Antelope Consulting

Impacts of convergence on consumer policy

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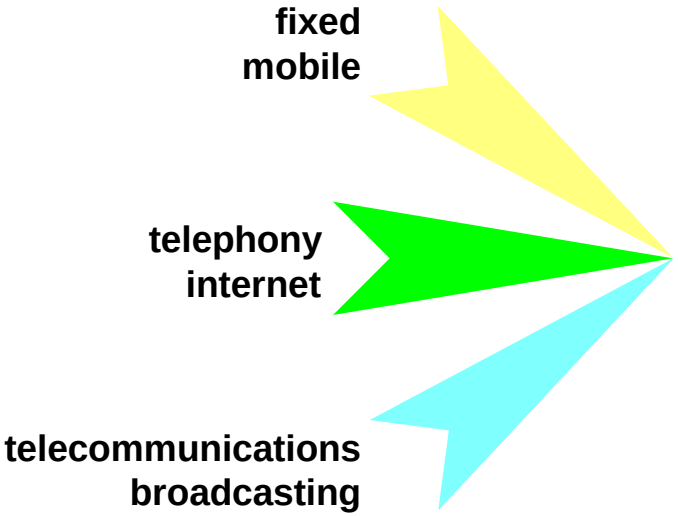
June 2007

Agenda

- **Introduction**
- **Case study 1: Numbering**
- **Case study 2: Quality of service**
- **Case study 3: Privacy**
- **Conclusion**

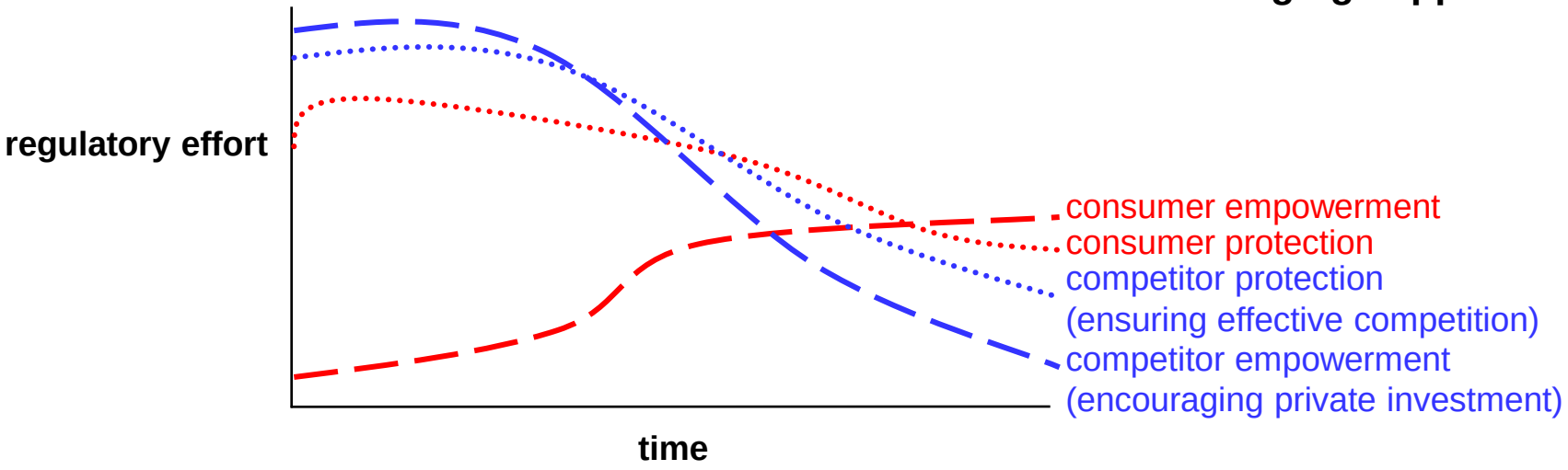


Relations between competition policy and consumer policy

- **Typical objectives of regulators are:**
  - **Ensuring effective competition.**
  - **Encouraging private investment.**
  - **Defending consumer interests.**
- **Competition is not an end in itself: it is a way of getting industry to serve customers better.**
- **During the move from monopoly to full competition, regulation must make up for inadequate competition.**
- **Even with full competition, communications may need special consumer policies because:**
  - **Communications form essential services.**
  - **Market failures may persist for disadvantaged groups of consumers.**
  - **Purchase decisions become very complicated.**
- **However, convergence leads to more general service packages; there can be more general policies (for pricing, quality and privacy, say), with special instances for specific services.**

Life cycle of competition policy and consumer policy

- **Consumer protection involves counteracting market failures and preventing abuse in (for example):**
  - **Missing or wrong price information.**
  - **Unauthorised or misleading sales.**
  - **Incorrect or incontestable bills.**
  - **Scams.**
- **Consumer empowerment involves assisting choice and instilling confidence with (for example):**
  - **Tariff and quality comparisons.**
  - **Complaints handling (sometimes).**
  - **Dispute resolution (sometimes).**
  - **Processes for changing suppliers.**

