



Innovations in Clouds,  
Internet and Networks

19<sup>th</sup>  
ICIN  
CONFERENCE

PARIS  
MARCH 1 - 3, 2016

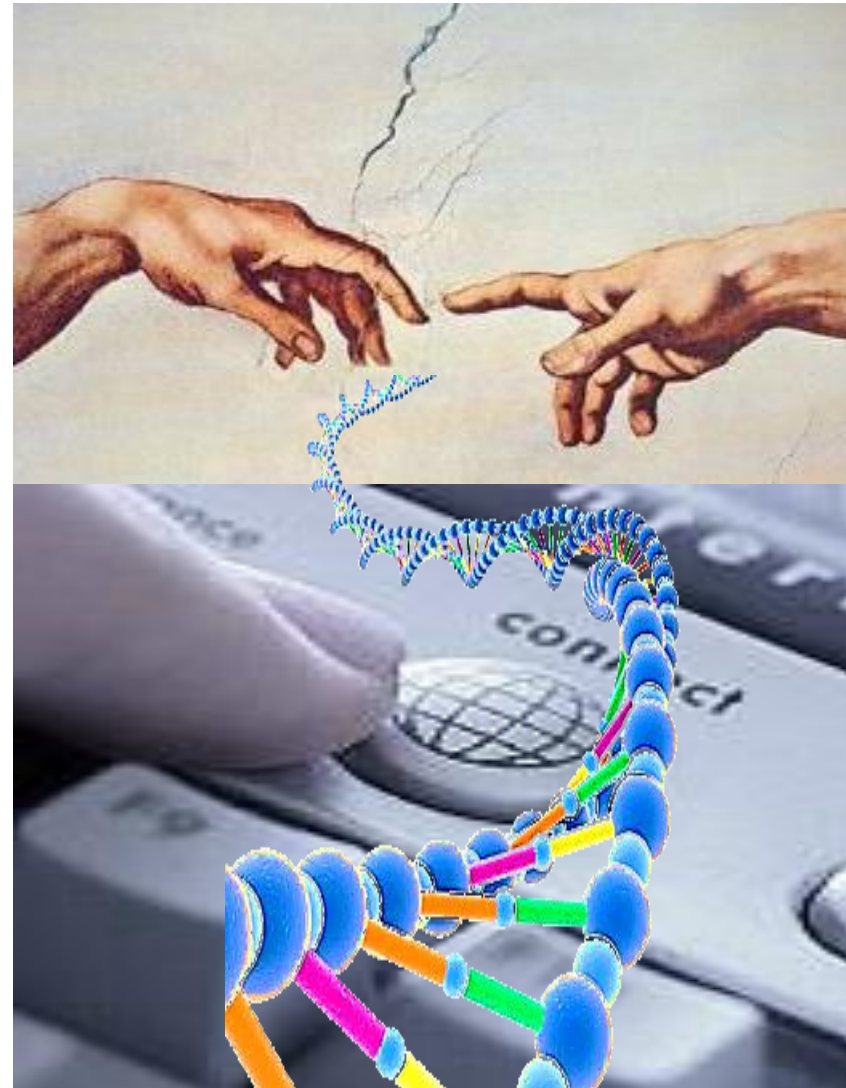
## A Question of QoS

VoIP, WebRTC or VoLTE?



Rebecca Copeland, Paris, 2nd March 2016

- **Web Calling – a game changer**
- **The GENOME opportunity**
- **Unilateral/bilateral session control**
- **Selectable service mode**
- **QUSA (QoS, Urgent, Secure, Affordable)**
- **Summary**



