



소프트웨어 인 라이프
<http://www.softwareinlife.com>

Cloud Computing

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Paradigm shift ?



- If computers of the kind I have advocated become the computers of the future, then **computing may someday be organized as a public utility** just as the telephone system is a public utility...

The computer utility could become the basis of a new and important industry.

John McCarthy, speaking at the MIT Centennial in 1961

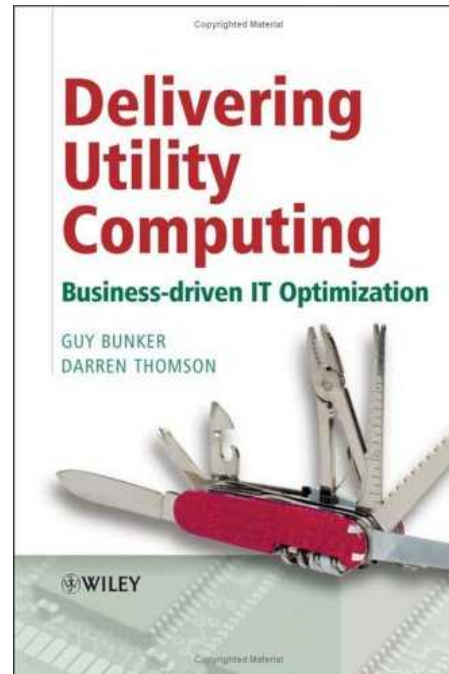
John McCarthy was responsible for the coining of the term "Artificial Intelligence" in his 1955 proposal for the 1956 Dartmouth Conference and is the inventor of the Lisp programming language.

[http://en.wikipedia.org/wiki/John_McCarthy_\(computer_scientist\)](http://en.wikipedia.org/wiki/John_McCarthy_(computer_scientist))



소프트웨어 인 라이프

Utility Computing



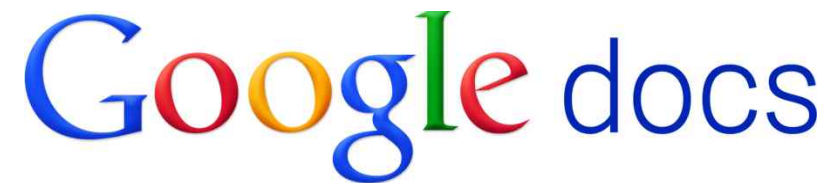
- Utility Computing is the **packaging of computing resources**, such as computation, storage and services, as a metered service similar to a traditional public utility (such as electricity, water, natural gas, or telephone network).

http://en.wikipedia.org/wiki/Utility_computing



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Service



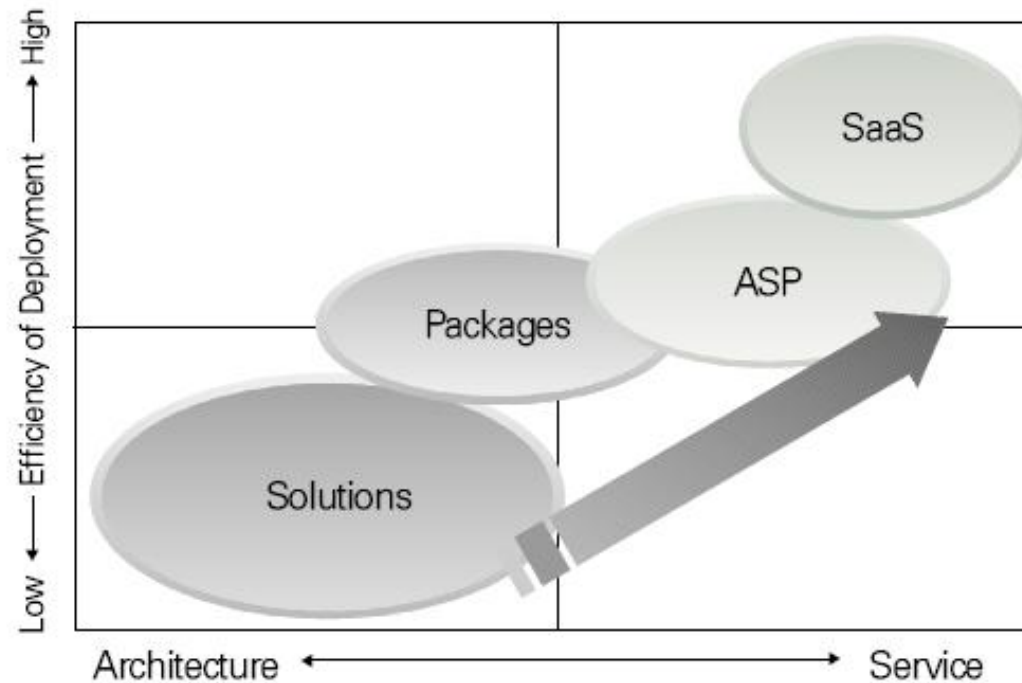
- Is software a product or a service?
 - So from the legal perspective software is really a product.
I mean, a service. Sorry for this lapse.

[http://en.wikipedia.org/wiki/Service_\(economics\)](http://en.wikipedia.org/wiki/Service_(economics))
<http://se.ethz.ch/~meyer/publications/softdev/product-service.pdf>



소프트웨어 인 라이프

SaaS



- **Software as a service** is software that is deployed over the internet and/or is deployed to run behind a firewall on a local area network or personal computer.