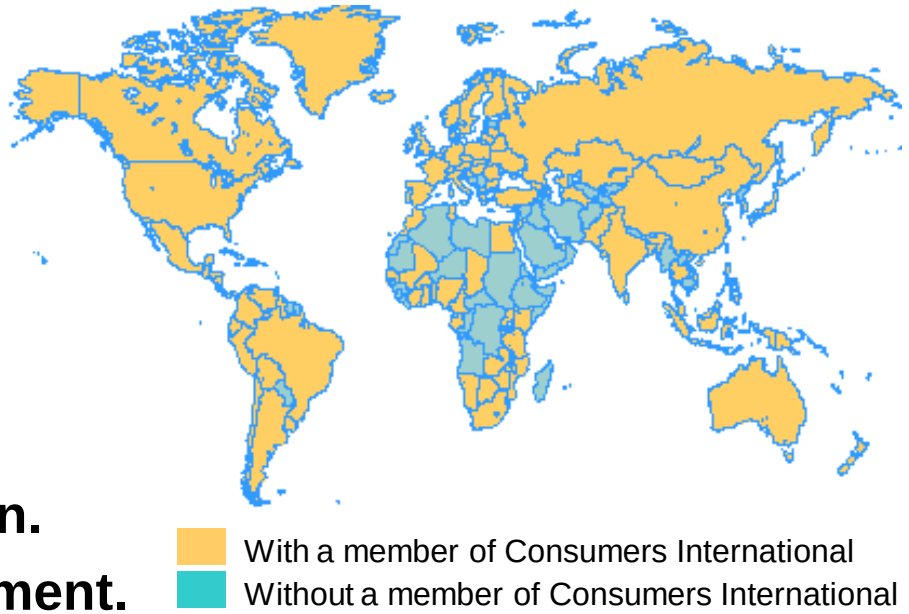


Consumer empowerment becomes more appropriate as markets and consumers mature.

A general global view of consumer rights

- **The right to satisfy basic needs.**
- **The right to be safe.**
- **The right to be informed.**
- **The right to choose.**
- **The right to be heard.**
- **The right to receive redress.**
- **The right to get consumer education.**
- **The right to have a healthy environment.**

Source: Consumers International,
based on “Guidelines for Consumer Protection”,
United Nations General Assembly, 1985 and 1999.



Source: Consumers International, 2007.

These rights can be specialised to communications.

Consumer risks from communications advances

- Consumer institutions
  - Inadequate complaints and redress systems
  - Inadequate consumer involvement in policy making
- Consumer contracts
  - Unclear contracts
  - Rushed purchase decision
  - Inadequate price indications
  - Unclear bills
- Privacy and security
  - Misuse of personal data
  - Unwanted calls
  - Insecure personal billing accounts
  - Insecure personal communications
- Access and affordability
  - Expense of essential services
  - Unavailability of new services
  - Expense of advanced equipment
  - Incomplete interoperability
  - Absence of essential new services
- Price
  - Excessive overall prices
  - Unfair residential prices
- Quality
  - Harmful or illegal content
  - Unexpected content
  - Worse communications quality
  - Unwanted effects of competition
- Choice
  - Barriers to choice of transport
  - Artificially limited choice of content
  - Difficulty in finding content

Source: Claire Milne with Ovum,
Results from an early survey of 46 organisations in Europe,
In “The consumer in the information society”,
European Commission, 1996.

Consumer policy needs for communications advances

- **Consumer protection examples with convergent services include:**
  - **Single point of contact for all consumer contract problems**
  - **Clear rules on permissions to transmit and store personal data**
  - **Trustworthy intermediaries in transactions**
  - **Price controls on service bundles from former monopoly suppliers**

- **Consumer empowerment examples with convergent services include:**
  - **Unbiased programme guides**
  - **Price and content labelling**
  - **Portability of electronic addresses**
  - **Trial and maximum contract lengths**
  - **Expenditure control mechanisms**
  - **Enhanced consumer representation**