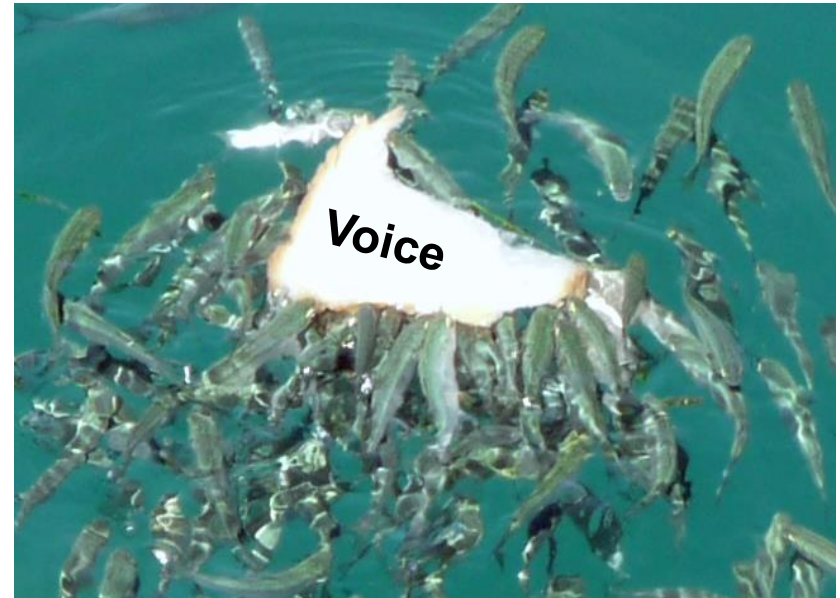
## The Changing Voice Landscape

- The **service environment** has already moved to the web
- Web **browser calling** (webRTC) is the next stage that grabs Voice from Telecom
- Web apps crave **immediacy**
- **Social media** P2P is the main idea...
- Every website **can be a calling app** – just add simple java scripts, the browser does the rest
- Simple, quick, free – but **no-frills**
- So webRTC is now threatening the **operators' stronghold** – Voice!



## The Web Calling Short-Comings

- Web Calling is managed by **a single website**, which ignores non-subscribers' preferences
  - WebRTC intended for peer-to-peer, not for business... no **mutual privacy policy**
  - Many SMEs will be willing to **pay for privacy** and reliability
  - Enterprises must consider **BYOD**! They need differentiated services
  - Parallel universe? – no, just different **service modes** for different requirements
- 
- Time to **monetize 'free' Voice**?
  - What people will **pay for Privacy**, Predictability, and the right quality for the right occasion
  - It will be popular with SMEs with no own network, Growing army of home workers, Self employed, BYOD enterprises.



What if the service decides how to deliver the call by context – managed or unmanaged network... free or paid... QoS or not...

It is an opportunity to **Change DNA**:

- For changing the operators' DNA and start **selling web connectivity** services
- Change DNA to allow web pages be the **communication apps**
- Change DNA to sell **hybrid web QoS**, that is just right
- Allow '**affordability**' to guide decisions

## QUSA Policy

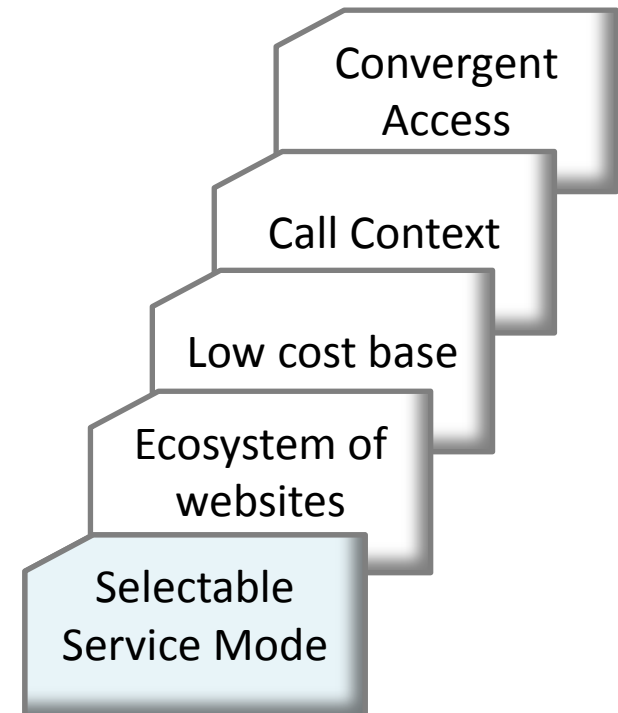




## GENOME: Good Enough Network of Moving Endpoints

### GENOME Requires:

- Good enough – not always the best
- Good enough for the request context
- Good enough – for affordability too!
- Good enough – with variable levels of privacy - a trade-off between free and private
- Good enough - business or personal
- Good enough high priority when it is needed