SaaS, PaaS, IaaS

Managed by Vendor

Infrastructure (as a Service)



Platform (as a Service)



Software (as a Service)



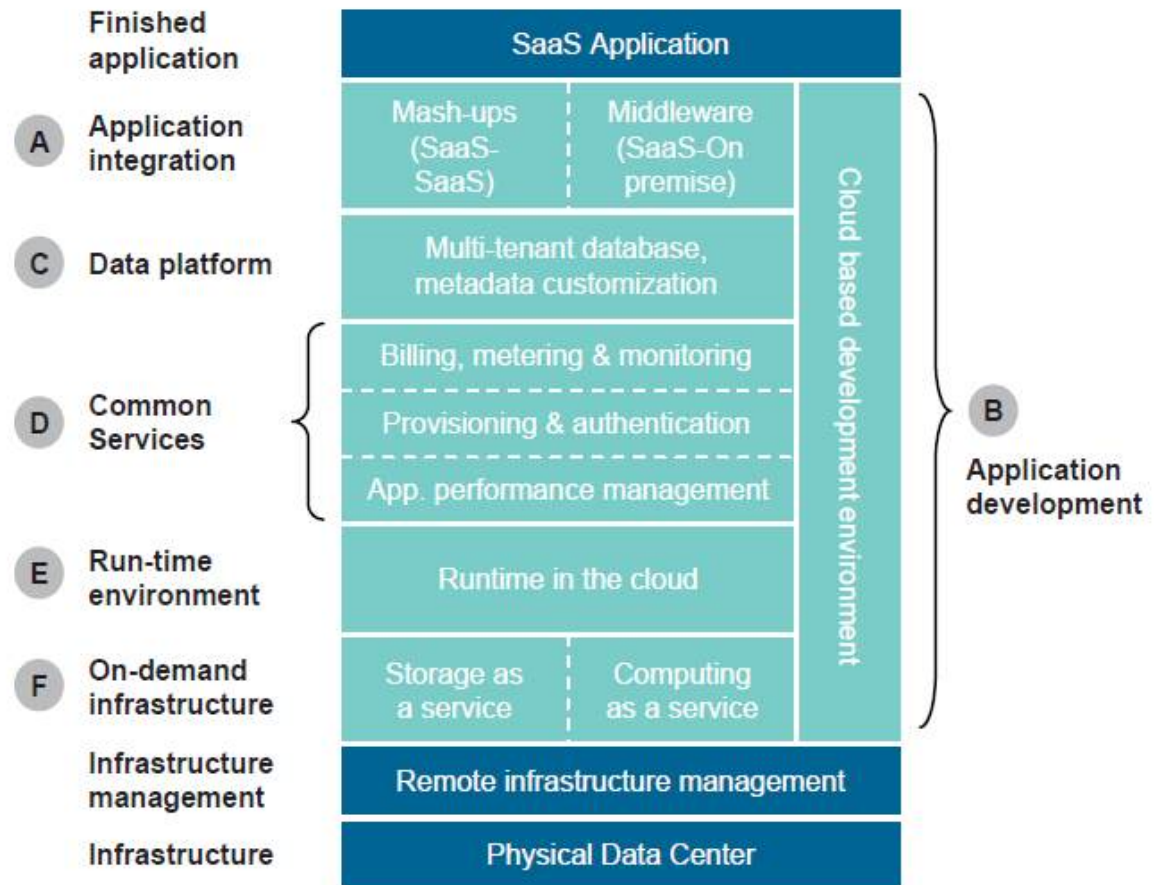
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SaaS Platform Structure

What is a software platform?

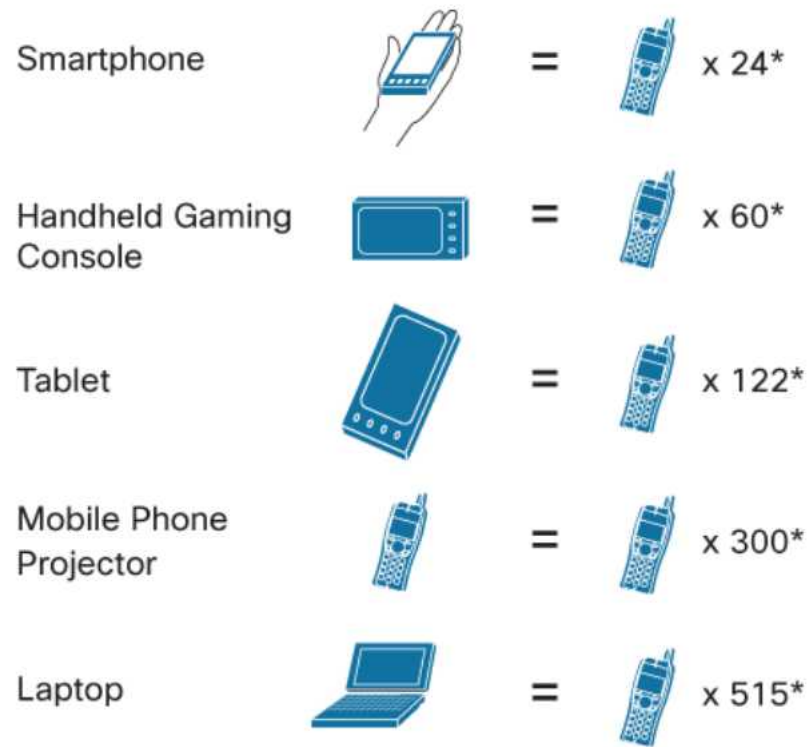
A software platform is a set of products, services, tools and packages that help users develop and deliver their applications effectively