Source: Claire Milne with Ovum,
Results from an early survey of 46 organisations in Europe,
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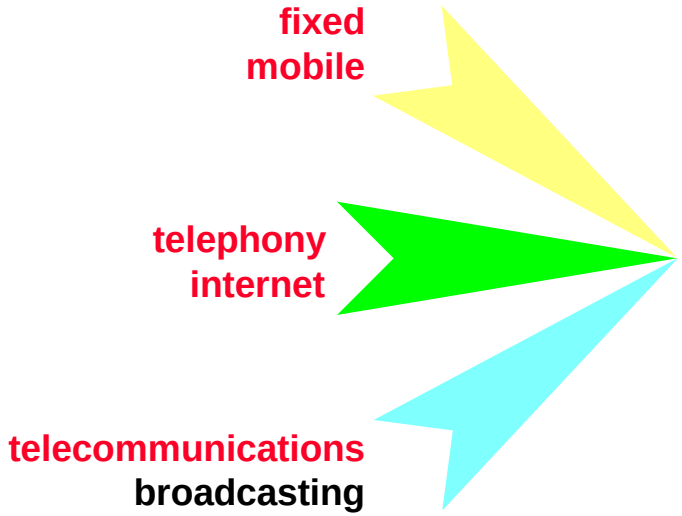
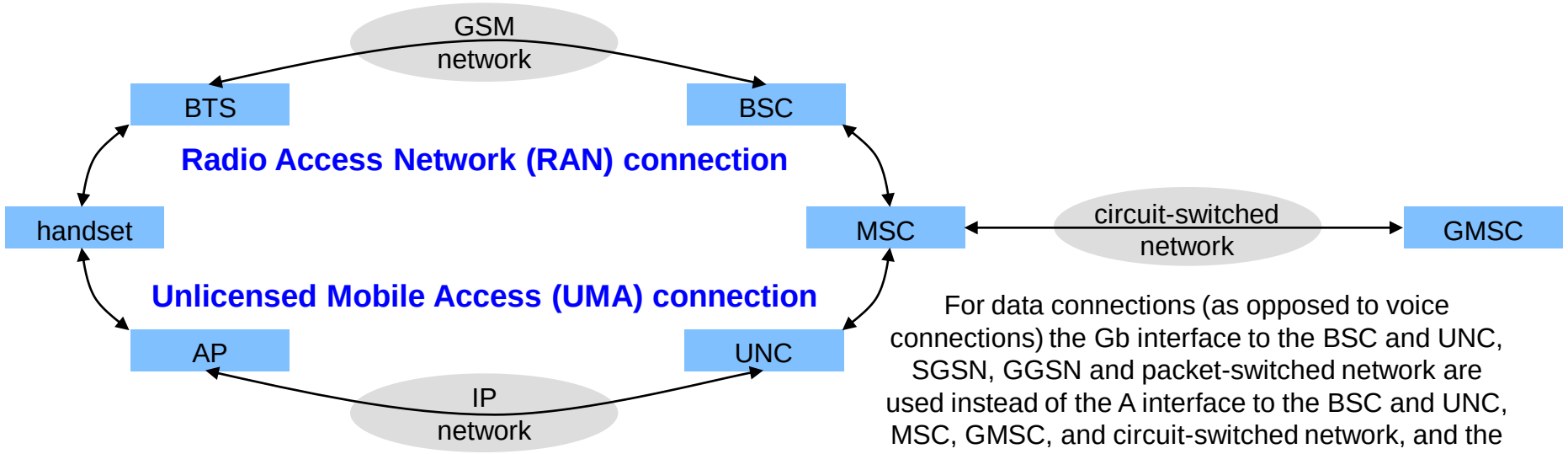


FMA operation

- **Earlier versions of Fixed Mobile Access (FMA) combine DECT and GSM on single handsets, without satisfactory handover.**
- **Current versions of FMA combine VOIP and GSM on single handsets, with satisfactory handover.**
- **Calls to (but not always from) FMA handsets are routed to mobile networks.**
- **For mobile operators, an alternative is to use just their networks with home zone tariffs and, perhaps, small cells for cheap indoor coverage.**



For data connections (as opposed to voice connections) the Gb interface to the BSC and UNC, SGSN, GGSN and packet-switched network are used instead of the A interface to the BSC and UNC, MSC, GMSC, and circuit-switched network, and the UNC does not need to include a media gateway.

Desired properties of numbering for new services

	VOIP			FMA		
	fixed	**mobile**	**special**	**fixed**	**mobile**	**special**
• **Inform callers about tariffs before calls**	probably	no	possibly	possibly	possibly	possibly
• **Avoid extra need for subscribers to change their numbers**	probably	no	no	no	probably	no
• **Avoid extra demands for scarce numbers**	possibly	probably	possibly	possibly	probably	possibly
• **Avoid extra digit analysis in routing calls**	no	probably	probably	no	probably	probably
• **Inform callers about recipient locations before calls**	possibly	no	no	possibly	no	no
• **Inform callers about service features before calls**	possibly	possibly	probably	probably	probably	probably

Implications for consumers in several countries of the numbering for these services

Some choices of numbering for convergent services

	VOIP			FMA		
	fixed	**mobile**	**special**	**fixed**	**mobile**	**special**
• **UK**	yes (1)	no	yes	yes (1)	yes	no
• **Ireland**	yes (2)	no	yes (3)	yes (4)	yes	yes (3)
• **Japan**	yes (5)	no	yes (6)	no	no	yes
• **Denmark**	yes	yes	no	yes	yes	no
• **France**	yes	no	yes	no	yes	no
• **Italy**	no	no	yes	yes	yes	no
• **US**	yes	yes	no	yes	yes	no

