COSI – partnerships for Consumer Online Safety for the Internet

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“Intercaï Mondiale - The Business of Telecoms”

• Truly supplier independent
• Significant operator experience/expertise complementary to LEA expertise
• Track record of working in Oman, with TRA

• International Experience
  – Europe – Development of Content Filtering for Interception and Blocking for triple play operating businesses within Europe for a Global Operator
  – UK – Thought partner of Policy with the regulator for media and telecoms
  – UK – Due Diligence performed for a Venture Company upon a company providing multi-gigabit network encryption products globally
  – UK – Provision of Advisory Services for Skynet 5 military and commercial satellite voice and data services globally with international links

• Middle East Experience
  – Bahrain – Development of WiMAX infrastructure with network protection and key recovery to support Legal Interception
  – Jordan – Trust and Confidence Policy for E-Commerce through the use of PKI with a Certificate Authority
  – Kingdom of Saudi Arabia – Development of new entrant Mobile Network Operator(s) including Lawful Interception for Voice and Data traffic requirements
  – Kuwait - Development of Mobile Network Operator with Lawful Interception including Voice and Data traffic
Intercai’s breadth of international experience

- Technology evaluation and policy
- Network Architecture & design
- Network/Services Quality
- Network Performance & Optimisation
- Content Management
- Business planning and technical support
- Technical and financial due diligence
- Sector policy and establishment of Regulator
- Licensing policy and licence award
• Angus has had an extensive career involving policy and regulation for Mobile, Satellite and Fixed networks along with design and integration for security for IT and Telecommunications industries with a focus on network technologies, the applications running upon them and the integration with customer applications. He has worked closely with government agencies, telecom regulators, operators, enterprises and manufacturers.

• He is an expert of wireless and wireline networks with security, including voice, technology and its application for solutions in today’s fast moving business environment. Angus has a proven track record in implementing Mobile, IP Telephony, Networks and Security for Small Medium and General Enterprise, Government and Telcos. His recent work includes regulation of Mobile, Value Added Services and software support systems for public safety and national security.
Background

- The realities of cyberspace make it clear that everyone has to work together.
- Responding effectively to cyber-threats requires resources, know-how and strong investments on capacity developments; these efforts cannot be undertaken by only one entity.
- The key element is bringing the public and the private sectors together in trusted forums and joint activities, to address the common cybersecurity challenges and develop solid capacity building plans.
- These collaborative efforts should involve every cyber-user; from citizens to corporations, law enforcement, and critical infrastructure providers.
- The basis of a successful partnership is trust, which is necessary for establishing, developing and maintaining sharing relationships between the different parties.
- This session looks closer at the benefits as well as challenges associated with innovative and sustainable partnerships for enhanced cybersecurity, and how joint efforts generate concrete steps forward.
Consumer On-line Safety for the Internet (COSI)

• Consumer On-line Safety for the Internet (COSI) requires the stakeholders in the public and private sectors to address the challenges against various threats to consumers, including but not limited to:
  – Content and child protection
  – Unsolicited commercial messaging (spam)
  – Scams (phishing and pharming)
  – Illegal downloading of music and film
  – ...
COSI Stakeholders

• The stakeholders need to be brought together into a trusted forum undertaking activities together.

• This forum has to be built with new stakeholders that work with consumers using the existing partnerships, including but not limited to:
  – Child Welfare
  – Judiciary
  – Law Enforcement
  – Regulators
  – …
Existing Partnerships

- Suitable existing partnerships include but limited to:
  - National Security
    » Telecom operators
    » Corporations with their own telecommunications infrastructure,
    » Telecom Regulator
    » Concerned Agencies of National Governments
  - Public Safety
    » Telecom operators
    » Telecom Regulator
    » Law Enforcement
The forum has to be clear in its purpose, operations model and its way forward, including but not limited to:

- Aims of the association
  - Obligations under law
  - Obligations under regulations
  - Obligations implied under licences
- Preparation of principals and executive regulations
- Defined reference model
- Development of Code of Practice
- Development of Framework
- ...
The forum has to deliver against its aims. The aims have to be backed up through law or use of a number of laws. These laws themselves maybe supported with regulatory controls. The forum must be able to identify clearly a breach, audit it and enforce penalties against it by the relevant stakeholder(s).

- Example applicable laws
  » Data Protection
  » Freedom of Information
  » Freedom of Expression
  » Intellectual Property
  » 'e-Transactions
  » Consumer Protection
  » Cyber Crime
  » ...