The components of the SaaS application stack



Network Traffic

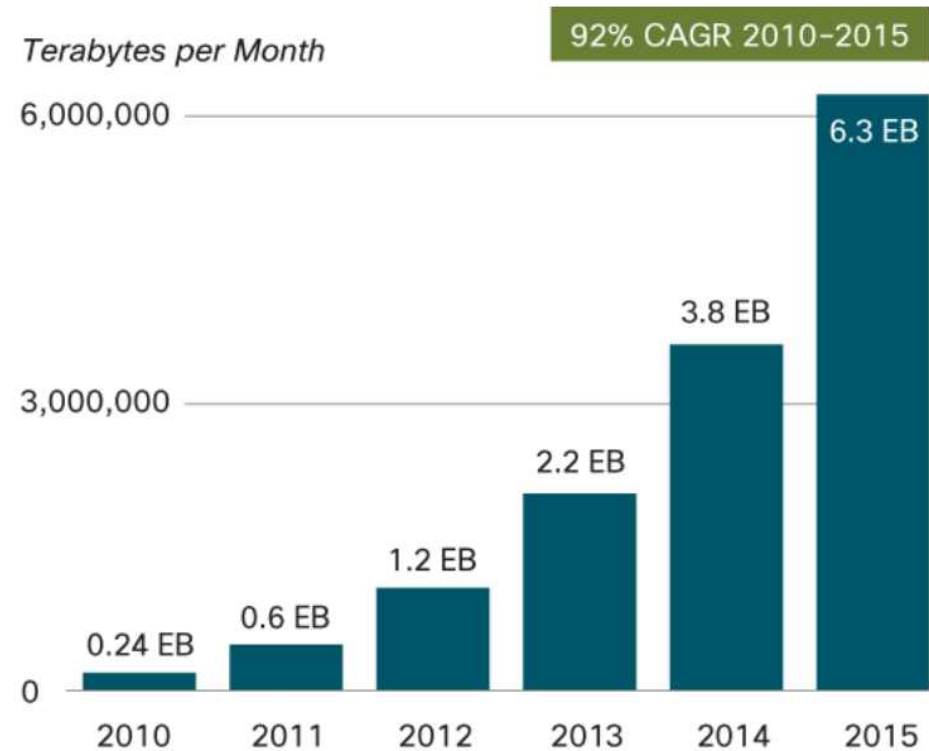
High-End Devices Can Multiply Traffic



* Monthly basic mobile phone data traffic

Source: Cisco VNI Mobile, 2011

Exabytes per Month of Mobile Data Traffic by 2015



Source: Cisco VNI Mobile, 2011

1 EB = 1,000,000,000,000,000,000 B = 10^{18} bytes = 1 billion gigabytes = 1 million terabytes



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The Network is the computer



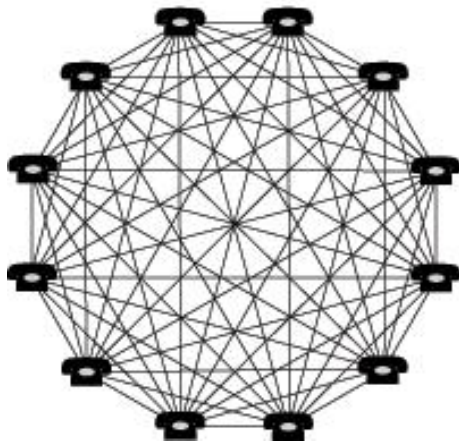
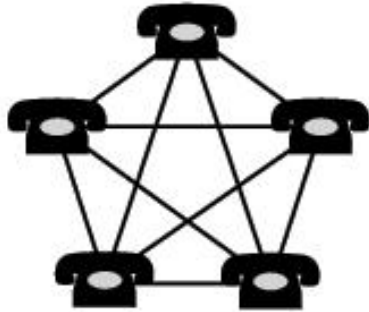
- The network will truly be the computer.
 - Google's CEO, Eric Schmidt, The Economist, 2006
- Gilder's Law: Bandwidth grows at least three times faster than computer power.
 - George F. Gilder

<http://googlesystem.blogspot.com/2006/11/network-will-truly-be-computer.html>
http://en.wikipedia.org/wiki/George_Gilder



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The Network Effect



- Metcalfe's law:
Network value rises by the square of the number of terminals.
– Robert Metcalfe
- Metcalfe's law characterizes many of the network effects of communication technologies and networks such as the Internet, social networking, and the World Wide Web.