Permitted numbering in several countries for these services (with constraints shown for three countries)

1. Providers must use fixed network call charges.
2. Customers must reside in the geographic areas and not use the fixed numbers outside the geographic areas much, providers must offer publicly available telephony services with fixed network call charges, and there must be no shortage of geographic numbers.
3. Providers must use numbering ranges as intended and not support premium rate services with them.
4. Customers must reside in the geographic areas, providers must offer publicly available telephony services with fixed network call charges and restrict the use of the fixed numbers to the geographic areas, and there must be no shortage of geographic numbers.
5. Providers must offer at most 150 milliseconds delay and serve emergency calls.
6. Providers must offer at most 400 milliseconds delay.

Forms of identification used for VOIP

- **Numbers for VOIP like those for traditional telephones:**
  - **Can be used by telephones with IP connectivity (through gateways in the customer premises or the access network).**
  - **Can have portability implemented much as in traditional networks, with the possible addition of ENUM systems.**
  - **Lose their links with area codes originally allocated to specific access network operators, if there is portability.**
  - **May have little geographic significance (because the routing is determined by more centralised databases).**
  - **Are managed by the telecommunications regulator.**
- **Other forms of identification for VOIP:**
  - **May be used, perhaps alongside telephone numbers, by terminals such as computers (for example, sip:rem@antelope.mn).**
  - **Can have portability implemented in redirect servers (for example, mapping sip:rem@antelope.co to sip:rem@nominated_isp.mn).**
  - **May lose their links with proprietary domain names, if there are personal domain names (for example, sip:home@milne.123.mn).**
  - **Have no geographic significance (though some location information can be obtained from the underlying IP addresses).**
  - **Are managed by the domain name manager.**

The nature of ENUM and similar systems

- **ENUM is intended to relate phone numbers to communication services that can be used in IP networks, potentially with:**
  - **Several communication services per phone number.**
  - **Individual phone numbers as personal identifiers.**
- **ENUM maps a phone number to:**
  - **A list of communication services and identifications, ordered by the user preferences (voice, email, instant messaging, …).**
  - **A VOIP service and identification (such as sip: rem@nominated_isp.mn), in particular.**
- **ENUM is technically successful in using the Domain Name System (DNS) of the public internet in a fairly static way.**
- **In its original public form ('user or public ENUM') it exposes the mapping between telephone numbers and identifications to the public:**
  - **Subscribers would have difficulties in keeping their information up-to-date.**
  - **Spammers would have no difficulties in finding the information.**

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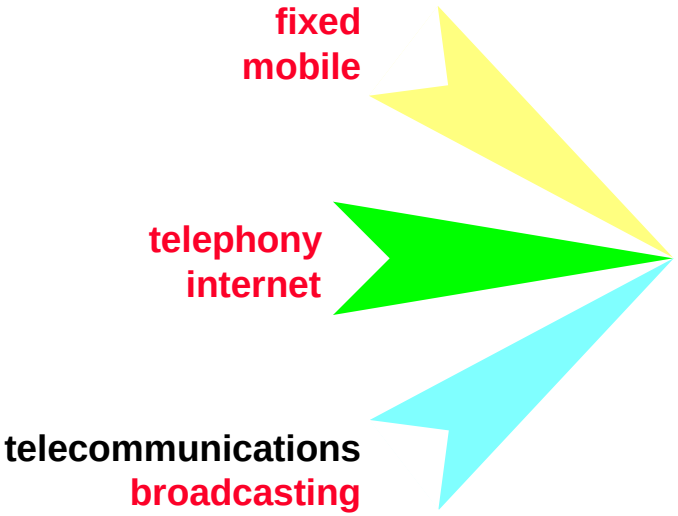
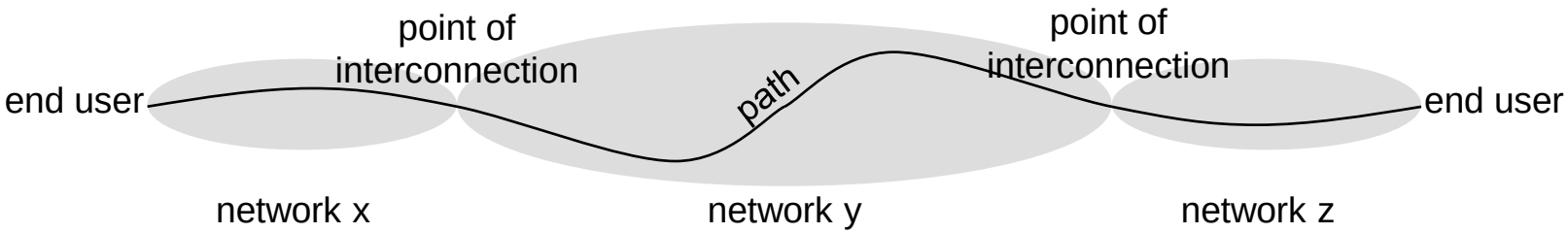


