

4th European Summit  
on the Future Internet

13-14 June - Aveiro, Portugal

# Thoughts on Future Internet

Thomas Michael Bohnert,

#ICCLab / ZHAW

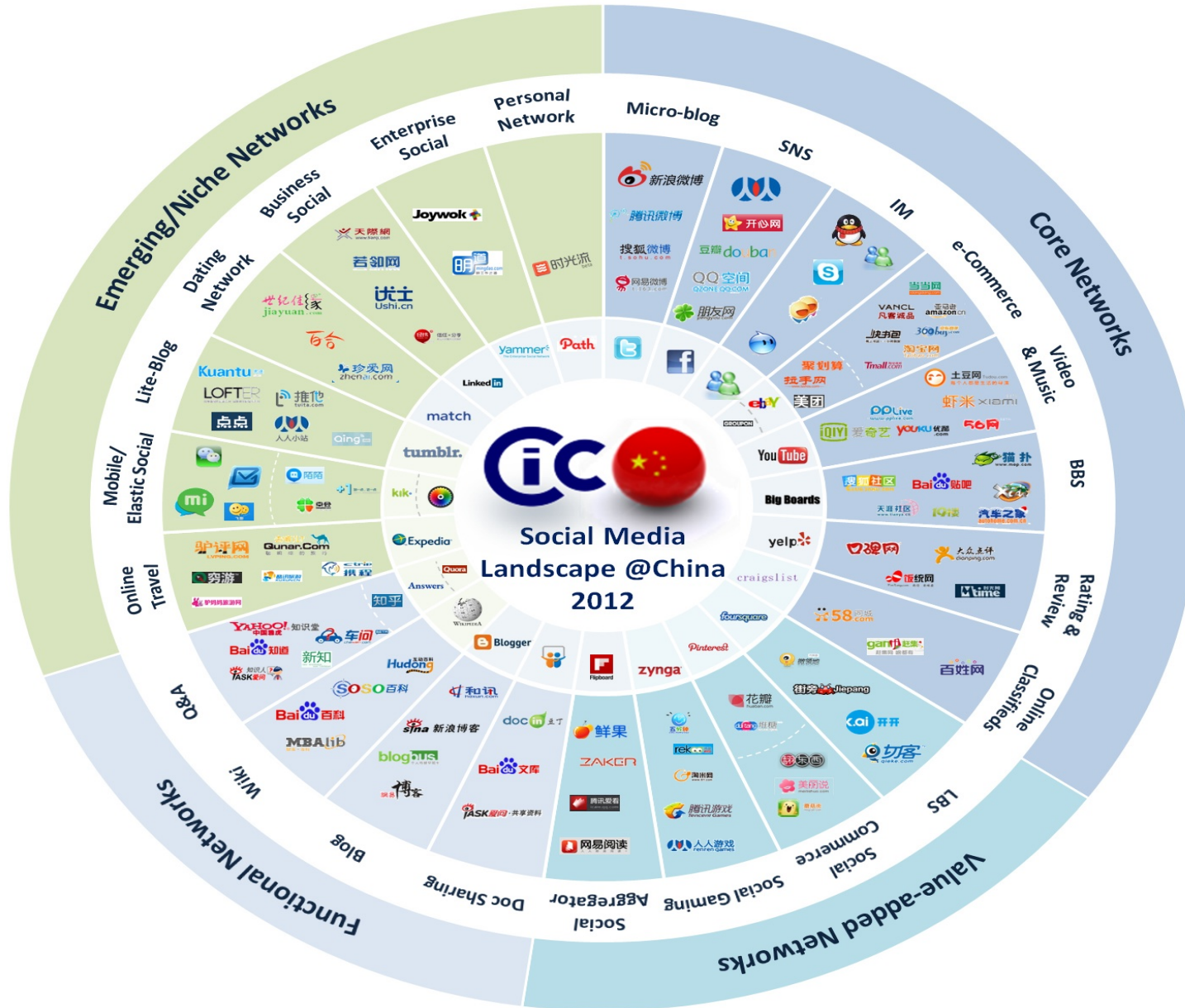
[www.cloudcomp.ch](http://www.cloudcomp.ch)

# Venture Capital

Europe:  
We need more VC.  
That's it



# Venture Capital?



# Venture Capital

US: VC investment declining



# FI-PPP

## Courageous move



# FI-PPP

## Right Scope (Challenge 1)



# FI-PPP

## Right principles

- Program
- Convergence of ICT
- Non-ICT-ICT collab
- Tech Reuse
- Consolidation
- Software that is UUU
- Large-scale pilots



# FI-PPP

## Truly European

Person (Career),  
Team,  
Unit,  
Department,  
Company (Partner),  
Task,  
Work Package,  
Project,  
Program





# FI-PPP

## Openness

Who can ...  
Who should participate?



