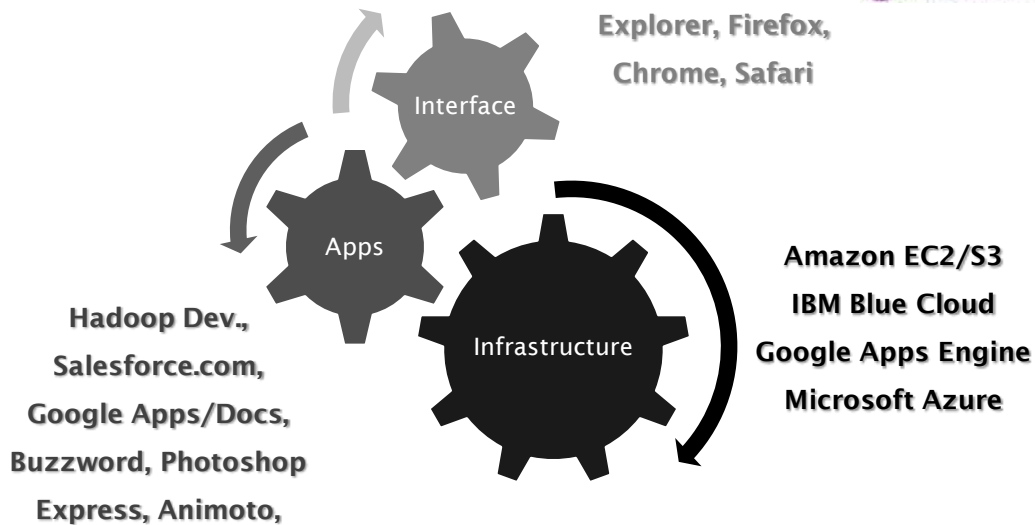


*N.B. Computational resource is commonly used to describe accessible computing equipment and software.

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Cloud Platform



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Example: TimesMachine



- **Full-page NY Times scans (1851-1922)**
 - Organised chronologically and navigated by a calendar interface
- **Platform: Amazon EC2/S3, Hadoop Dev.**
 - Input : 405k hi-res TIFFs, 3.3m SGML articles, and 405k xml files
 - Output: 810k PNG and 405k JavaScript files
 - Execution time: 36 hours



D. GOTTFRID "The New York Times Archives + Amazon Web Services = TimesMachine" 21/May/2008

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Emperor's new clothes ?

- **Server Virtualisation**
 - IBM MVS (70's)
- **Software as a Service**
 - ASP (90's)
 - Service Bureaus (60's)
- **Thin Clients**
 - NCs/JavaStations (90's)
 - Dumb terminals
- **Internet**



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What is different NOW?

- 2012: 20% of businesses own no IT Assets
- 2013: Mobile phones > PCs for Web Access worldwide
- 2014: IT business cases include Carbon Remediation Costs

Gartner Highlights Key Predictions for IT Organizations and Users in 2010 and Beyond (13/Jan/2010)

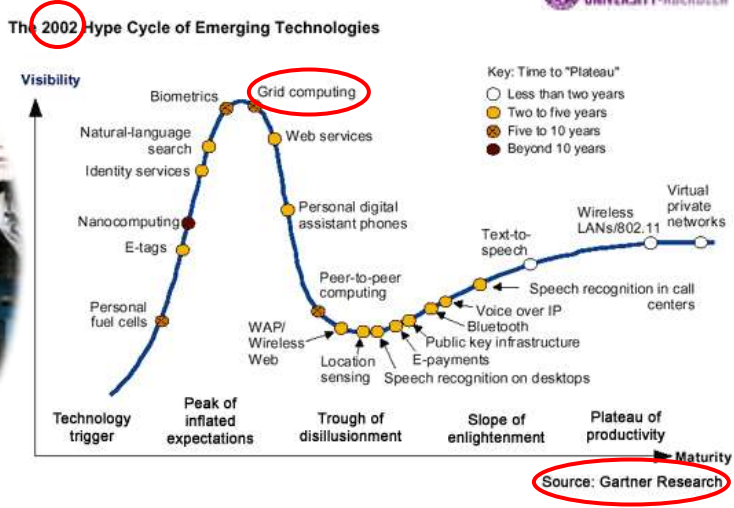
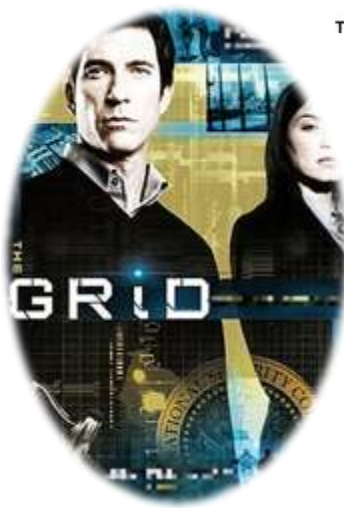
TCO + Mobility + Green Computing



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Have I seen this movie before?