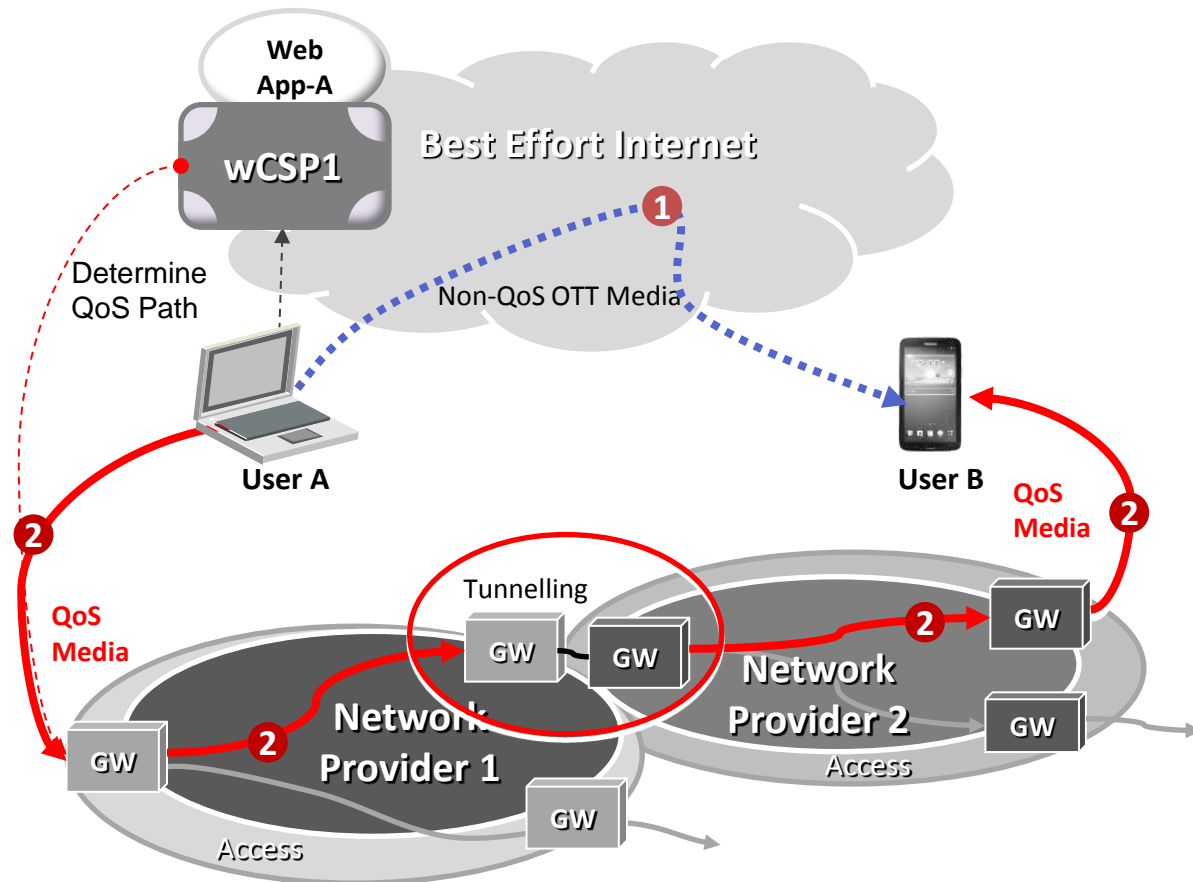


## Enforce web policy

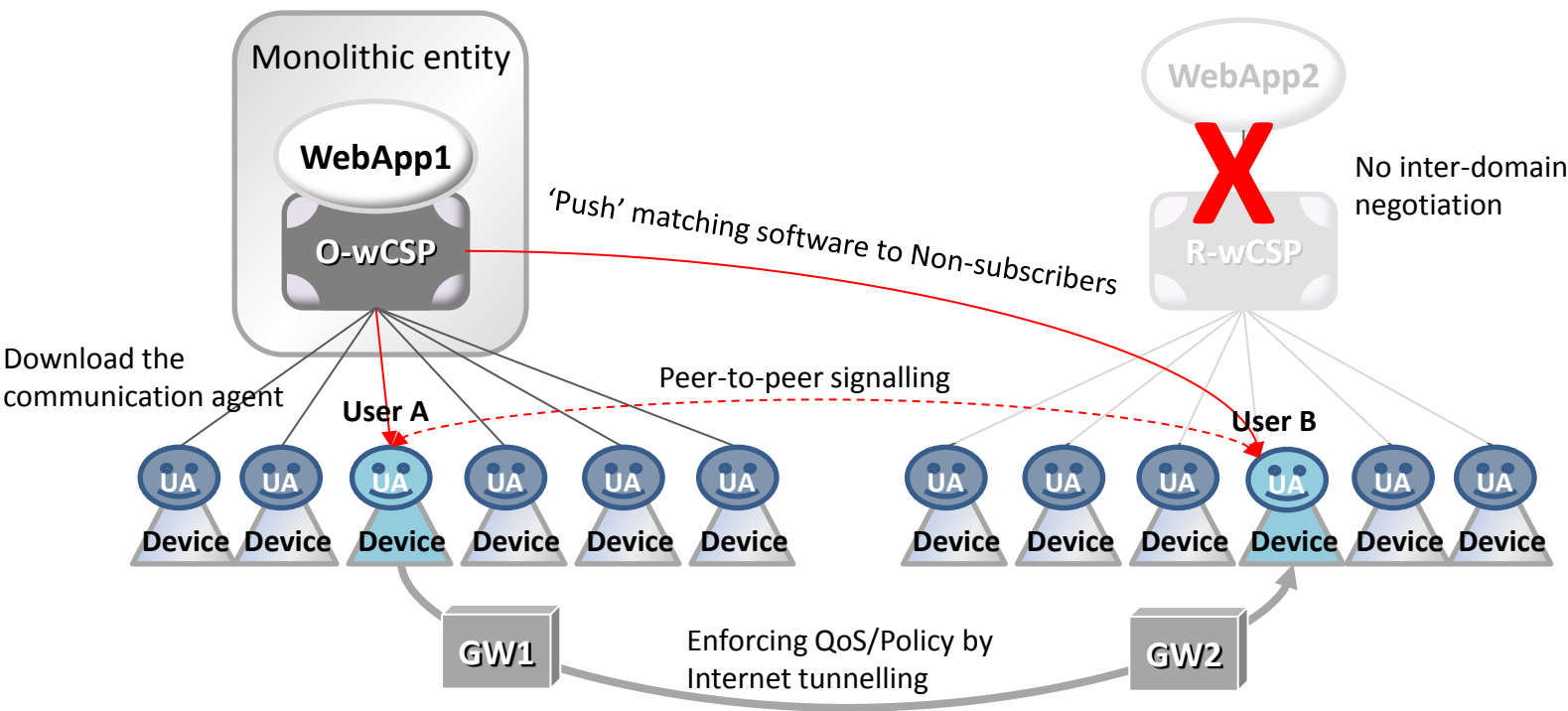
- ISPs today manage QoS, but only within their own networks
- Needs method of negotiating policy and enforcing it
- TURN/STUN/ICE gateway already enable basic QoSweb services, but they need to operate across entities