- Example regulatory controls
  » Crypto policy
  » Data privacy
  » Content filtering
  » Traffic Analysis and Management
  » Information Assurance
  » Unsolicited Commercial Messaging
  » IP Lawful Interception
  » ...
A key part of building the forum is the need for a national hotline to be setup allowing the public to report offending content:

- Email
- Web portal
- Telephone
- …

The national hotline has to be able undertake content rating and validate the complaint.

- The national hotline passes on for action to be undertaken by national stakeholders.
- It maybe the offending content may not be within the country of the consumer making the report. The national hotline will then have to take up action with the hotline in the relevant country. It is necessary for the national hotline to develop links with hotlines in other countries and report upon it to the forum.
Broadcasting is the most established model of Content Regulation is. Does experience of this provide a model for regulation for other channels of communication?

- Legal framework
- Broadcasting Authority
- Broadcast Licensing
- Film Censors
- Censoring / Classification
- Advertiser Authority
- Electronic, print etc

Consumer Complaints

TV Considerations
- Multiplicity of competitive stations thru digital transition
- Limitations on satellite reception
- Delivery of media electronically & hard copy
The approach towards content regulation need to be set in the context of the following:

- The standards of the country and its culture
- Extent of regulation and the severity and granularity that is sought
- Proactive vs Reactive approach
- Regulatory models for the different types of media
- Regulatory mechanisms set in the context of a realistic expectation of compliance from third parties such as Service and Content Providers
- Required regulatory resources

The requirement to introduce and enforce content regulation needs to be considered from a number of perspectives. If, for example, the regulatory model is too extensive, severe and granular, it may be unworkable and present an unmanageable responsibility on the regulator and also militate against socio economic objectives.

‘Best practice’ in other countries uses different models for broadcasting and telecommunications. The latter, comprising internet and mobile, has different considerations because of the way in which infrastructure is managed where mobile has, for the moment, more formal controls.

Television Without Frontiers TWF

- European TWF Directive under debate
- Desire for EU single market in TV broadcasting and one that could compete with the USA with EU cultural and economic objectives
- TV only, not radio
- But TWF Directive is not technologically neutral. TV services via non-broadcast means are regulated differently to identical services that are broadcast.
- This is the nub of the matter that faces all in the new content space.
**Internet Practice**

- www, Usenet newsgroups, ...
- email excluded
- Rating system
- External site issues
- White & black lists

**Objective**

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<th>Objective</th>
<th>?Possible by self-regulation</th>
<th>?Possible by legislation</th>
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<td>Enable adults to protect children from unsuitable material</td>
<td>Yes</td>
<td>No</td>
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<tr>
<td>Enable adults to control their own access to material they do not wish to see</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Prevent communication of material which is illegal to possess</td>
<td>No</td>
<td>No</td>
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**Source:** ICC

- Consumer Complaints
- Content Providers, ICH, ISP
- ICH, ISP Licensing
- Labelling / Exclusion Practice
- Client Filter Provision
- Regulator
- Lacks legal framework

**Q? Should Content Regulation of Internet (practices and resources) be applied to Broadcasting and, if so, to what extent?**
Mobile – Convergent Device?

- The mobile is becoming an access device where its use as a mobile phone for voice, messaging and multimedia services on the mobile operator's network represents its main but not sole function.
- Access to fixed lines is being introduced in the tariff war so that mobiles in range of the user's land line can have calls routed over the fixed infrastructure.
- With the increasing use of broadband coupled with the capability of mobile phones (internet/IP connectivity and web browsing) there is the prospect of these devices being used to access the web and related sites such as Usenet.
- The operator controlled model in the Walled Garden Scenario belies this internet/web access scenario.
- Matters to take into consideration are the uptake of mobiles (the overall range of devices) in young people and the issues of client protection software such as filtering and malware.
- Content regulation needs to take into account the way in which Mobiles may be used over the next 3 to 5 years and as Mobile Internet devices.

- For the purposes of content regulation, the mobile ‘phone (inc PDA and other variants) should be viewed as an internet access device with the following attributes:
  - predominant device for young people
  - personal & therefore less parental control
  - internet & web browsing functionality
  - limited control re filtering & malware
  - the need to look to future capabilities as well as considering those on the horizon

- Q? Should Content Regulation be considered from the perspective of convergence, ie all audio visual material that is communicated over IP?
MNO Practice

- Setting the scene for Content Regulation internationally
  - Should it aspire to be technology and platform neutral?
  - What is the level of pain and difficulty for the MNO?

Review of current practice

- Providing a review of practices of other countries
- All have come from a broadcasting regulation background
- They are seeking to address regulation of the internet, few are doing
- The mobile device represents the new wave of convergence

- Across Europe, no legislation is in place and codes of practice are used /
- MNOs have proclaimed their policy regarding their social responsibility
- MNOs have issued corporate responsibility statements and given timescales to the business to implement these.