# FI-PPP

## Expectation Management

Huge carrot, many rabbits (or mules)



# FI-PPP

## Leadership

Where you are versus where to go?  
Coordinator vs Manager vs Leader  
Governance  
AB, SB, AdvB, EIB, ?



# FI-PPP

## Role of EC

Contractual framework, exploitation, Open Source



# FI-PPP

## Focus

All about Generic Enablers?  
Platform or no platform?  
Experimentation?



# CTI in Switzerland

## Effective and Efficient

Focus on uptake (you can call it innovation)  
Industry(SME)-led, but significant involvement of academia  
LOW overhead  
Builds on top of (applied/foundational) research



# Content

Quo Vadis?



# Cloud Computing

## The Future Saviour?

IaaS → IT departments → Commodity

PaaS → Developers → Applications/Value

SaaS → Consume only, focus on your core competency





# Cloud Computing

And European Strength?



# Cloud Computing

## Example: Telco Strategy

T 008

### Wachstumsfelder der Deutschen Telekom.

Umsatz in Mrd. €	Ambitionsniveau	
	2012	2015
Mobiles Internet	6,4	≈ 10
Vernetztes Zuhause	6,3	≈ 7
Internet-Angebote	1,0	≈ 2
T-Systems (externer Umsatz) <sup>a</sup>	6,5	≈ 7
Intelligente Netzlösungen (Energie, Gesundheit, Vernetztes Automobil)	0,1	≈ 1

<sup>a</sup> Ohne Umsatz aus Intelligenten Netzlösungen.



# Cloud Computing

## European Strength?

Bereits seit 2005 bietet unsere Großkundensparte T-Systems dynamische SAP-Leistungen an. Seitdem wuchs das Portfolio schrittweise über die Applikationsmigration und Datenintegration bis hin zu komplexen Cloud Services mit höchsten Sicherheitsanforderungen. T-Systems betreibt eine Vielzahl von Services und kundenspezifischen Cloud-Lösungen innerhalb der Hosting-Umgebung von 90 Rechenzentren weltweit mit mehr als 60 000 Servern. 2,6 Mio. SAP-Kunden nutzen unsere Cloud-Dienste. Im vergangenen Jahr konnten wir weitere Großaufträge gewinnen, etwa BP und Georg Fischer AG. Um unseren Kunden einen noch einfacheren und schnelleren Zugang zu Cloud-Diensten zu ermöglichen, ging T-Systems zudem eine strategische Partnerschaft mit VMware ein, dem weltweit führenden Anbieter von Virtualisierungs- und Cloud-Lösungen.

Wir bieten ebenfalls Cloud Services an, die in erster Linie auf die Bedürfnisse unserer 2,2 Mio. kleinen und mittelständischen Geschäftskunden in Deutschland zugeschnitten sind, so z. B. virtuelle Server, Sicherheits- und Anwendungsprogramme. Im Berichtsjahr startete der Online-Marktplatz „Business Marketplace“, auf dem Firmen flexible und kostengünstige Business-Anwendungen buchen können.