## Compare QUSAweb to VoLTE:

- However, end-to-end tunnelling requires universal acceptance, so no guarantees
- There is no cell handover while moving
- Achieving strong web based authentication and security is harder



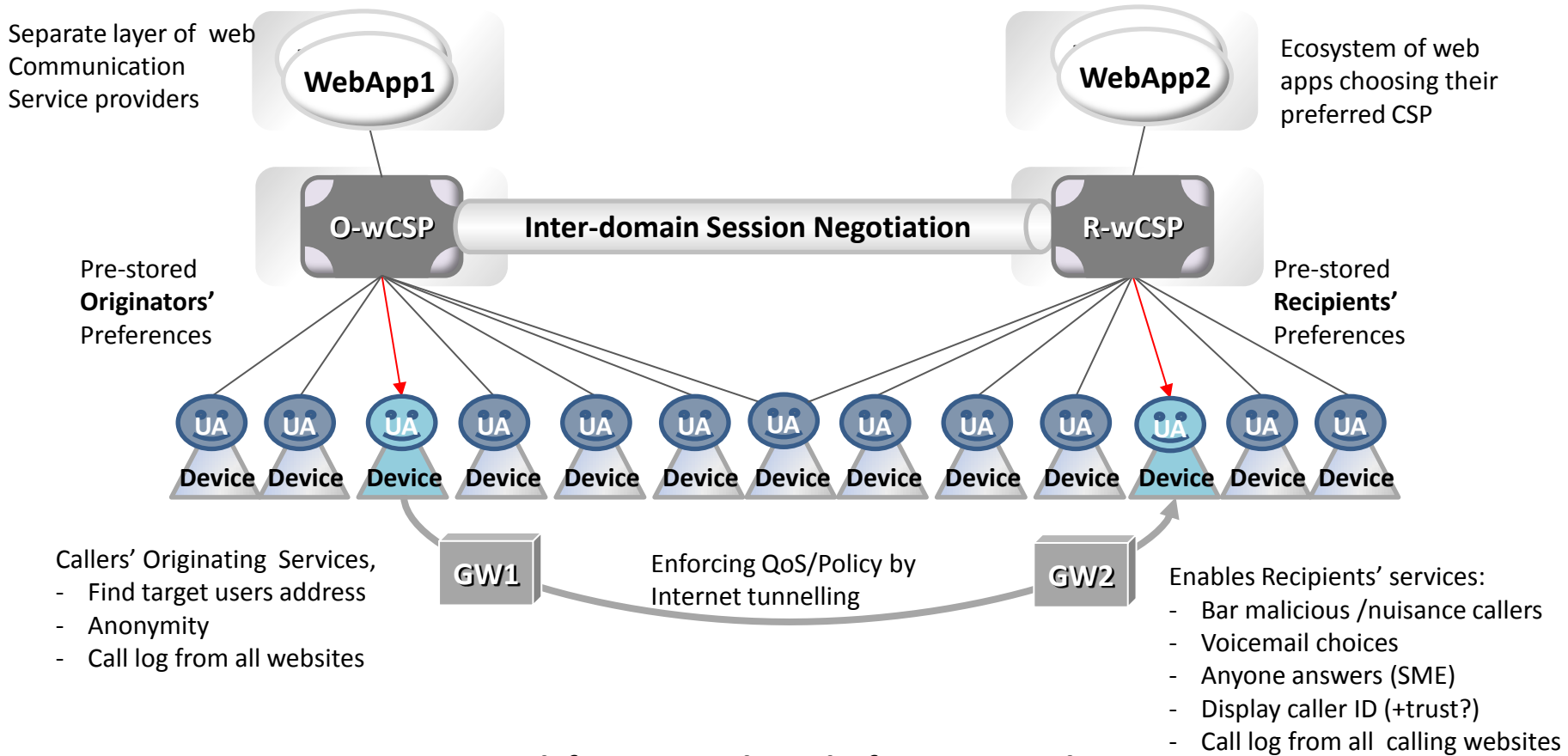
Same as the OTT VoIP Model, but allows calling non-subscribers...