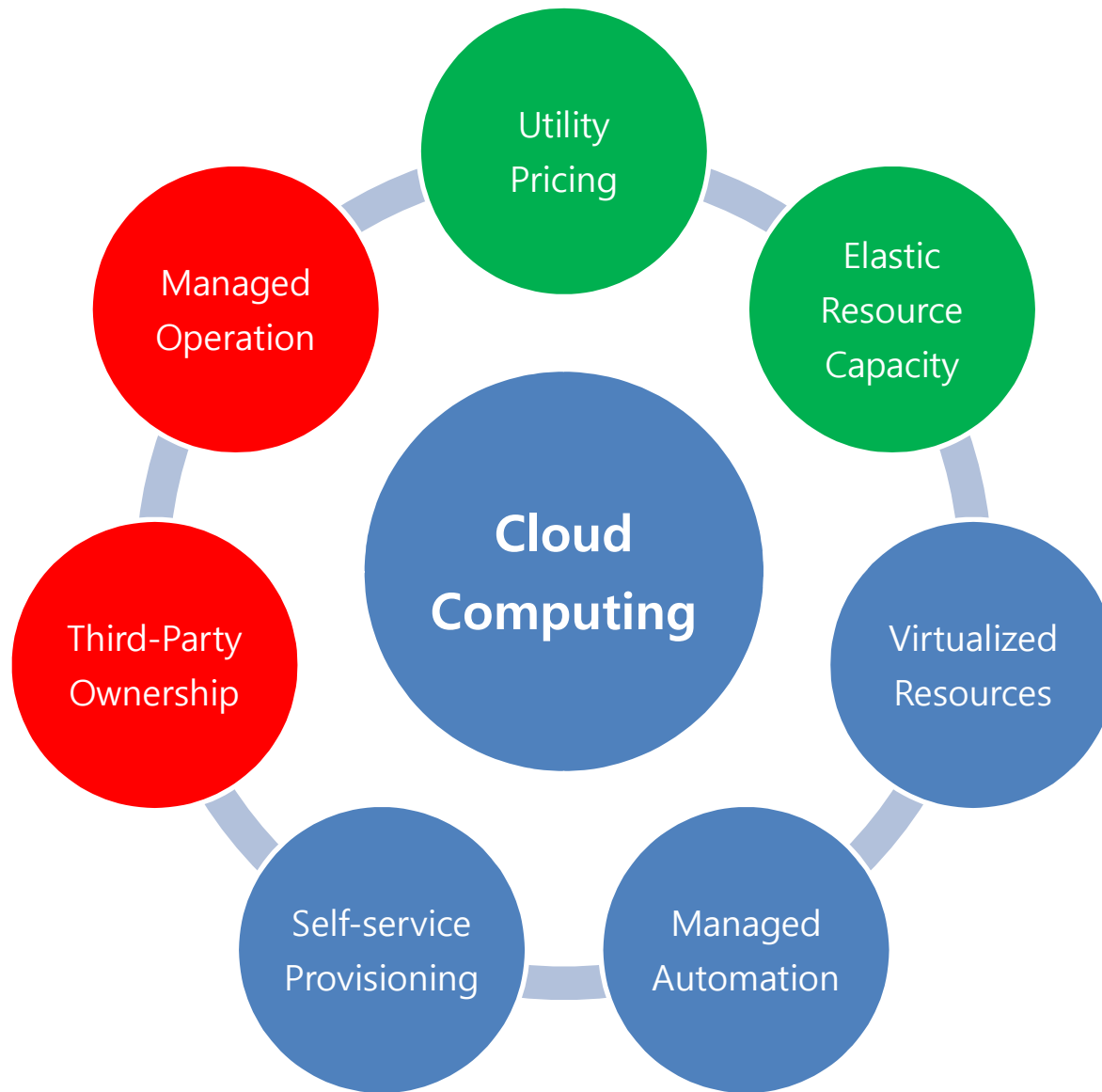


Cloud Computing



- **Cloud computing** describes computation, software, data access, and storage services that do not require end-user knowledge of the physical location and configuration of the system that delivers the services.

Key Benefit of Cloud Computing



Economic Element

- Pay-as-you-go
- Pay-as-you-grow
- Utility based payment
- Lower TCO

Architectural Element

- Simple, development
- Abstract environment
- Easy & Agile Development
- Device & Location Independent
- 24x7 Support(SLA)
- Secure Storage Management
- Highly Automated

Strategic Element

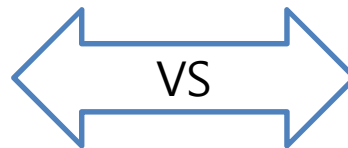
- Focus on your core business
- Reliability & Scalability
- Lower Capital Expenditure



Key Factor of Cloud Computing

	Ranked Number 1	Ranked in Top 3
Cost Savings	34%	65%
Uptime/High Availability	17%	46%
Performance	12%	43%
Consumption-based Pricing	12%	33%
Scalability	7%	40%
Flexibility	6%	41%
Rapid Deployment	5%	24%

- Cost
- Scalability
- Flexibility
- Availability
- Portability
- Collaboration



- Security
- Privacy
- SLA

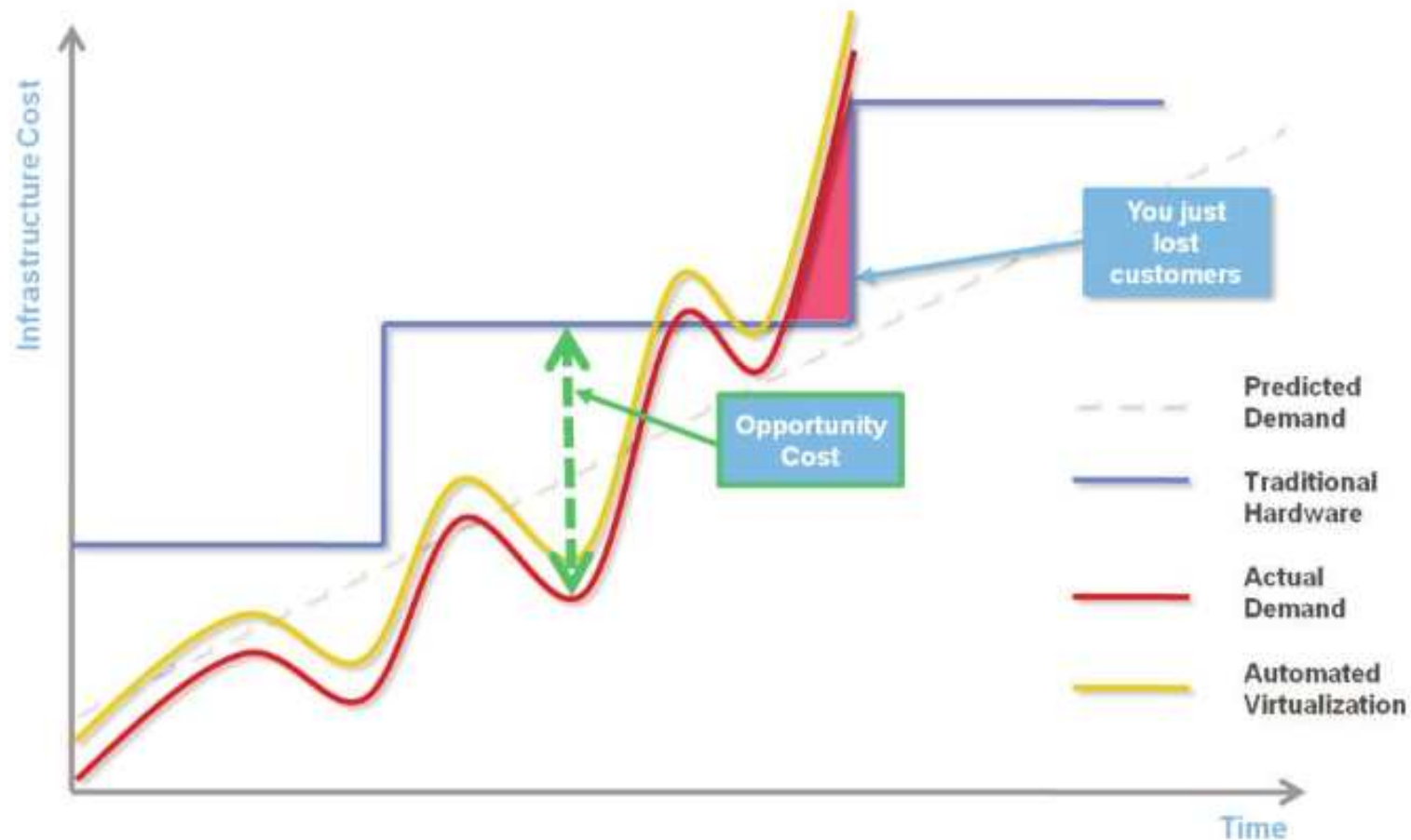
<http://www.b10wh.com/2009/02/the-size-of-the-company-does-not-reflect-on-utilization-of-cloud-computing/>



