Before we start... a few words about PwC...

Facts & Figures
PricewaterhouseCoopers International

163,000
(9028)
Employees

8,600
(441)
Partner

26.2
(1.37 €)
Billion US-Dollar Revenue

758
(29)
Locations

151
Countries

3
Cluster

3
Service Lines

Based on results of FY09
Markus Vehlow
PricewaterhouseCoopers
Cloud Compliance – Navigation in the Cloud

### Agenda

1. Introduction
2. Cloud Environments
3. Hurdles & Risk Areas
4. Points to Consider
5. Outlook – Next Generation Outsourcing

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### Introduction

[Image of a door opening to a blue sky]
What is Cloud Computing? A Simple Question?

**Time2Market**  
**SOA Infrastructure as a Service**  
**IaaS**  
**Business Model**  
**PaaS**  
**Platform as a Service**  
**Virtualization**  
**Security**  
**Community Cloud**  
**SaaS**  
**Software as a Service**  
**Security**  
**Service Level Agreement**  
**Data Privacy**

ICT resources **where ever you want!**

**Open Source**  
**Private Cloud**  
**Storage Computing**  
**OnDemand**  
**Cost Reduction**  
**Standards**  
**Internet**  
**Service Subscription**  
**Self Service**  
**Disaster Recovery**  
**Contracting**  
**Scalability**  
**Productivity**  
**Flexibility**  
**Risks**  
**Innovation**  
**Storage Multi Tenancy Compliance**  
**Public & Hybrid Cloud**
What is Cloud Computing? A Simple Question?

ICT resources as long as you want!

ICT resources as much as you want!
Cloud Computing – Navigation in the Cloud

**What is Cloud Computing? A Simple Question?**

**Time2Market SOA Infrastructure as a Service IaaS Business Model PaaS**

Platform as a Service Virtualization Security Community Cloud SaaS

Software as a Service Security Service Level Agreement Data Privacy

**ICT resources as often you want!**

Open Source **Private Cloud** Storage Computing OnDemand Cost

Reduction Standards Internet Service Subscription Self Service Disaster

Recovery Contracting Scalability Productivity Flexibility Risks Innovation

Storage Multi Tenancy Compliance Public & Hybrid Cloud

**Conclusion: ICT is a commodity (like gas/water)!**

Open Source **Private Cloud** Storage Computing OnDemand Cost

Reduction Standards Internet Service Subscription Self Service Disaster

Recovery Contracting Scalability Productivity Flexibility Risks Innovation

Storage Multi Tenancy Compliance Public & Hybrid Cloud

Markus Vehlow
PricewaterhouseCoopers

October 27, 2010
Page 9
### What is Cloud Computing – 2nd Try?

It's Evolution in Technology and Revolution for the Business

<table>
<thead>
<tr>
<th>Cloud Attribute (Technology Evolution)</th>
<th>Impact on ICT Resources*</th>
<th>Business Benefits (Business Revolution)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(De)-Provisioning</td>
<td>Enable/Disable ICT Resources</td>
<td>Higher Business Agility</td>
</tr>
<tr>
<td>Virtualization</td>
<td>Scale ICT Resources</td>
<td>More Business Flexibility</td>
</tr>
<tr>
<td>Internet (increased connectivity)</td>
<td>Access ICT Resources (even by mobile devices)</td>
<td>Increased Business Availability</td>
</tr>
<tr>
<td>Multi-Tenancy</td>
<td>Share ICT Resources</td>
<td>Reduced Costs (Economies of Scale)</td>
</tr>
<tr>
<td>Pay Per Use (usage based billing)</td>
<td>Affordable ICT Resources</td>
<td>Lower Entry Barriers for the Business</td>
</tr>
<tr>
<td>Service Orchestration</td>
<td>Combine ICT Resources</td>
<td>Better Business Flexibility</td>
</tr>
</tbody>
</table>

*ICT Resources - infrastructure elements like storage, computing power, systems (IaaS), platforms like development/run-time environments (PaaS), and software or software services (SaaS)

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**Cloud Environments**

2
One Cloud is not Like the Other….. 
….But They All Share the Same Core Attributes

<table>
<thead>
<tr>
<th>Virtualization (OS, Computing, Storage)</th>
<th>&quot;De-&quot; Provisioning (rapid, scalable &amp; elastic)</th>
<th>Location (On, Off, Cloud)</th>
<th>Service-Orchestration (SW2SW)</th>
<th>Internet Access (HTTP/HTTPS)</th>
<th>Any Device (including mobile)</th>
<th>Multi-Tenant (Shared)</th>
<th>Off-Premise (Proprietary)</th>
<th>Pay Per Use (usage-based)</th>
</tr>
</thead>
</table>

Public Cloud

Private Cloud

Typical Clouds in Today’s Business Environment
Cloud Computing – Navigation in the Cloud

Important Challenges for Providers?