**Even for C2B Click-to-Talk, the destination policy and the ad-hoc caller's policy are ignored**



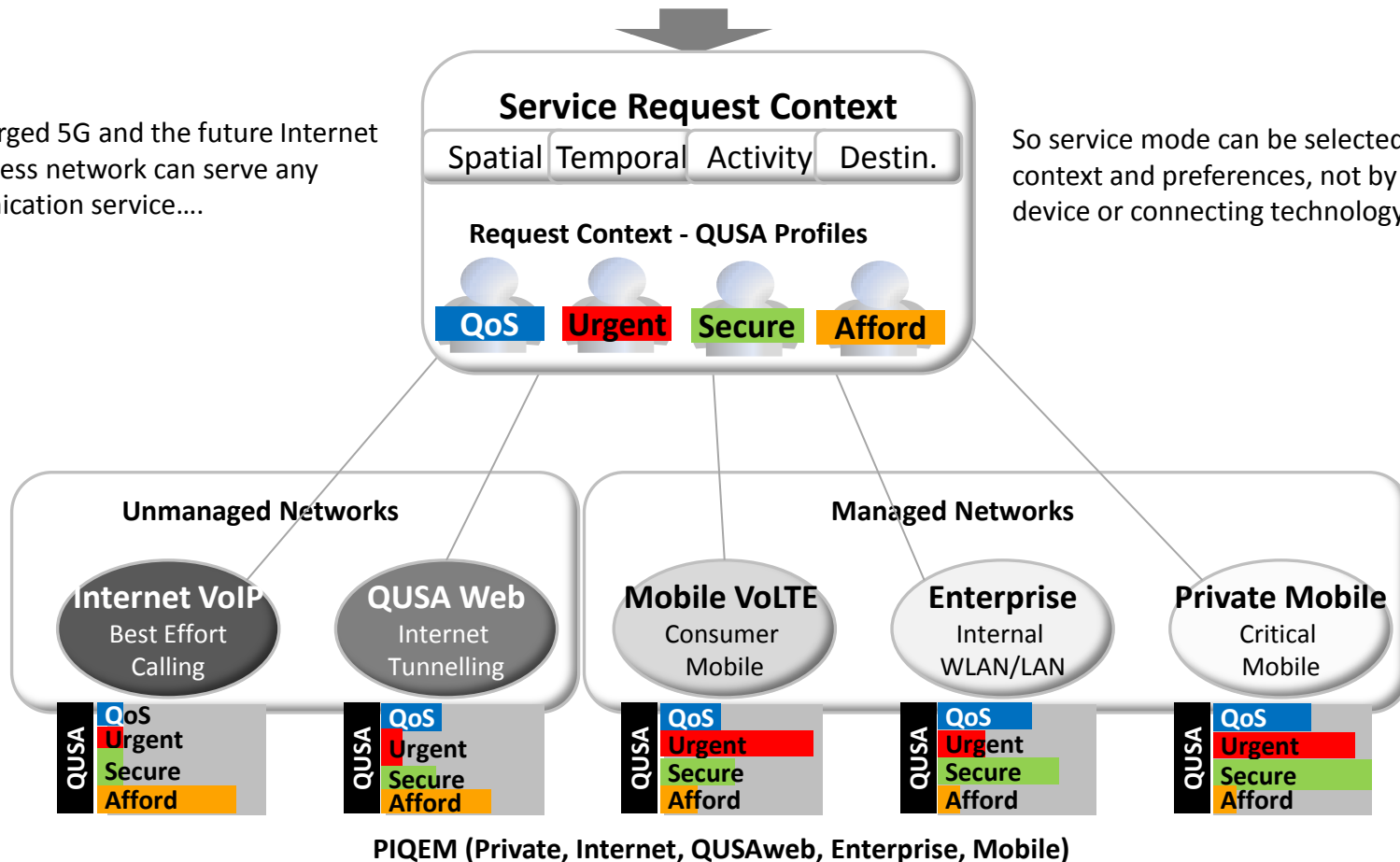
Same Principle as the IMS/VoLTE Model