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Capacity vs Usage

Take the Risk Factor out of Capacity Planning

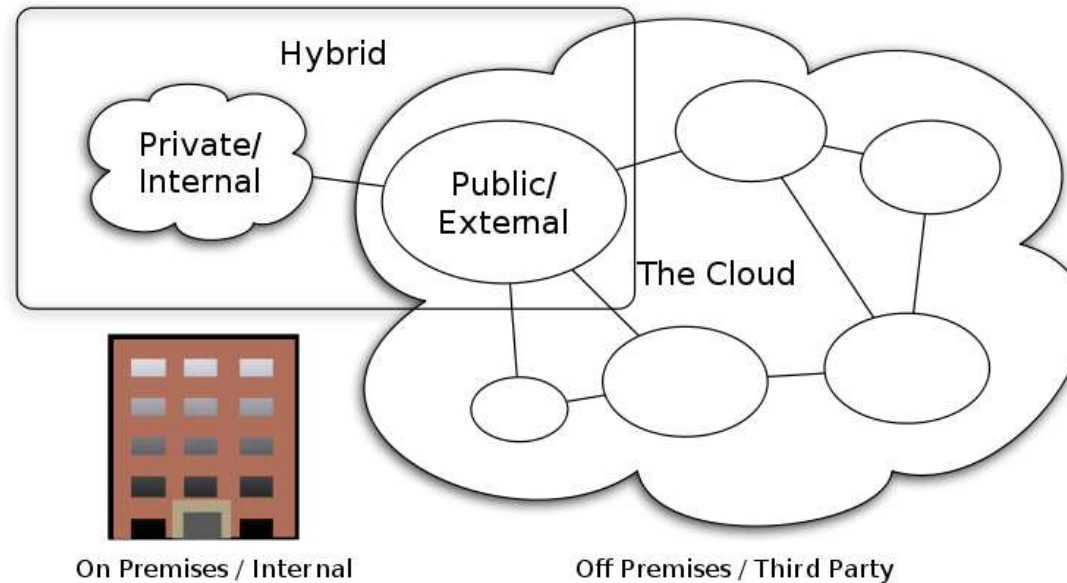


Source: Amazon Web Services



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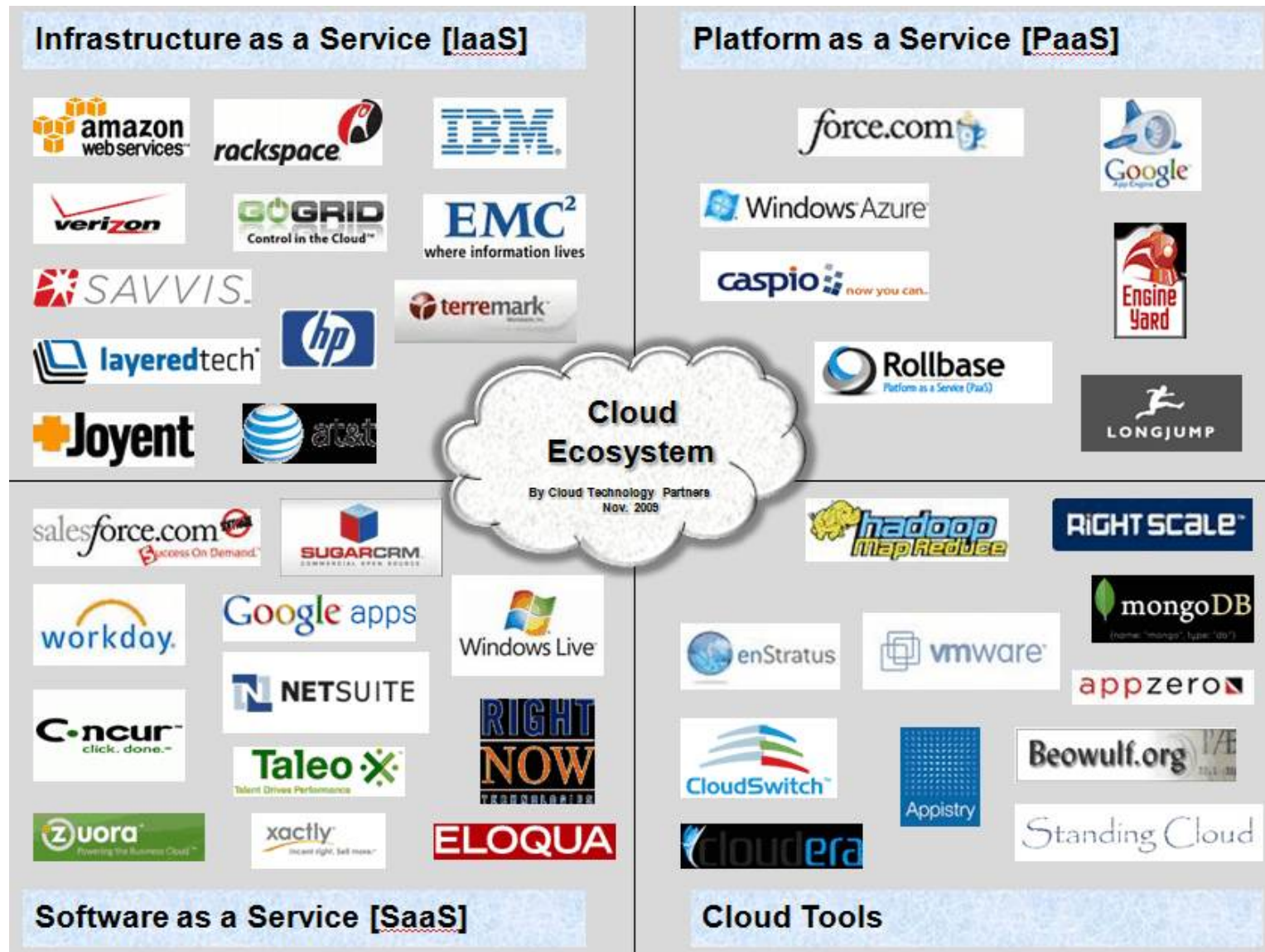
Category of Cloud Computing