VOIP relation to quality of service

- **Quality gets worse when a call crosses several times between VOIP networks and conventional networks:**
  - **Between each pair of networks a conversion introduces many milliseconds of delay and sometimes a change in voice encoding.**
  - **The total delay (through 6-12 conversions) can become too large in conversations using national networks, or even international networks.**
  - **Successive encodings (through 3 conversions) can degrade voice quality severely.**
- **These problems will be reduced over time:**
  - **More networks will interconnect directly using IP (without conversions).**
  - **Gateways will support better encodings, such as Adaptive Multi-Rate (AMR).**



IPTV relation to quality of service

- **Many delay constraints are no more severe than for VOIP:**
  - **When IPTV is largely a one-way service, delay does not matter much.**
  - **Channel switching matters and should take at most 400 ms (which limits the servers as much as the network).**
  - **Lip synchronisation matters, so audio and video network paths should be consistent.**
- **Most loss constraints are perhaps no more severe than for VOIP:**
  - **IPTV is not like distribution over IP of conventional TV in this respect.**

Quality of service in an NGN

- **An NGN may offer wholesale services between layers as well as between networks:**
  - **Quality of service information is important between layers as well as between networks.**
- **An NGN may offer multiple real time services, with different delay and loss requirements:**
  - **Quality of service needs to be understood and estimated end-to-end for different real time services (including those for people with disabilities).**
- **An NGN may build new "walled gardens" with charges for "suitable quality" IP and violations of "net neutrality":**
  - **Quality of service should be maintained for "best effort" IP, to avoid forcing customers to higher quality levels (and higher prices) than necessary.**
- **An NGN may introduce bundles of services crossing several layers:**
  - **Quality of service information for the individual services can help customers comparing dissimilar bundles from different operators.**

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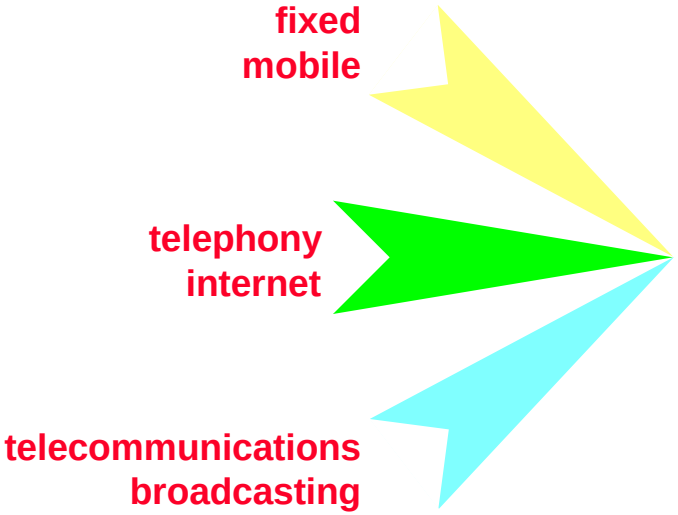
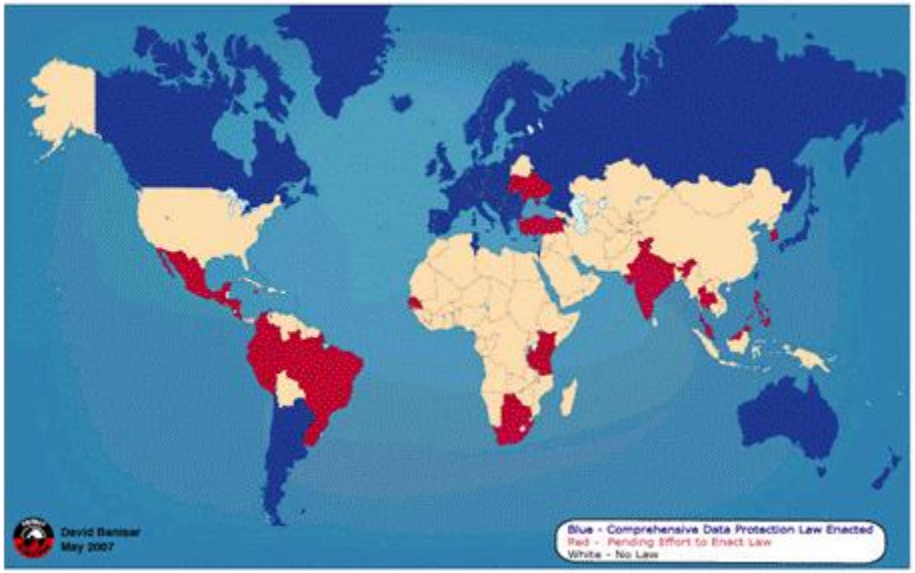
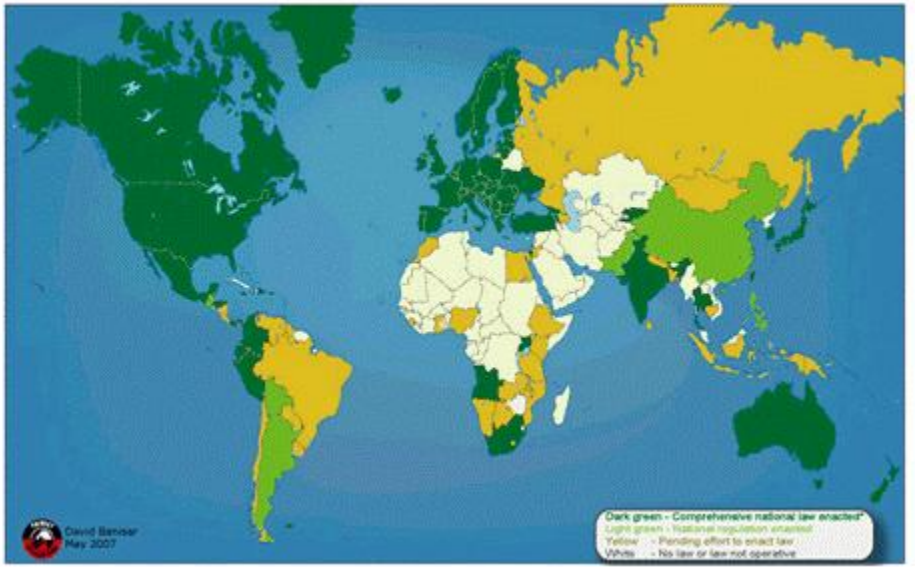


