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STRATEGIC INNOVATIONS THROUGH NGN STANDARDISATION FOR A UBIQUITOUS CONSUMER WIRELESS WORLD

Máirtín O’Droma & Ivan Ganchev
Telecommunications Research Centre
University of Limerick, Ireland
Outline

- New Wireless Communications Business Model
  - **Consumer-centric** business model (CBM)
  - CBM technological foundations
  - Strategic NGN standardisation
  - Business development opportunities and
  - Social impact and benefits
- Conclusions & Questions
Subscriber-centric Business Model, SBM

- Prior agreements between Foreign ANP and Home ANP required for roaming.

Legacy

SBM

TSP

Home ANP

Foreign ANP

VASP

Wi-Fi, etc

Subscriber

Mobile User

Wireless Services

Business agreements
Invisible Constraints ?!
Consumer-centric Business Model, CBM

- Third-Party Authentication, Authorization and Accounting service providers, 3P-AAA-SPs
- Consumer address ownership, portability & security

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First ITU-T Kaleidoscope Conference – Innovations in NGN
NGN authentication architecture for interworking among wireless access networks

ITU Draft Recommendation Q.3202.1: "Authentication Protocols ... for Interworking among 3GPP, WiMax, and WLAN in NGN"
3P-AAA

Service and Service providers

- 3P-AAA SP are new business entities
- Central role
- **Separation of** the administration and management of users’ AAA activity **from** the supply of a wireless access network service
  - Many benefits for consumers, new ANP entrants, etc.
- Network-independent, autonomous, and trusted business entities
  - Market fairness and openness
NGN Standardisation: New Interfaces for 3P-AAA functional model
3rd-Party Authentication, Authorisation and Accounting (3P-AAA)

**NGN Standardisation:**
- 3P-AAA interface architecture
- 3P-AAA signalling protocol

**Business Development Opportunities:**
- New business entities - 3P-AAA service providers
  - Handling all wireless communication purchasing transactions
- Expansion into all areas of purchasing through universal CIM cards
- Wireless payment applications ("mobile money")

**Social Impact:**
- Zero roaming charges
- Users not tied to any ANP
New ‘Personal’ Address scheme

- New globally network-independent “personal” Address
  - Consumer address ownership and
  - Full address portability is enabled
  - IPv6 addresses
    - separate class of network-independent “personal” IPv6 addresses
    - >n.10 billion addresses in this class

- Security
  - Universal Consumer Identity Module CIM card
  - ITU-T X.509 digital certificate security
  - CIM replaces SIM in UCWW

- NGN Standardisation - required for these
CIM Card Security & ITU-T X.509

- **IPv6 address**
  - purchased by user
  - is embedded into his/her ITU-T X.509 digital certificate
- **Location**: field
  - ‘Extensions’
    - ‘Subject Alternative Name’

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**Personal IPv6 address(es)**

*Subject Alternative Name*
WBC & ICC Services

- Wireless Billboard Channel (WBC)
  - New Service & Service Providers

- Incoming Caller connection (ICC) services
  - New Service & Service Providers

- Both require NGN Standardisation
Wireless Billboard Channels (WBC)

- Wireless equivalent of Roadside advertisement billboards

- ‘Push’ advertisements means for Access Network Providers
  - ‘Presence & current service offerings
  - Association procedures for a consumer to obtain services

- Consumer discovery and network association
  - Access network presence & current service offerings
  - Consumers scan WBC broadcasts
    - Discovers, updates, matches service offerings against ABC&S criteria under their different profiles ...
    - ABC&S network-service match decisions

- Advertisement, Discovery and Association (ADA) functions and activities
  - Particular to consumer wireless communications environment
WBC characteristics

- **Simplex narrowband Broadcast** channels
- Geographic coverage regimes:
  - *Local, Regional, National & Global*
- **Broadcast Platforms (there may be many)**
  - local radio, wireless LAN systems (e.g. WiMax)
  - Digital Audio Broadcasting - DAB
  - Digital Radio Mondiale - DRM
  - Digital Video Broadcast Handheld - DVB-H
- Operated by **non-ANP** service providers
- Standardised Layered architecture
Wireless Billboard Channels (WBCs) - Summary

NGN Standardisation
- WBC spectrum allocations
- WBC Protocol architecture (physical, data link, and service layer protocols)

Business Development Opportunities
- New business service provider entities (WBC-SPs)
  - Existing broadcast service providers
  - Advertisers: of ANPs, TSPs, and others

Social Impact
- Users awareness of all current service offerings
- Competition Stimulus: new services, service costs, etc.
- Strong support for consumer ‘freedom of choice’
  - Choice of ‘best’ service within a group of services
  - Personal profile matching & user-driven ABC&S decisions
- Fair and equal pro-actively access to consumers for
  - Existing and NEW access network providers
  - Others - TSPs, mobile handset manufacturers, etc.
Consumer-oriented Incoming Call Connection service (ICC)

Not having a fixed point of attachment how can a consumer receive incoming calls?