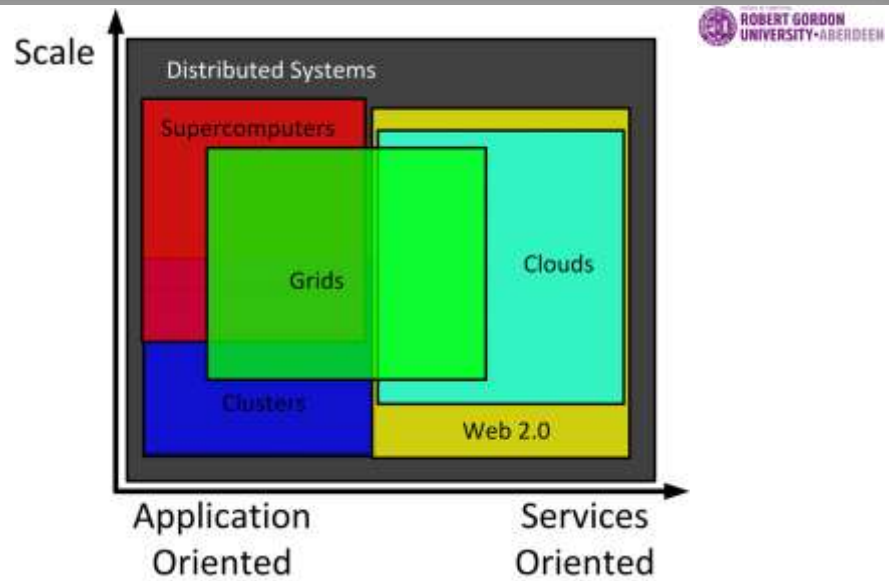
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Grid or Cloud?

Grid	Cloud
Multiple Administrative Domains across Different Collaborating Organisations	Multiple Administrative Domains and Networks within a Single Enterprise
Application-oriented	Services-oriented
Large scientific workloads	On-demand business workloads
Bona-Fide	Usage-based Charge
Non Mission Critical Computational Processes	

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Positioning



Foster et al. "Cloud Computing and Grid Computing 360-Degree Compared," GCE '08, Nov. 2008 doi: 10.1109/GCE.2008.4738445

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The Higher-Education Case Study

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Embracing the Cloud

- **E-mail outsourcing**
 - Google or Microsoft?
- **Thin Clients**
 - Virtual Desktops
- **Server Virtualisation**
 - Resource consolidation
- **Application Leasing**
 - Office, Educational & Research



N. Sultan, Cloud computing for education: A new dawn?, International Journal of Information Management, Volume 30, Issue 2, 2010, pp. 109-116, DOI: 10.1016/j.ijinfomgt.2009.09.004.

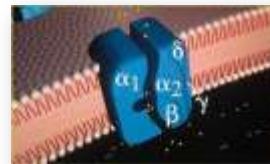
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RGU: Your Trusted Partner

- **University-wide ICT Master Plan**
- **School of Computing/IDEAS**
 - World-Class Expertise in Cloud Technologies*: Hadoop, Server Virtualisation, On-demand Computing, ...
 - Extensive experience in Grid Computing for eScience**
 - MSc in IT Management

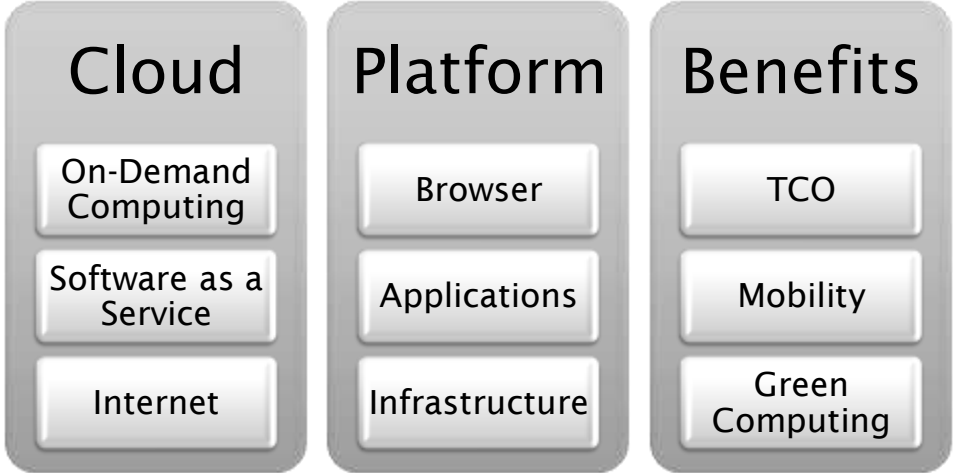


*Kontagora M, Gonzalez-Velez H. Benchmarking a MapReduce Environment on a Full Virtualisation Platform. In: CISIS 2010: IEEE; 2010. p. 1-6.
**Gonzalez-Velez H. Self-Adaptive Skeletal Task Farm for Computational Grids. Parallel Computing. 2006 Sep;32(7-8):479-490.

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Summary



Thank you for listening



Questions & Comments

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