

INTUG

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next generation issues

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INTUG contents

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- INTUG
- regulation: legacy & transition to the new?
- vested interests
- IP Multimedia Subsystem (IMS)
- leveraging & bundling
- privacy & security
- conclusions & issues

INTUG what is INTUG?

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- members:
 - national associations
 - corporations
 - individuals
- activities:
 - ITU and WTO
 - OECD
 - APEC TEL, CITEL and EU

INTUG our aims

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- real and effective competition
- genuine choice for users
- lower prices
- higher quality
- more innovative services
- constructive co-operation with:
 - international bodies
 - governments
 - regulators

INTUG generations

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- useful for historical explanations
- successive “generations” of:
 - computers
 - semi-conductors
 - cellular wireless technologies:
 - analogue
 - digital
 - digital with IP capability
- extensively (mis-)used in advertising

But we are not all using the same generation today

INTUG OECD policy analysis

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“It could be very tricky for policy makers and regulators to strike a balance between allowing nascent markets to develop without interference and ensuring that competition is able to develop in those new markets. However, they can play an important role in removing barriers to the effective deployment of NGN while encouraging the development of NGN.”

<http://www.oecd.org/dataoecd/58/11/34696726.pdf>

INTUG definition from ITU-T SG 13

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- a Next Generation Network is a packet-based network able to provide telecommunication services, able to make use of multiple broadband, QoS-enabled transport technologies and in which service-related functions are independent from underlying transport-related technologies.
- it offers unrestricted access by users to different service providers
- it supports generalised mobility which will allow consistent and ubiquitous provision of services to users

<http://www.itu.int/ITU-T/studygroups/com13/index.asp>

INTUG definition from ETSI TISPAN

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- a multi-service, multi-protocol, multi-access, IP-based network
- secure, reliable and trusted
- an enabler for Service Providers to offer:
 - real-time communication services
 - peer-to-peer and client-server
 - nomadicity and mobility of both users and devices
 - interoperability between legacy and next generation services and networks
- regulatory compliance
(e.g., lawful interception, number portability and emergency services)

http://portal.etsi.org/portal_common/home.asp?tbkey1=TISPAN

INTUG adoption & diffusion

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- incumbent operators:
 - cost savings (OPEX and CAPEX)
 - new services and revenues
 - politico-regulatory advantage
- enterprises:
 - return on investment
 - added-value and increased functionality
- consumers:
 - life-style choices
 - exciting devices and services

INTUG barriers to adoption

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- inadequate competition
- lack of clarity in benefits
- excessive pricing
- “walled gardens”

INTUG standardisation

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- very complicated work at:
 - ITU SG 13
 - ETSI TISPAN
 - 3GPP
 - etc.
- impossible to assess:
 - user needs
 - implications of standardisation
- driven by:
 - manufacturers
 - operators

INTUG european union

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- consultant study on NGN in 2003
- i2010 initiative
- workshop on NGN in June 2005
- the market analysis method is thought to be sufficiently flexible to cover NGN
- a “nebulous” concept
- subject for further study and consultation
- lobbying by incumbent operators and manufacturers

<http://europa.eu.int/i2010>

INTUG deutsche telekom

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“Our vision is to give the customer access via one single line - i.e. our broadband connection - to the wealth of the multimedia world, using a range of devices: at present telephones, televisions, PCs, video telephones and multimedia boxes. The benefits of this for our customers are obvious. They will have easy access to superfast Internet, video, games offers, high-quality general entertainment and interactive learning ... ”

Walter Raizner, Member of the Board of Management

Kai Uwe-Ricke, chief executive of Deutsche Telekom, hinted he did not expect the new network to be covered by the current regulatory regime and called on the telecoms regulator to allow the company to earn a “fair return on capital” on the investment.

Financial Times

<http://news.ft.com/cms/s/51fab7e6-1b0f-11da-a117-00000e2511c8.html>

INTUG ECTA

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“Failure to act will enable incumbent operators to build networks that foreclose competition reducing choice and innovation for consumers and businesses for years to come. Incumbents have argued that NGN investment is risky and that regulation would deter them from making this investment. However, the real risk is that, if incumbents can escape regulation by upgrading their core networks to reflect efficient modern technology already used by many other operators, competition will be irreparably damaged and, as a result, future investment by both incumbents and market entrants will be jeopardised.”

<http://www.ectaportal.com/uploads/NextGenerationNetworksPPMay2005.pdf>

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“The telecommunications sector is key for the sustainable development of Europe. All stakeholders must work together to develop policies that support investments in next generation networks to underpin the success of the EU’s knowledge-based economy.

