



Core 5 – Flexible Networks

*Emergent Research Issues from a Socio-Economic
Perspective to Convergence, Tussles, Control
Points and Network Sharing*

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Flexible Networks

- A flexible network is a composed ecology of devices and services aiming to provide a seamless experience to the network users. By enabling technologies within this type of network that promote **flexible, agile, dynamic and self-evolving** networking capable of coping with unforeseen **socio-economic** (user/network operator/service provider) **demands** the seamless goal can be achieved. Ideally in this type of networks security should be invisible to the user, not getting on the way of usability and yet the highly flexible and broad range of services must still be fully robust assuming that the end-user is probably the weakest link in any security system
- **Mobile VCE:**
 - Consortium of companies (Thales, France Telecom, Fujitsu, LG, etc)
 - 4 areas of research covered by Imperial College, Stratchclyde (Glasgow), Surrey and LSE



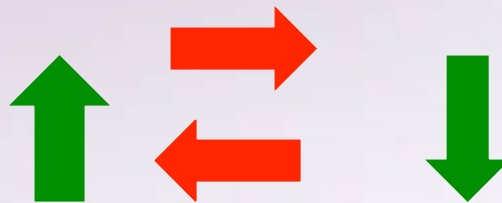
Flexible Networks as an Emergent Perspective – Design issues

➤ Hanseth and Lyytinen (2010)

- Bootstrap and adaptability
- Complexity of the environment
- Design process: discover, implementation, integration, control, coordination heterogeneous
- Areas: applications, platforms, information infrastructure

Top to bottom

Vertical design model



Vertical/horizontal design model



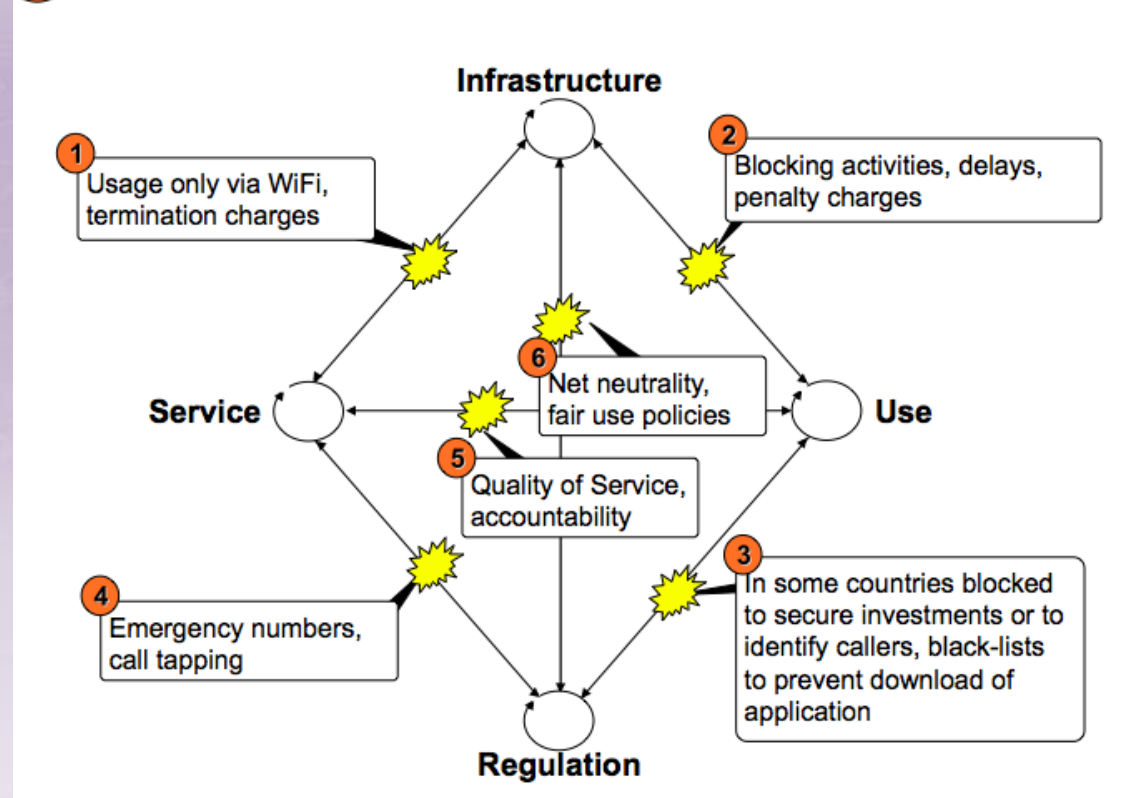
Research Issues in Flexible Networks Design

- **Convergence**
- **Tussles** (Clark, 2002)
 - Technical vs. socio-economic point of view
- **Control Points**
 - Exclusive and non-exclusive models
 - Digital markets (Bush, 2009)
 - Flexible control points (Herzhoff,2009)
 - Sharing (Benkler, 2005)
- **Applied to two cases VoIP and Network Sharing**



Control Points and Tussles

C EXAMPLE: TUSSLES AROUND MOBILE VOIP



Each case study can be provided with design recommendations for improving tussle

Research Challenges

- **Flexible Networks provides an interesting case of IS on several areas:**
 - Tussles can inform design
 - Control points as key design
 - Importance of the socio economic view (Luhmann)
 - Infrastructure as an emergent perspective (Hanseth and Lyytinen)
 - Yoo et all (2010, pp12) – Dimensions of Digital Innovation
 - Convergence and digital materiality
 - Innovation processes (generativity, locus and pace)



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MOBILE

VCE

How to design for Tussle – An initial socio-economical perspective

- According to social conflict theory [Luhmann1997]:
 - Conflicts do not need to be destructive or in fact at all negative (**immunization of society, testing resistance potential**)
 - However, some conflict system can become **destructive** (feeding from host systems)
- Large-scale networks become more and more **like society**, including conflicts
- In systems design suggestion to deal with conflicts is usually **to resolve it**

- Society as a whole has developed **three ways** to deal with conflicts [Luhmann1997]:
 - Resist conflicts by establishing a structural asymmetry
 - Conflicts are allowed but reduced through social regulation (3rd party)
 - Differentiation between reasons for conflict and conflict itself
- Furthermore, conflicts are also dealt with through toleration, suppression, externalization, postponement, ignorance, encapsulation, prevention and institutionalization [Malsch2001]

Based on the work completed in Phase 1, it has been identified the need for a methodology that encompasses the required strategies for “design for tussle” in the technical work packages