Rethinking Rights and Regulations

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Summary of selected chapters by H.Hämmäinen

Governance in Namespaces

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Summary by H.Hämmäinen

Motivation

- We are surrounded by physical and computerized namespaces
- Regulator looks for technical control points, and often ends up to a namespace issue
  - In 2000, voteauction.com started auctioning real votes of the US presidential elections. Authorities were able to shut down the site because it was registered in the US. The site was soon registered and reopened in Austria as vote-auction.com. Private registrar closed it in Austria without any jurisdiction.
  - In 2000, napster.com was shut down by a court order because of copyright infringements. This action was technically possible because Napster was dependent on a centralized search structure based on domain names.

About Namespace Governance

- While addresses *locate* resources, location-independent names *identify* them
- Names are mainly used to identify four kinds of resources
  - Persons (e.g. MS Passport, PKI)
  - Computers and devices (e.g. Internet/DNS, PSTN/phone numbers)
  - Files (e.g. WWW/URL, P2P file sharing)
  - Applications and services (e.g. TCP/port numbers, WWW/UDDI)
- Means of namespace governance
  - By contract (e.g. ICANN for DNS)
  - By technology (helps to enforce contracts when aligned)
- Governance by governments, private entities, or hybrid coalitions (sometimes disputed, e.g. the role of ICANN)

Namespace Topologies

- Vertical distribution
  - <u>Flat namespaces</u>: centralized, easy to regulate (e.g. MS Passport)
  - <u>Hierarchical namespaces</u>: decentralized, several entities (e.g. DNS)
- Horizontal distribution
  - <u>Centralized namespaces</u>: easy to regulate, strong network effects, high switching costs (e.g. old Napster, MS Passport)
  - <u>Federated namespaces</u>: interoperability between multiple namespace providers (e.g. PKI cross-certification, opening of MS Passport to foreign identities)
  - <u>Decentralized namespaces</u>: operationally independent but technically uniform namespaces, difficult to control (e.g. Gnutella, PGP)

Intensity of Namespace Governance

- Intensity of governance has an impact on regulability and innovativess
- Innovativeness of the end-to-end principle in Internet can be seen as a consequence of the private TCP port numbers
- Degrees of intensity
  - <u>Controlled</u> (e.g. IANA registered "well-known" TCP port numbers 1-1024)
  - <u>Coordinated</u> (e.g. IANA registered TCP port numbers 1025-49151)
  - <u>Uncoordinated</u> (e.g. unassigned private TCP port numbers 49152-65535)

Scope of Namespace Governance

- Scope of governance has a policy impact on regulatory, privacy and innovation issues
- Amount of information per name in namespace
  - <u>Information-rich</u>: adds privacy concerns (e.g. DNS/whois)
  - <u>Information-poor</u>: tool for privacy protection (e.g. PSTN phone numbers)
- Purposes of namespace
  - <u>Single-purpose</u>: easy to regulate (e.g. Napster file namespace for music)
  - <u>Multi-purpose</u>: more difficult to regulate (e.g. DNS, layering of DNS/IP/Ethernet namespaces)
- Adaptiveness of internal namespace structure
  - <u>Fixed</u> vs. <u>Adaptive</u> namespaces
  - Number of names can be fixed (e.g. IP addresses) or dynamic (e.g. PSTN)

Design Implications

- <u>Knowledge</u> of a namespace typically resides in databases
- Centralized <u>knowledge</u> (i.e. database) may lead to centralized <u>control</u>
- Centralized <u>control</u> may lead to centralized legal <u>responsibility</u>
- Recording industry could not attack Napster via the TCP port 6699, but instead focused on its proprietary file namespace which depends on the public DNS namespace in a centralized way

Taxonomy of Namespaces

General Template

		Allocation of		
		Knowledge	**Control**	**Responsibility**
Vertical	Flat	c	c	c
Distribution	Hierarchical	d	m	m
Horizontal	Centralized	c	c	c
Distribution	Federated	m	m	m
	Decentralized	d	d	d
	Controlled	c	c	c
Intensity	Coordinated	m	d	m
	Uncoordinated	d	d	d
	Information-rich	c	c	c
	Information-poor	d	d	d
Scope	Single-purpose	c	c	c
	Multi-purpose	d	d	d
	Rigid Internal Structure	c	c	c
	Adaptive Internal Structure	d	d	d

Legend
c = fully centralized
m = intermediate between centralized and decentralized
d = fully decentralized

Taxonomy of Namespaces

Case DNS

		Allocation of		
		Knowledge	**Control**	**Responsibility**
Vertical	Flat	c	c	c
Distribution	Hierarchical	d	m	m
Horizontal	Centralized	c	c	c
Distribution	Federated	m	m	m
	Decentralized	d	d	d
	Controlled	c	c	c
Intensity	Coordinated	m	d	m
	Uncoordinated	d	d	d
	Information-rich	c	c	c
	Information-poor	d	d	d
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Taxonomy of Namespaces