Types of Content – many, varied and challenging

- TV
  - Programs
  - Film
  - Adverts
- Radio
  - Programs
  - Adverts
- Internet
  - www
  - Usenet newsgroups
  - FTP
- Mobile
  - MMS
  - Internet
  - all devices inc PDA
MNO Regulatory Status

- What is the MNO situation?
- What is the current level of content access control e.g., age verification, URL filtering ….?
- Is there a country code of practice and what is it?
- Is there a corporate responsibility statement and what is it?
- What are the timescales for implementation of the policy for each country operation?
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<th>South America</th>
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Examples of local regulatory and social variances:

**UK**
Long tradition of topless modelling in the press – but not showing couples

**Ireland**
Nudity is not acceptable – not even topless models

**Netherlands**
Very high level of tolerance to erotic images of all kinds

**Austria**
Very tolerant of all erotic images
Few restrictions

**Sweden**
Extremely intolerant
Calls to ban all forms of adult media

**Germany**
High tolerance of erotic images, subject to proper minor protection controls
Individual Appropriate Content

Parental Specified Preferences

- Fashion Sites
- Friendship Sites
- Personalisation Sites
- Diet Sites
- Finance Sites
Age Implication: Inbound Services

Age Verification also applies to in-bound services

- SMS / MMS Marketing
- Phishing (via SMS / MMS or Internet Links)
- Harassment / Nuisance Calls
- Inbound Chat
- Unknown originators
- Telemarketing (to minors)
Policies of EU Telecoms and Justice Commissioners

• Mobile
  – Mobile Internet (Web and WAP)
    » child protection in place banning illegal content
    » Internet Watch Foundation (www.iwf.org.uk) black list used
    » IWF works in conjunction with internet hot lines association inhope (www.inhope.org)
    » STOP enforcement on materials for producing acts of terrorism
  – Mobile Business
    » Tunnel traffic to Enterprise services to enforce corporate policies
    » Using off the shelf products e.g. Blackberry

• Broadband
  – Consumer, Hot Spot & Hospitality Suite
    » Similar to Mobile Internet
  – Business
    » Similar to Mobile Business
Example Forum Funding Scheme

- Complaints about content are collected together into a black list for periodic validation, perhaps twice a day, that are distributed to stakeholders to use for referencing to bar access to this illegal content.

- Commercial stakeholders such as telecom operators are able to use it on their infrastructure to cleanse their services.

- This telecom operators could be paying members of the forum which they can use in their marketing to demonstrate support of cultural standards and social values

- The equipment vendors used by the telecom operators could be associate members paying for the ability to host the black list on their equipment
Forum National Promotion

• Its essential that the Forum is promoted to consumers and that they understand they are important, since they can provide details of illegal content to the national helpline.

• Ways of getting the message out about the forum include but are not limited to:
  – Roadshows
  – Free leaflets to hospitals, schools, universities, clubs…
  – Web sites of stakeholders
  – articles in the media
    » newspapers, magazines, television programmes…

• This needs to be on a regular basis to describe purpose and provide success stories to encourage consumers to be active
Forum International Promotion

- We all understand that the Internet is global
- The Forum needs to be promoted to other national hotlines
- This allows for co-ordination between countries tackling threats to consumers safety from illegal content
- Policies maybe different between different countries i.e. one size does not fit all, and this needs to be understood in not just blocking access to content but requesting support in issuing of a take down notice to have content removed.
- For a take down noticed to be delivered against an illegal piece of content the national hotline of that country needs to initiate action
The evolution of cybersecurity challenges requires solid capability and capacity plans with the existing partnerships for National Security and Public Safety to be developed and implemented, including but limited to:

- Network Encryption
- Lawful Interception
- Data Retention
- Malware
- Information Assurance
- Quality of Service
National Security for Liberalised Telecoms Market

- National Security Partnership has challenges in developing capacity and capability plans tracking telecoms market evolution
  - Government ownership
  - Incumbent based market
  - Liberalised telecoms market
    » Access providers
    » Service providers
    » Network operators
ETSI LI Structure

Communication Service Provider

Net Operator Administration Function

IRI Mediation Function

CC Mediation Function

Interception Mediation

Network Internal Functions

Intercept related information (IRI) (also called Call Data)

Content of Communication (CC)

Network Entities

Voice / IP Network

LEA domain

HI1 (Provisioning)

HI2 (CDC)

HI3 (CCC)

Law Enforcement Collection & Administration
LI Tap with Incumbent in Telecoms Market

- Issues
  - All traffic force routed to international gateway – backbone costs
  - Performance intercepting all call data and content within volume
  - Mobile networks double NAT IP addresses obscuring them
LI Taps for Liberalised Telecoms Market

- LI Taps for Call Content
- Scale of LI Taps
  - Bitstream & VoIP provider and Network Operator
  - Minor Management and Operations
Public Safety for Liberalised Telecoms Market

• Public Safety Partnership has challenges in developing capacity and capability plans in a telecoms liberalised market
  – Virus distribution among smart phones via MMS
  – Key loggers for collecting contacts from smart phones
  – SMS traffic overloading message switches and management
  – ...