- **Public Cloud** – The public cloud is standardized cloud computing where all resources like applications and storage is made available to general public over the internet by services provider itself, which offers it free of cost or pay-per use basis.
- **Hybrid Cloud** – Hybrid cloud can be defined as use of both physical hardware and virtualized cloud server instance together to provide a single common service. Two separate clouds joined together or combination of virtualized cloud server instances used together with real physical hardware is also known as Combined cloud.
- **Private Cloud** – Private cloud provides hosted services to a limited number of people, may be within the cooperation, behind a firewall and it is also called internal cloud.



Cloud Ecosystem



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Wikinomics



WIKINOMICS

*How Mass Collaboration
Changes Everything*

Don Tapscott
and Anthony D. Williams

UNABRIDGED

READ BY ALAN SKLAR

- 4 Key principles
 - Openness
 - Peering
 - Sharing
 - Acting Globally



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Cloud Computing 사례



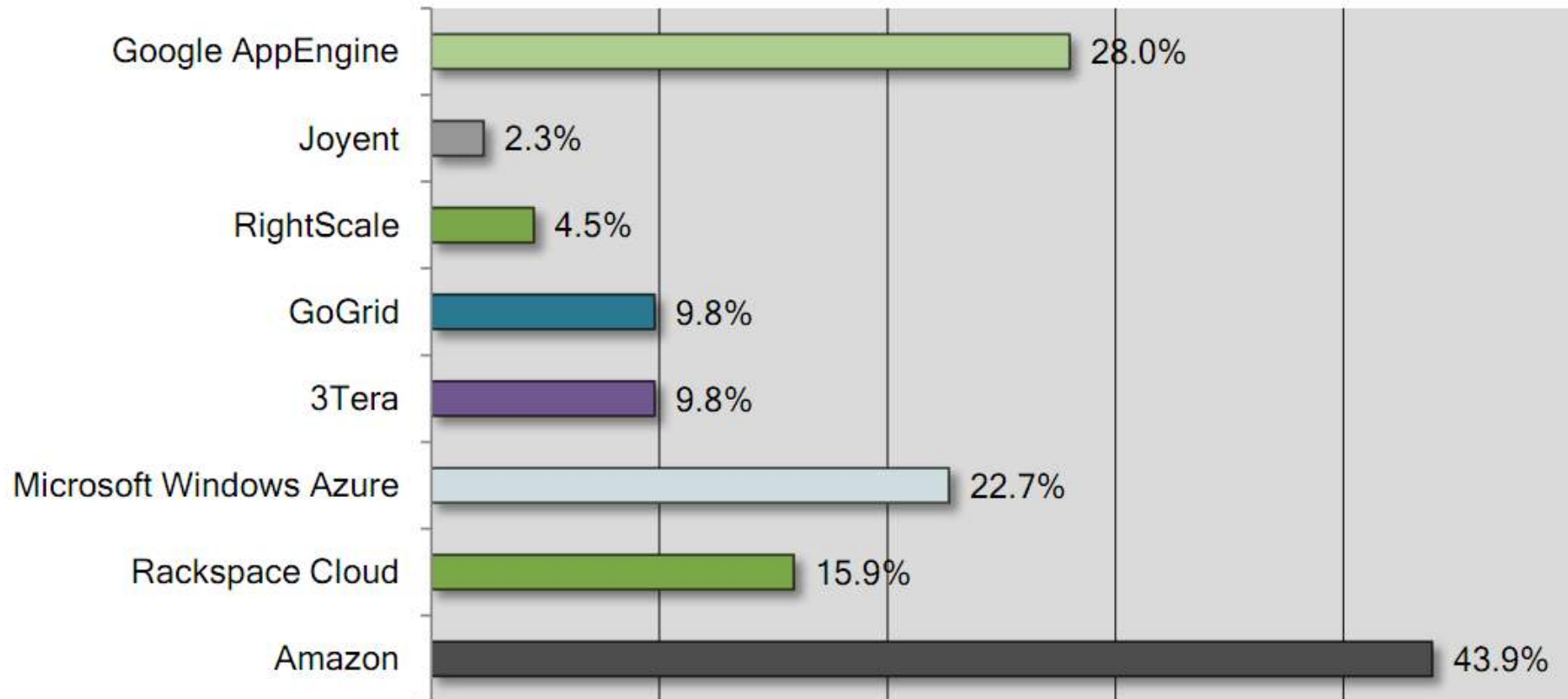
- The New York Times Archives + Amazon Web Services = TimesMachine