Implemented data protection and freedom of information laws



Source: Privacy International, 2007.



Source: Privacy International, 2007.

Privacy problems in communications may be just specific aspects of more general problems.

Data protection practice: a current bad example

- **"... throughout our research we have found numerous deficiencies and hostilities in Google's approach to privacy that go well beyond those of other organizations... none [of the 22 other companies surveyed, including AOL, Microsoft and Yahoo] comes close to achieving status as an endemic threat to privacy."**

Source: Privacy International, June 2007

- **"The Article 29 Working Party fully supports this Resolution [on Privacy Protection and Search Engines] and would appreciate the detailed views of Google on the steps which it has taken to fully implement its recommendations... by the beginning of June 2007."**

Source: Article 29 Working Party, May 2007

- **"Google's logs link a user's personally-identifiable IP address with their search terms... 89% of respondents think their search terms are kept private, and 77% believed that Google searches do not reveal their personal identities. These numbers indicate that Google's practices violate the public's expectation of privacy with respect to the collection and use of search history data."**

Source: Electronic Privacy Information Center, May 2007

United States Patent Application *20070072676* Kind Code A1 Baluja; Shumeet March 29, 2007
Using information from user-video game interactions to target advertisements, such as advertisements to be served in video games for example

Abstract

Information about a person's interests and gaming behavior may be determined by monitoring their online gaming activities (and perhaps making inferences from such activities). Such information may be used to improve ad targeting. For example, such information may used to target ads to be rendered in a video game being played by the person.

Source: Patent Office, US, March 2007.

Data protection principles

- **Personal data shall be:**
  - **Processed fairly and lawfully.**
  - **Obtained only for processing compatible with specified and lawful purposes.**
  - **Adequate, relevant and not excessive for the intended purposes.**
  - **Accurate and, where necessary, up to date.**
  - **Retained for no longer than is necessary for the intended purposes.**
  - **Processed in accordance with the rights of the person to access it and to prevent processing likely to cause damage or distress, for direct marketing or for taking decisions about the person automatically.**
  - **Protected by technical and organisational measures against unauthorised or unlawful processing and against accidental loss, destruction or damage.**
  - **Transferred without consent only to countries that protect adequately the rights and freedoms of persons in relation to its processing.**

Source: adapted from Data Protection Act, UK, 1998.

Privacy problems

- **"The systems [17-year-old] Nieves allegedly accessed contain customer billing records, addresses, and credit card information... Nieves also infected AOL servers with a malicious program to transfer confidential data to his computer... Nieves managed to log into 49 AOL instant message accounts belonging to AOL customer support... He also allegedly launched successful phishing attacks against AOL staffers, gaining access to more than 60 accounts from AOL employees and subcontractors."**

Source: summarised from IDG news service, April 2007.