• Root cause analysis challenges
  – Customers complained of receiving duplicate SMS messages
  – Seeing huge volumes on SMSC
    > 33 Million duplicated SMSs daily
    Problem was growing by 4% a day
  – Initial diagnosis was faulty ‘firmware’ of some Nokia handsets
Root Cause:
Guardian Application

- Guardian client application causing havoc
  - Theft prevention software
  - Sends SMS when handset is turned on, and SIM or media changed

- Spreading like a virus
  - Seen in Middle East, Italy, Egypt, The Philippines
  - Accidentally being loaded on new phones by retailers, copies itself from media cards
  - More that 50,000 infected/affected handsets
  - Currently limited to few specific DAs, but starting to see new ones
  - Sending up to 100 SMS messages a minute per handset to a non-existent number
  - Application sending up to 10 a min, each fails
    And handset tries to send 10 times for each message
Still not out of the woods

- Temporary fix with SMSC changes to ACK the SMS
  - Dropped the number down to 300K per day
  - Rose back up to 2M SMS per day because of new Destination Addresses

- Very difficult to “clean”
  - Author provided an uninstall tool, but couldn’t easily deliver it to users (GPRS enablement, MMS capable handsets)
  - Hard to get marketing, operations, management to agree how to handle
    » To Communicate cleansing
    » Agree applications can be deleted from handset
Audit and Enforcement

• For consumers the results of these development provide for an enhanced experience measured through the use of key performance indicators.

• Likewise the framework developed by the forum allows for all stakeholders to have metrics to measure against expected levels of behavior.

• Individuals who repeat bad levels of behavior after being warned can have penalties enforced against them.
Security Control Framework

Protecting Operators
- Keep malware off the network
- Prevent spam & fraud
- Block illegal content

Protecting Consumers
- Prevent malware & fraud
- Parental control
- Stop bullying & harassment

Protecting Businesses
- Enforce ‘Acceptable Use Policies’
- Satisfy industry & government regulations
- Prevent corporate data leakage
Hardware Architecture

Handset Clients

Global Monitoring and Response Network

Security Policy Execution Layer

Security Interception Layer

Subscriber Permission Register

Enterprise Portal

OA & M Layer

Provisioning

Reporting

G & M

LOGGING

Handset Clients

Enterprise Portal

OA & M Layer

Global Monitoring and Response Network

Security Policy Execution Layer

Security Interception Layer

Subscriber Permission Register

Handset Clients

Enterprise Portal

OA & M Layer

Global Monitoring and Response Network

Security Policy Execution Layer

Security Interception Layer

Subscriber Permission Register
Traffic Control Technology

• Traffic management allowing monitoring and control of network traffic per application and per subscriber
  – Layer 7 deep packet inspection
  – Behavioural traffic analysis
  – Pattern matching of collaborative protocols
    » P2P file sharing
    » Instant Messaging
    » Media Streaming
    » Internet Telephony
  – Integrated QoS management
    » Prioritization
    » Shaping
    » Blocking
  – Accounting
    » Application aware
    » Subscriber aware
Content Filtering System Logic Flow

1: User requests content
2: SSG checks service provision and forwards request to CSG
3: CSG passes to CFE for Filter Decision
4: CFE queries data source to see if user subscribes to Content Filtering
5: CFE checks URL category and profile to make filter decision
6: CFE logs decision for reporting tool
7: CFE tells CSG to Allow or Redirects request
8: Request forwarded to website or to redirect page / internal homepage
9) Content delivered to handset
10: Update of new sites and categories to CFE
11: Profile Mgr

URL List Provider
Reporting
Telecom Operator Governance

- SOX
- GLBA
- JPA
- PCI
- HIPAA
- NIST
- ITIL
- CoBit
- ISO
- jCoBit
- SLA Validation
- Troubleshooting
- Investigations
- Forensics
- Log Data Warehouse

Lose Customers
Get Fined
Go To Jail
Lose Job
End