<http://open.blogs.nytimes.com/2008/05/21/the-new-york-times-archives-amazon-web-services-timesmachine/>

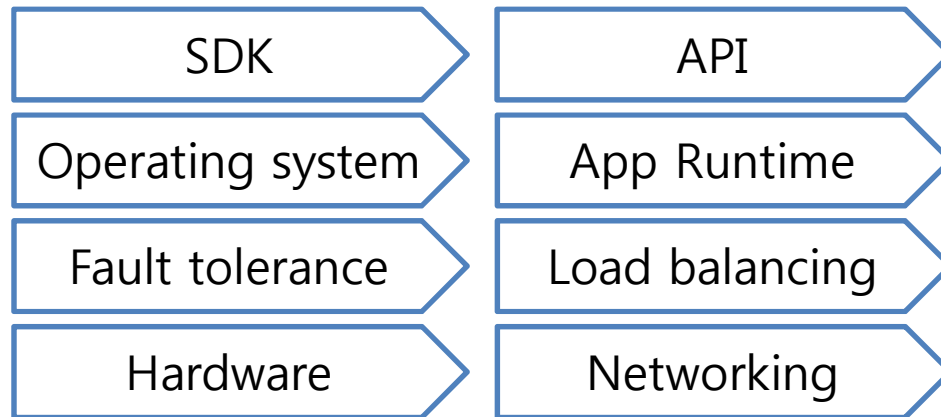


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Cloud Computing Market



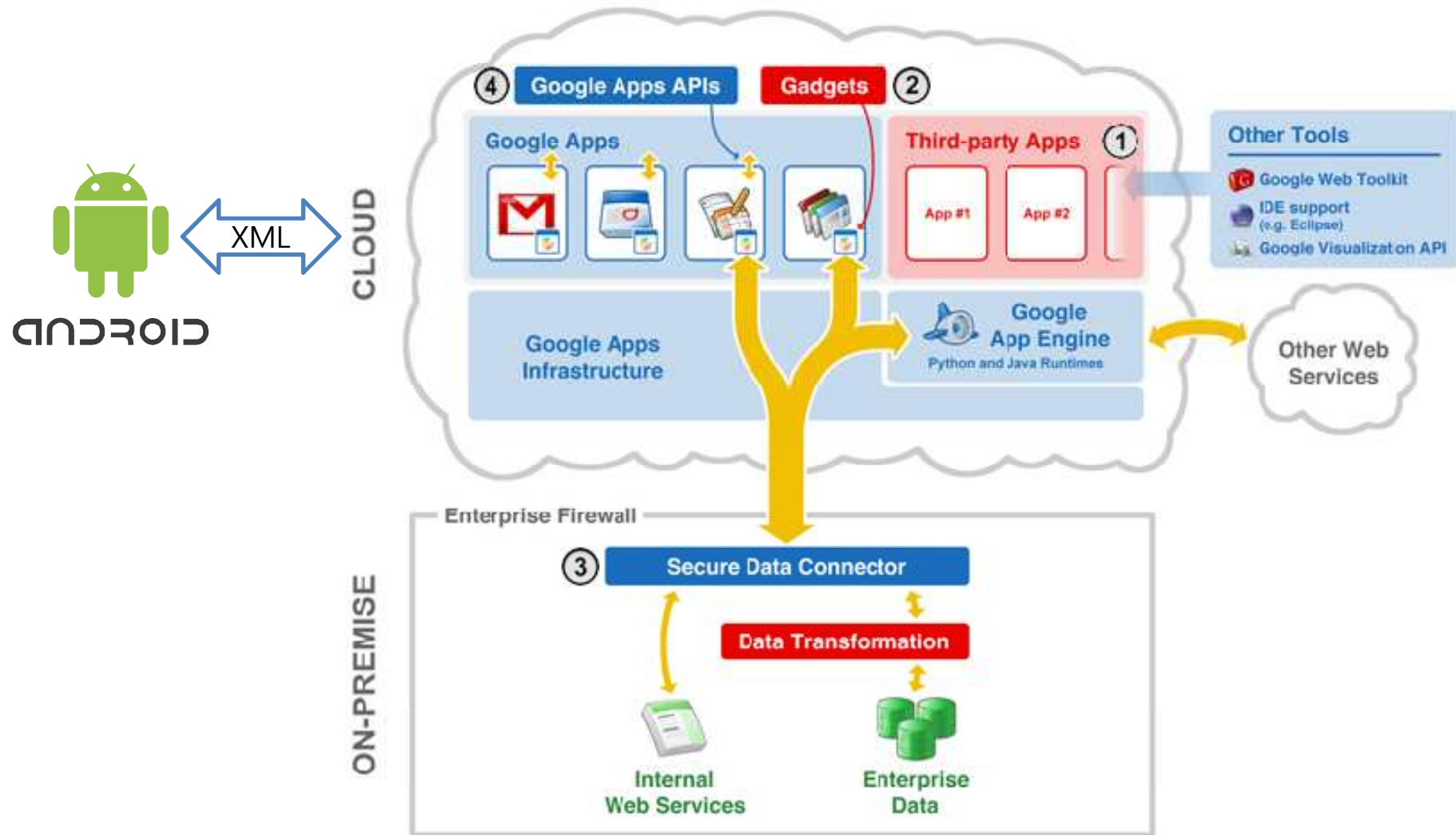
Google App Engine의 정의



- Google App Engine이란 Google의 인프라스트럭처를 이용하여 원하는 웹 어플리케이션 등을 쉽게 개발/배포/관리 할 수 있는 Cloud Computing을 지원하는 플랫폼이다.