- **Unauthorised data collection and retention:**
  - **Search, email, ecommerce and networking sites.**
  - **RFID, presence and location tracking.**
- **Violation of confidentiality or anonymity:**
  - **Accidents, thefts, and contracts with small print.**
  - **ENUM.**
- **Intrusion:**
  - **Instant message, email and SMS spamming.**
  - **VOIP spamming ('spitting').**
- **Eavesdropping:**
  - **Instant message and email interception.**
  - **VOIP and alarm system interception.**
- **Fraudulent representation:**
  - **Phishing, pharming, and misleading minors.**
  - **VOIP phreaking.**
- **Covert data or program insertion:**
  - **Trojan horses, worms, viruses, spyware, adware and other malware.**
  - **Rogue internet dialling.**

Telecommunications privacy regulations

- **Unauthorised data collection or retention:**
  - Non-anonymous traffic and location data may be used for marketing or value added services only with consent.
  - Non-anonymous traffic and location data must be erased when bills using it can no longer be challenged.
- **Violation of confidentiality or anonymity:**
  - Numbers or addresses may be put in a directory only with consent.
  - CLI presentation must be suppressible call-by-call.
  - Billing must be allowed not to be itemised.
- **Intrusion:**
  - Unwanted call forwarding must be able to be terminated.
  - Unsolicited or automatic electronic communications may be used for direct marketing only with consent.
- **Eavesdropping:**
  - Communications may be examined by persons other than the users only with consent or legal authorisation.
- **Fraudulent representation:**
  - Email for direct marketing must provide valid return addresses for identifying senders and preventing further communications.
- **Covert data or program insertion:**
  - Data or programs may be put on terminal equipment only with consent.

Source: summarised from Privacy and Electronic Communications Directive, European Commission, 2002.

Broadcasting privacy guidance

- **Any infringements of privacy must be warranted by, for example:**
  - **Revealing or detecting crime.**
  - **Protecting public health or safety.**
  - **Disclosing incompetence that affects the public.**
  - **Exposing misleading claims made by individuals or organisations.**
- **Potential infringements of privacy include:**
  - **Disclosing without consent the location of a home or family.**
  - **Disclosing without consent private words, images or actions captured in a private or public place.**
  - **Disclosing without consent words, images or actions of people in emergencies, accidents or personal tragedies.**
  - **Disclosing without consent from the guardian (and, if possible, the person) non-trivial facts about a person under sixteen or a vulnerable person.**
  - **Disclosing without telling the next of kin (and, if possible, the person) the identity of a person who has died or endured an accident or a violent crime.**
  - **Breaking guarantees of confidentiality or anonymity.**
  - **Filming or recording surreptitiously or vexatiously.**

Source: summarised from Broadcasting Code, Ofcom, UK, 2005.

Relations between telecommunications privacy regulations and broadcasting privacy codes

- **Privacy guidance for broadcasting can be interpreted in terms of data protection problems for communications, such as:**
  - **Unauthorised data collection or retention.**
  - **Violation of confidentiality or anonymity.**
  - **Intrusion.**
  - **Eavesdropping.**
  - **Fraudulent representation.**
- **However, it is likely to be formulated much more loosely than privacy regulations for telephony, because:**
  - **It has different historical origins.**
  - **It covers wider ranges of possible situations.**
  - **It deals with situations that are not pre-programmed.**
  - **It is linked with content guidance that is necessarily loose.**
- **Nonetheless, it is relevant to internet material for public access, not just to television material.**

Generality and specificity in regulation for convergence

- **A general law about data protection applicable to sectors besides communications, is desirable, but:**
  - **It might be difficult to formulate with enough precision.**
  - **It would need parliamentary and ministerial time.**
- **If there is no general law, a specific regulation should aim to be neutral about technologies and services (except where there are concerns about market power).**
- **As an example, "public access" below covers user ENUM as well as telephone directories; it does not cover CLI, which is not public.**
- **Also, the choice between opting-in and opting-out might be a choice between confidentiality and publicity, both of which might be desirable.**

43. Every Licensee shall supply information for public access about a Number through which an End User is taking service if and only if: (a) The Commission or an agent authorised by the Commission has requested that the information be supplied; (b) The Licensee has offered explicitly in the terms and conditions for the service the option of supplying the information; and (c) The End User has not accepted, or has withdrawn an acceptance of, the offer of the option to supply the information.	Conditions for supplying information about holders of Numbers

Source: adapted from Draft Numbering Regulations, Nigerian Communications Commission, Nigeria, 2007.