Case Skype

		Allocation of		
		Knowledge	**Control**	**Responsibility**
Vertical	Flat	c	c	c
Distribution	Hierarchical	d	m	m
Horizontal	Centralized	c	c	c
Distribution	Federated	m	m	m
	Decentralized	d	d	d
	Controlled	c	c	c
Intensity	Coordinated	m	d	m
	Uncoordinated	d	d	d
	Information-rich	c	c	c
	Information-poor	d	d	d
Scope	Single-purpose	c	c	c
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The Potential Relevance to the US of the EU's Newly Adopted Regulatory Framework for Telecommunications

S. Scott Marcus

Summary by H.Hämmäinen

Motivation

- Convergence of telephony, data, and broadcasting networks and businesses is a major global regulatory challenge
- The most concrete challenges are the new IP-based substitutes
  - IP telephony over CATV, ADSL, and WLAN networks
  - IP television mainly over ADSL and fiber-to-the-home

Regulation in the US

- Revision to the Telecommunications Act of 1934, that of 1996, does not cover convergence, but separates telecommunications services from information services (i.e. IP-based)
- Concern on the Universal Service Fund started in 1998
- Antitrust process is merger-centric
  - relevant product market is defined using a "smallest market principle"
  - impact of a merger is estimated using relative concentration and the Herfindal-Hirschman Index (HHI)
  - Department of Justice (DoJ) collects confidential information via Civil Investigative Demand (CID)
- Federal Communications Commission (FCC) has less power for collecting confidential information
- FCC must conduct a Biennial Review to secure that unnecessary regulations are removed
- Regulation is multilevel (federal, state, municipality) but FCC has taken a position that Internet is interstate

EU – New Regulatory Framework

Framework directive
- Establishes the common regulatory framework
- Defines the tasks of National Regulatory Agencies (NRA)
- Sets procedures for Significant Market Power (SMP) definition
- Accounting separation requirement (network/services)
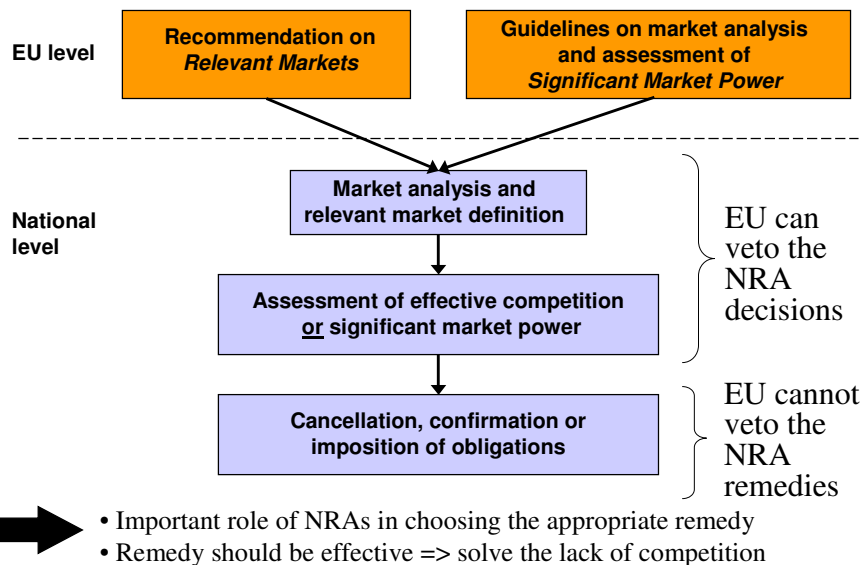
Access directive
- Interconnection and access rights and obligations
- Cost recovery and price control
- Accounting separation, use of specific cost accounting systems

Universal service directive
- Defines minimum set of basic services to all citizens
- Basic telephone service, leased lines

EU – Regulatory Process

EU level

| Recommendation on *Relevant Markets* | Guidelines on market analysis and assessment of *Significant Market Power* |

National level

Market analysis and relevant market definition

Assessment of effective competition **or** significant market power

EU can veto the NRA decisions

Cancellation, confirmation or imposition of obligations

EU cannot veto the NRA remedies

- Important role of NRAs in choosing the appropriate remedy
- Remedy should be effective => solve the lack of competition

US vs EU

- EU pursues technology- and service-neutral regulation, while the US still leans on detailed silos. EU deals with convergence explicitly
- EU has centralized responsibility for law creation and decentralized for law enforcement. The US does not separate these responsibilities
- US defines specific regulatory outcomes, while EU defines the process for reaching outcomes
- In EU, people trust governments more than corporations. In the US, it is vice versa. FCC lacks the authority to get confidential information and may lack the ability to protect that information

Thanks!