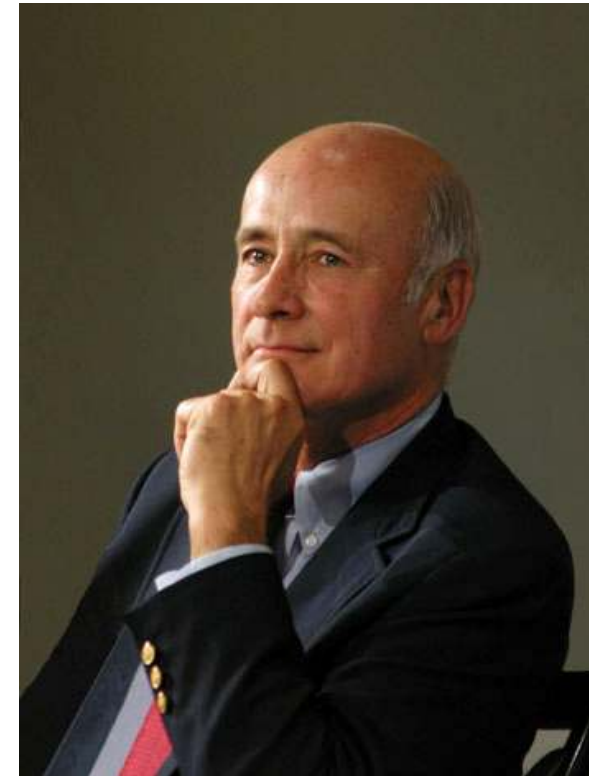
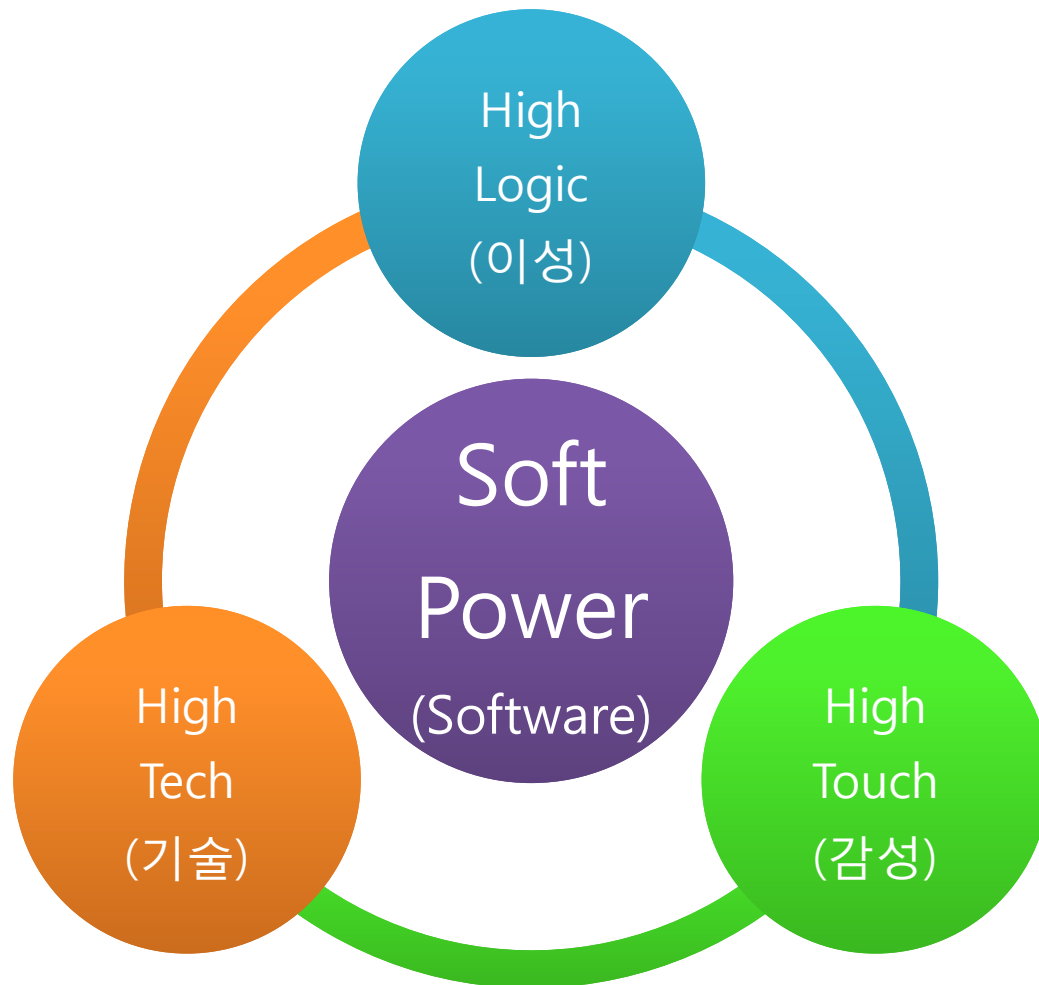


GAE 활용



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Soft Power



Joseph Nye pioneered the theory of soft power.

http://en.wikipedia.org/wiki/Soft_power
http://en.wikipedia.org/wiki/Joseph_Nye



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감사합니다.

<http://code.google.com/p/devmento-gae-seminar/>