ETNO members are committed to pursue and reinforce their investment in tomorrow’s networks but investors need the guarantee that they will be properly rewarded for the risks they take. Operators should be able to introduce new infrastructures or services even when partially relying on ‘legacy’ components (such as VoIP) without being caught up in all-encompassing access regulation.”

http://www.etno.be/Portals/34/press_corner/ETNOmanifesto.pdf

INTUG SBC a.k.a. AT&T

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"They don't have any fiber out there. They don't have any wires. They don't have anything ... they use my lines for free -- and that's bull. For a Google or a Yahoo! or a Vonage or anybody to expect to use these pipes for free is nuts!"

Edward Whitacre, CEO

This seems to forget that the *customer* is paying rent for broadband access in order to reach Google, Yahoo! and Vonage.

INTUG more than one network

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- fixed broadband:
 - corporate
 - residential
- wireless broadband networks:
 - Wi-Fi
 - WiMAX
- cellular voice and data networks
- digital broadcast networks
(DAB, DMB, DVB, terrestrial and satellite)
- (re-)distribution (Wi-Fi and UWB):
 - office and residential
 - Personal Area Networks (PANs)
 - car networks

INTUG “an Internet of things”

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- the next step, beyond today’s Internet, is to connect inanimate objects to networks
- networks and networked devices become omnipresent
- electronic tags (e.g. RFID) and sensors extend the communication and monitoring potential of the “network of networks”

<http://www.itu.int/osg/spu/publications/internetofthings/>

INTUG definition from NRI

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“As is the Internet, the ubiquitous network is a single integrated ICT paradigm that covers a full range of key elements from network infrastructure, digital equipment with communications capabilities and digital platforms (infrastructure environment) to solutions, and represents the environment for ICT utilization.”

Teruyasu MURAKAMI

<http://www.nri.co.jp/english/opinion/papers/2004/pdf/np200479.pdf>

INTUG ubiquitous network society

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- NGN plus RFID/sensors
- preferred model in North-East Asia
- any time, any place, any network, any device
- operators owning all types of infrastructure:
 - wired
 - cellular
 - wireless
- reduces interconnection & access disputes

<http://www.stanford-jc.or.jp/research-project/scti/summary/materials/200404261-imagawa.pdf>

INTUG Radio Frequency Identification (RFID)

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- communication:
 - person to object
 - machine to object
- passive or active tags
- open or encrypted tags
- requires assignment of spectrum
- privacy concerns:
 - US Department of State passports
 - Gillette Mach 3 razors

http://europa.eu.int/comm/justice_home/fsj/privacy/docs/wpdocs/2005/wp111_en.pdf

INTUG UK - NGN exercise

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- driven by BT and its 21st century network (21CN)
- massive OFCOM consultation:
 - two rounds of documents and comments
- in parallel with and related to the developments in “equivalence”
- too abstract for user assessment
- unclear what are the:
 - benefits
 - threats

<http://www.ofcom.org.uk/consult/condocs/ngn/>

<http://www.ofcom.org.uk/consult/condocs/nxgnfc/>

INTUG interconnection

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- well established rules for:
 - conventional networks
 - IP networks
- how do NGNs interconnect?
 - price
 - quality of service
 - interworking
 - location

INTUG world trade organisation

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- **Essential facilities** mean facilities of a public telecommunications transport network or service that
 - (a) are exclusively or predominantly provided by a single or limited number of suppliers; and
 - (b) cannot feasibly be economically or technically substituted in order to provide a service.
- A **major supplier** is a supplier which has the ability to materially affect the terms of participation (having regard to price and supply) in the relevant market for basic telecommunications services as a result of:
 - (a) control over essential facilities; or
 - (b) use of its position in the market.
- **Interconnection** with a major supplier will be ensured at any technically feasible point in the network. Such interconnection is provided.
 - (a) under non-discriminatory terms, conditions (including technical standards and specifications) and rates and of a quality no less favourable than that provided for its own like services or for like services of non-affiliated service suppliers or for its subsidiaries or other affiliates;
 - (b) in a timely fashion, on terms, conditions (including technical standards and specifications) and cost-oriented rates that are transparent, reasonable, having regard to economic feasibility, and sufficiently unbundled so that the supplier need not pay for network components or facilities that it does not require for the service to be provided; and
 - (c) upon request, at points in addition to the network termination points offered to the majority of users, subject to charges that reflect the cost of construction of necessary additional facilities.

http://www.wto.org/english/tratop_e/serv_e/telecom_e/tel23_e.htm

INTUG wto commitments

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- how do you apply the commitments to NGN?
- what sorts of commitments might be negotiated in the future?
- in competitive markets it might not matter

INTUG Loch Lomond Accord

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- agreement from 1997-98 between users and VPN providers
- service management and end-to-end fault diagnosis and ownership
- administration and billing:
 - one stop shopping
 - one stop billing
- synchronised private numbering for On-net to On-net calling
- calling line identification (CLI) and ring-back-when-free

INTUG interoperability

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- will the service you want be available on the networks to which you have access?
- will the devices and networks interwork?
- how will the network be selected:
 - the cheapest? (for the user or the provider?)
 - the best quality
- what happens if you have no billing relationship?
- will all services be available on all networks?