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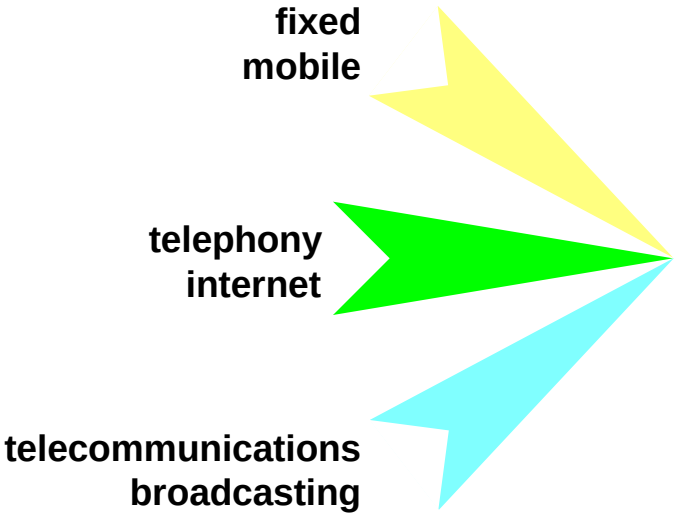
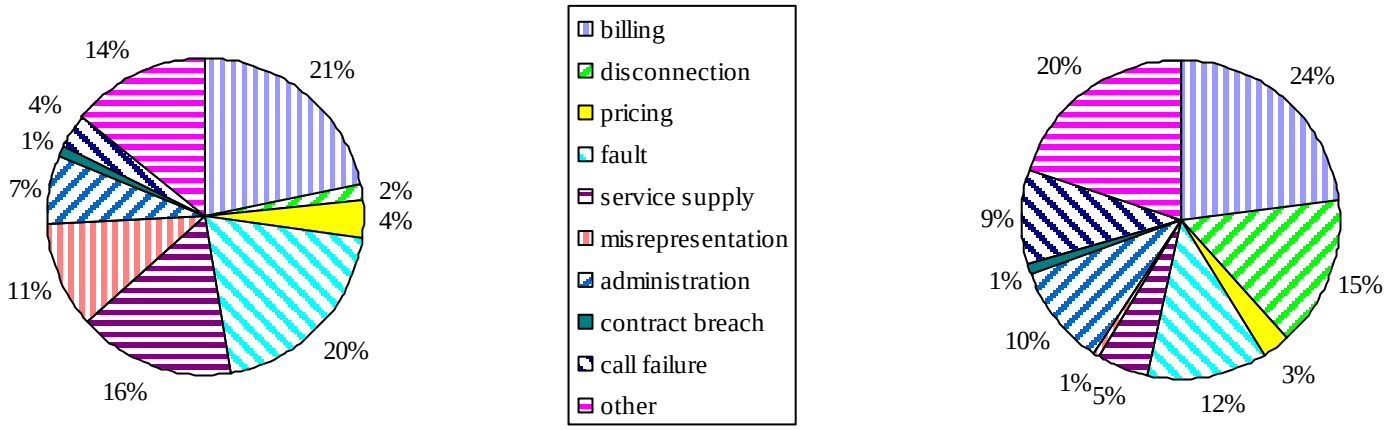


Areas of policy and regulation affected by convergence

	IPTV	VOIP	FMA	NGN
• Numbering.		●	●	●
• Quality of service.	●	●		●
• Universal service.		●		●
• Emergency calls.		●		●
• Pricing.				●
• Interconnection.		●		●
• Cross-subsidy.	●		●	●
• Regulatory organisation.	●			●
• Openness of access.	●		●	●
• Privacy.	●	●		●
• Acceptability of content.	●			●

Some aspects of regulation affected by these services

Complaints to regulators in two countries in Africa



The proportions of complaints allocated to the classes “billing”, “pricing”, “administration” and “contract breach” were rather similar in the two countries.

The proportions of complaints allocated to the classes “disconnection”, “service supply” and “misrepresentation” were very different in the two countries.

Other problems remain.

General suggestions

- **Consider policies before procedures.**
- **Start with general laws where they exist.**
- **Try to design specific policies that can be turned into general ones.**
- **Apply general principles such as:**
  - **Technology and service neutrality.**
  - **Confidentiality.**
  - **Openness of access.**
- **Test and adapt general principles according to specific situations.**
- **Focus on real threats to competitors and consumers.**
- **Prioritise and qualify planned regulatory efforts.**
- **Get surveys of consumer opinions as inputs.**
- **Contribute to predictability instead of uncertainty.**

Coming to grips with convergence is akin to wrestling with smoke.

Source: John Pinnock (outgoing Telecommunications Industry Ombudsman in Australia), CTN Quarterly, June 2007.

Specific points

- **Use number ranges to provide tariff information, not to constrain competition or to identify technologies or services.**
- **For more about numbering regulation see**

  “World numbering developments”

  at

  www.antelope.org.uk/numbering/World_numbering_developments.pdf
- **Use quality of service monitoring to provide publishable comparable end-to-end measurements, not to assess internal network performance or impose unrealistic targets.**
- **For more about quality of service regulation see**

  “ICT Quality of Service Regulation: Practices and Proposals”

  at

  www.itu.int/ITU-D/treg/Events/Seminars/2006/QoS-consumer/documents/QOS_Bkgpaper.pdf