- SBM strength
- To be re-invented

Creation of a new business entity

- Incoming Call Connection (ICC) service Provider
  - Outside the access networks - autonomous
  - Lynch-pin for Incoming Call Connection (ICC) service

Operation based on

- A ‘contact address (CA)’ scheme
  - globally routable, temporary, forwarding IP address
- A Contact Address Identifier (CAI)
ICC Service Operation

GLOBAL ROUTING based on Contact Address (CA)

USER IDENTIFICATION & LOCAL ROUTING based on Personal IPv6 Address of callee

CALL-to-CA mapping

Caller(s)

ICC-SP1

CA1

ANP1

Callee

ICC-SPn

CAIn

ANPm

CAm

NAT
Incoming Call Connection (ICC) service

- **NGN Standardisation**
  - ICC interface architecture
  - ICC signalling protocol

- **Business Development Opportunities**
  - New entities - ICC service providers
  - Provision of user-friendly, flexible, specialised and customised ICC management services for
    - individuals, groups and corporations

- **Social Impact**
  - Full freedom of consumer choice, e.g.
    - Which networks to use for these services at any location or time
    - Matching ANP to be used to incoming caller profiles.
  - Consumer communications management
    - Enhanced, new possibilities, customisation, dynamic & adaptive, e.g.
      - incoming call connection service to be dynamically matched to consumer roles and profiles.
CBM technological foundations

- 3rd-Party Authentication, Authorisation and Accounting
  **3P-AAA**
- New Personal-IPv6 address & CIM card

- Wireless Billboard Channels
  **WBC**

- Consumer-oriented Incoming Call Connection service
  **ICC**

The two Pillars

Business Pillar

Re-invented
Packet-based network
- Primarily IPv6
  - New ‘personal IPv6 address’ class proposed

Broadband capabilities with end-to-end QoS and transparency
- UCWW includes an end-to-end transparent user-controlled Hot Access network Change (HAC)
- Supports transparent asymmetric connections

Unfettered access for users
- Users not tied to any particular ANP

Generalized mobility
- End-to-end controlled and executed, e.g. for HAC
- Primarily user-driven (and also supported by service providers)
- Full number portability
UCWW in Harmony with ITU NGN objectives

(2/3)

- **Interworking with legacy networks via open interfaces**
  - Three new open 3P-AAA interfaces are proposed
  - Transparent heterogeneous interworking facilitated
    - all network types, PSTN, wireless, etc.

- **Unified service characteristics for the same service as perceived by the user**
  - Services categorisation
    - based on the NGN Service Classification, ITU-T Focus Group on NGN (NGNFG) WG1
  - Supported by the new Wireless Billboard Channels
  - Compliance with all regulatory requirements (e.g. emergency, privacy etc.)

- **Decoupling of service provision from network, and provision of open interfaces**
  - Defining characteristic of UCWW
    - 3P-AAA SPs; WBC SPs; ICC SPs;
  - Clearer separation between ANPs and TSPs
A variety of identification schemes which can be resolved to IP addresses for the purposes of routing in IP networks

- New Contact Address Identifier, CAI, scheme
  - in the Incoming Call Connection service, ICC
- Works in conjunction with the permanent Personal IPv6 address
  - New IPv6 class proposed

Converged services between fixed/mobile

- New ICC service would support legacy ICC service
  - E.g. fixed PSTNs
Ubiquitous Consumer Wireless World environment proposed

Main beneficiaries

- **Consumers**
  - Huge increase in the freedom of choice in obtaining & managing wireless services
  - Greatly increased mobility
  - Full number portability
  - Consumer-driven Always Best Connected & Served (ABC&S)

- **All Wireless Business Stakeholders**
  - Manufacturers, Service providers, Application Developers, ANPs, ...
  - New Wireless business entrepreneurs
Wrap-up Conclusions 2/3

Benefits include

- More open wireless communications market
  - ‘level playing field’ for new network-provider entrants
- Immensely increased technological and business opportunities
  - for wireless access-network-providers
  - Mobile phone manufacturers
  - others
- Removal of roaming charges
- Stimulation of
  - many new telecommunication services
  - new wireless communications businesses
    - 3P-AAA SPs; WBC SPs; ICC SPs: +++
  - new niche and specialised wireless-access-network opportunities
  - ingredients for a potential commercial solution for Ad Hoc networking.
Wrap-up Conclusions 2/3

Strategic Innovations Through NGN Standardisation
Twenty years from now which is it to be?
End

Thank you

Questions, comments & discussion welcome.

Presentation by

Dr. Máirtín O’Droma

Email: mairtin.odroma@ul.ie

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