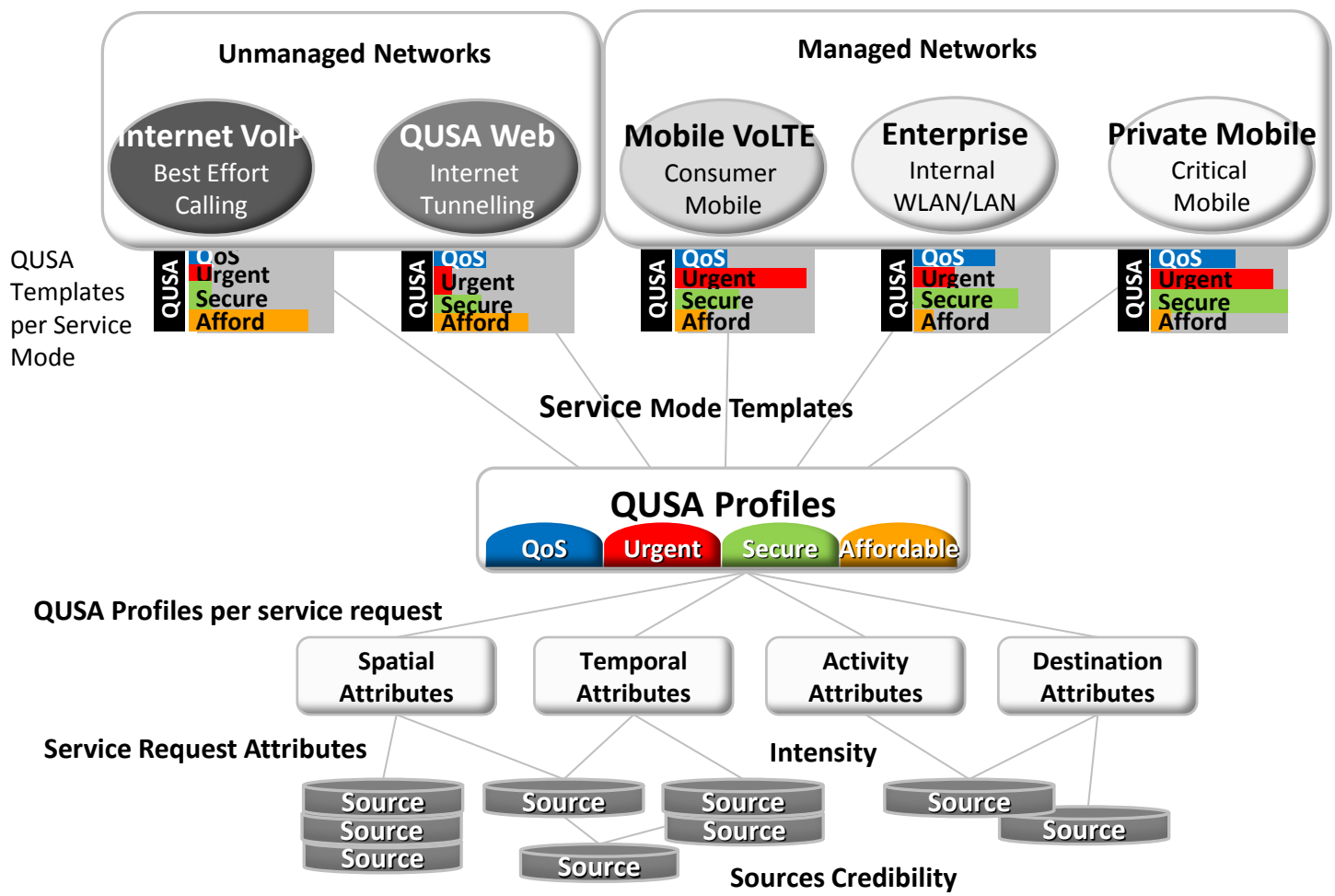
**Can work for any B2B! Works for BYOD too!**

In converged 5G and the future Internet  
- any access network can serve any  
communication service....