- Data Privacy & Compliance: 60% Big Challenge, 27% Medium Challenge, 13% Small Challenge
- Process Standardization: 61% Big Challenge, 25% Medium Challenge, 14% Small Challenge
- Flexible SLA’s: 49% Big Challenge, 25% Medium Challenge, 26% Small Challenge
- Information Security: 49% Big Challenge, 26% Medium Challenge, 25% Small Challenge
- Customer Satisfaction: 47% Big Challenge, 26% Medium Challenge, 27% Small Challenge
- Clarification Cloud Definition: 47% Big Challenge, 27% Medium Challenge, 26% Small Challenge
- Qualified Personnel: 32% Big Challenge, 31% Medium Challenge, 37% Small Challenge
- Suitable Sub-Contractors: 21% Big Challenge, 53% Medium Challenge, 26% Small Challenge
- Farewell from License Model: 11% Big Challenge, 53% Medium Challenge, 36% Small Challenge
- Sustain Service Quality: 11% Big Challenge, 50% Medium Challenge, 39% Small Challenge
- Cloud Reservations: 11% Big Challenge, 50% Medium Challenge, 39% Small Challenge
- Maintenance & Scalability: 20% Big Challenge, 64% Medium Challenge, 16% Small Challenge

Source: PwC Study (published October 25, 2010)
Cloud Computing – Navigation in the Cloud

Cloud Computing Risks Areas

Virtualization

Service Orchestration

(De-) Provisioning

Internet Access

Mobile Device

Multi-Tenancy

Off-Premises

Location

Pay Per Use

Points to Consider

4
Points to Consider

Cloud User

• For which purpose and internal processes can cloud services be used?
• Which criteria are important for a cloud provider selection?
• Is it really possible to save money with cloud computing in the concrete situation (economics)?
• Which prerequisites must be given to integrate a cloud service with the existing ICT environment (Readiness)?
• Are all risks related to the service delivery known (e.g. sub-contractors)?
• Which compliance and security requirements must be fulfilled before service consumption?
• Are all contract relevant aspects considered?
• How must the cloud provider be controlled and monitored (sourcing governance)?

Cloud Provider

• Are all customer relevant compliance and security requirements identified and fulfilled?
• How data privacy requirements are met in case that data is in transit (cross-border)?
• How are Pay-Per-Use and short contract periods in alignment with professional business services?
• How are aspects like data migration, data retention, and data return contractually stipulated?
• How aspects like availability and performance are assured for business critical cloud services?
• Which legal and fiscal implications are associated with the underlying procedures and business models?

Outlook – Next Generation Outsourcing
Cloud Computing – Navigation in the Cloud

Cloud Computing in the Future - Next Generation Outsourcing

Thank you very much! ありがとうございました!
Vielen Dank! 감사합니다! Grazie mille! 谢谢各位。
¡ muchas gracias! Merci beaucoup!

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(System & Process Assurance)

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Questions

There is a theory which states that if ever anybody discovers exactly what the Universe Cloud Computing is for and why it is here, it will instantly disappear and be replaced by something even more bizarre and inexplicable.

There is another theory which states that this has already happened.

(Douglas Adams 1952 - 2001)

Annex

Cloud Computing & Mobile Devices – Top 10 List

1) Mobile is poised to surpass the PC for primary data access.
2) Smartphone’s are driving the movement of business applications to the mobile cloud.
3) Generation Y is leading the shift to mobile.
4) Robust competition between providers is driving innovation.
5) The center of power is moving away from the Telco’s.
6) Where you are becomes as important as who you are.
7) Technology professionals need to design and architect with mobile in mind.
8) Application adoption will be largely based on user experience.
9) The mobile cloud introduces new business opportunities.
10) First mover opportunities exist.