INTUG the question of liability

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- multiplicity of:
 - networks, devices and sensors
 - network operators and service providers
 - third parties (aggregators, portals, etc.)
- we need to be clear about:
 - who controls and manages the service?
 - who ensures security to minimise misuse?
- ultimately, if something goes wrong:
 - who pays the penalty?
 - who goes to gaol?

INTUG control points

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- relating to network capabilities:
 - Network Address Translators and firewalls
 - routing tables
 - Quality of Service capabilities and interconnect
 - network coverage
 - termination capabilities
- related to accessing services and content:
 - unnecessary software and service bundles
 - “walled gardens”
 - tunnelling
 - filtering mechanisms and digital rights
 - end-user devices
 - content
- relating to user information:
 - authentication, single log-on and user profile management
 - customer billing information
 - access to customer information systems
 - resolution of names and numbers through customer identity systems
 - functions for determining location

<http://www.cullen-international.com/documents/cullen/cipublic/studies/ngnfinal.pdf>

INTUG access

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- where are the bottlenecks?
- what are the remedies?
- what are the equivalents of:
 - Carrier Pre-Selection (CPS)
 - Local Loop Unbundling (LLU)
 - Number Portability (NP)
- will they take as long to sort out as in the past?
 - deny
 - delay
 - degrade

INTUG bundling and leveraging

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- increasing effort in consumer markets to bundle:
 - triple play (telephony, Internet and TV)
 - quadruple play (plus mobile)
- serious risks of misuse of market power:
 - leveraging exclusive or “must have” content
 - asymmetric access to a network
- both classes of problem are very hard and time-consuming to resolve

INTUG IMS

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- IP Multimedia Subsystem (IMS)
- uses Session Initiation Protocol (SIP)
- appears to be designed to ensure control of network traffic
- could give operators a strong control over network traffic

<http://www.3gpp.org/>

INTUG ims

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- IMS offer the capabilities:
 - rapidly to define and implement services
 - services can interact with each other seamlessly
 - independent of the access technology
 - independent of the location of the end user
 - billing for services
- customers have access to services:
 - on multiple types of end user device
 - common presentation
 - common identification
- access technology no longer governs the service presentation to the end user
- a vast new range of services is conceivable

INTUG rising tide of “malware”

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- spam, spim, splog and spit
- viruses, trojans and worms
- phishing and pharming
- adware and spyware
- issues:
 - what is next generation malware?
 - is adequate security being designed into NGN, RFID and UNS?

INTUG residential wi-fi

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- redistribution of broadband capacity within the home
- connectivity for domestic appliances, entertainment and communications
- but who has access to the:
 - wi-fi router?
 - domestic server(s)
- is it secure, is it private, is it open?

INTUG converged corporate networks

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- network convergence is clearly gaining momentum
- expectations of value-adding benefits from convergence outweigh those of cost-efficiencies
- implementation barriers remain, such as security and cost
- realising the broader promise of convergence requires change well beyond the networks

<http://www.att.com/presskit/eiu/docs/networkconvergence.pdf>

INTUG quality of service

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- no consensus on approach:
 - over-provision?
 - MPLS?
 - Diffserv?
- how do you map QoS classes between networks?

INTUG IP numbering

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- eventual exhaustion of IPv4
 - long forecast, but not yet happened
 - e.g., GPRS is hidden behind a NAT
- proponents of IPv6
 - massive capacity
 - quite slow deployment
- proponents of IPv9, etc

INTUG conclusions

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- one network will not suffice
- NGN creates complex problems of:
 - access
 - interconnection
 - interoperability
- no clarity about the value of NGN to:
 - consumers
 - enterprises
- supposedly demand driven, but little evidence of that

INTUG issues

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- how do you err on the side of least damage?
- what should public policy promote?
 - competition?
 - investment?
 - infrastructure?
 - technologies?
(3G cellular wireless, WiMAX, Fibre To The X (FTTx), NGN, etc)
- is the ubiquitous network society model applicable away from Japan and Korea?

INTUG thank you

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