# Cloud Computing, And European (Telco) Strength?

Table 6: Initiatives by telcos to augment cloud capabilities

Initiative	Company	Examples
Partnering with technology vendors	Telstra	<ul style="list-style-type: none"> <li>In June 2011, Telstra announced that it is partnering with cloud technology vendors Cisco and VMware to build the next phase of its integrated cloud platform.<sup>25</sup></li> </ul>
	Telecom Italia	<ul style="list-style-type: none"> <li>In April 2011, Telecom Italia announced plans to build one of Europe's largest data centers, with more than 45,000 square meters of operational space. The new data center is expected to come into operation in the second half of 2012.<sup>26</sup></li> </ul>
	KT Corp	<ul style="list-style-type: none"> <li>In December 2011, KT Corp announced plans to build a new tier 3 certified data center in the National Capital Region (Ottawa and the surrounding area). The telco stated that three customers had already signed long-term co-location contracts worth about C\$100 million (US\$100.6 million), to use the new Bell data center, which is scheduled to begin operation in late 2012.<sup>27</sup></li> </ul>
Acquiring technology companies to boost cloud capabilities	NTT Corp	<ul style="list-style-type: none"> <li>In July 2011, NTT Holdings Plc, placed the core function access analysis at US\$90 million.<sup>28</sup></li> </ul>
	Telefónica	<ul style="list-style-type: none"> <li>In June 2011, Telefónica announced plans to build a new tier 3 certified data center in the National Capital Region (Ottawa and the surrounding area). The telco stated that three customers had already signed long-term co-location contracts worth about C\$100 million (US\$100.6 million), to use the new Bell data center, which is scheduled to begin operation in late 2012.<sup>27</sup></li> </ul>
	CenturyLink	<ul style="list-style-type: none"> <li>In April 2011, CenturyLink announced plans to build a new tier 3 certified data center in the National Capital Region (Ottawa and the surrounding area). The telco stated that three customers had already signed long-term co-location contracts worth about C\$100 million (US\$100.6 million), to use the new Bell data center, which is scheduled to begin operation in late 2012.<sup>27</sup></li> </ul>
Offering cloud-based unified communication services	Verizon	<ul style="list-style-type: none"> <li>In January 2011, Verizon announced plans to build a new tier 3 certified data center in the National Capital Region (Ottawa and the surrounding area). The telco stated that three customers had already signed long-term co-location contracts worth about C\$100 million (US\$100.6 million), to use the new Bell data center, which is scheduled to begin operation in late 2012.<sup>27</sup></li> </ul>
	Orange Business Services	<ul style="list-style-type: none"> <li>In June 2011, Orange Business Services introduced 'Business Together as a Service.' This service allows unified communications solutions to be offered via the cloud, using an 'as a service' model that allows enterprises to quickly and cost-effectively access communication and collaboration tools any time, anywhere, on any device.<sup>42</sup></li> </ul>
	Verizon	<ul style="list-style-type: none"> <li>In February 2011, Verizon introduced cloud-based unified communications and collaboration (UC&amp;C) solutions for businesses and government agencies. The new offerings are expected to be available to US customers from spring 2011.<sup>43</sup></li> </ul>
Expanding private and hybrid cloud offerings	SingTel	<ul style="list-style-type: none"> <li>In March 2011, SingTel and virtualization software provider VMware unveiled a hybrid cloud computing offering called PowerOn Compute. PowerOn Compute allows companies to expand the resources of their private cloud infrastructure into SingTel's secure public cloud.<sup>44</sup></li> </ul>
	AT&T	<ul style="list-style-type: none"> <li>In February 2011, AT&amp;T announced enhancements to its Synaptic Compute as a Service Solution. The enhancements include integration with AT&amp;T's VPN service to enable virtual private clouds, an expanded number of operating system templates, improvements to firewall policies to meet special security requirements, and new self-service and self-provisioning capabilities.<sup>45</sup></li> </ul>
	BT	<ul style="list-style-type: none"> <li>In February 2011, BT expanded its virtual data center package with an option to manage private cloud environments. Virtual Data Centre (VDC) Private is expected to enable businesses to manage applications and data on a virtualized infrastructure, mounted on their own or BT's hardware.<sup>46, 47</sup></li> </ul>

# Cloud Computing

European (Telco) Strength?  
Yes, increasingly



# Infrastructure FI-PPP

## On Connectivity? (Obj 1.1)

Connectivity alone long identified as unsustainable  
Broadband stimulus  
Large over-capacities (e.g. in German backbone)



# Smart Cities

## Constellation w Potential

Concentration of private and public sector  
Concentration of knowledge  
Concentration of high-quality infrastructure  
Citizens, Consumers, Developers



# Smart Cities

## Smart City Innovation?

Mostly internal to the city





# Proposal

## PaaS For Smart Cities

Tap into the Smart City Eco-System  
Provide a FI-Platform  
    Operated by Telcos and Its  
Address developers  
    With local knowledge  
Provide for citizens  
    With local needs



# Additional Thoughts



# Thoughts - APIs

AWS or not AWS?!



# Thoughts - Enterprise Grade

## Open Source, Cooperation, Foundation

OpenStack: Where are the Europeans?



# Thoughts - Incident Management

Cloud==Multi-sided Business  
(Business Networks)

In case of issues:  
Your Fault!



# Thoughts - SLAs

You, he, she and me:

- Do and Do Not



# Thoughts - Federation

There is more than one Cloud  
(no, no standards needed)



# Thoughts - SDN

Enabling, but for what?





# Thoughts - Clouds

Many open questions  
How to approach,  
beyond the FI-PPP?