So service mode can be selected by  
context and preferences, not by choice of  
device or connecting technology.



# Pre-Aggregation – Modelling QUSA Profiles



- Call **context** is derived from web app knowledge and sources, as well as CSP's
- Level of **collaboration** depends on the website
- Much is learned from the request itself and from **historical** records, showing trend
- Independent **sources** are available to CSPs now, e.g. GPS, Social Media analysis etc.
- Sources varying **quality** is noted by computed source credibility.

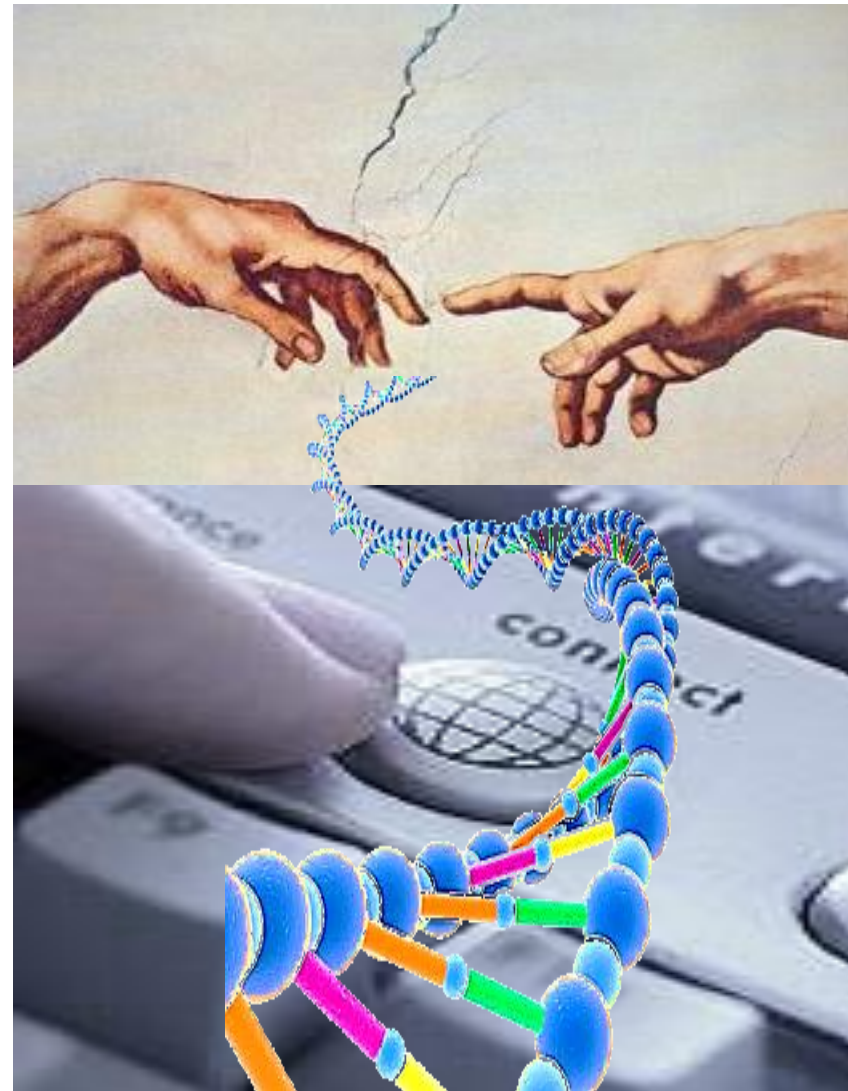
		QoSweb	For Service Mode: QoS OTT Enterj Mobi PMR											
201	Sources:	Acc Data	OSN Data	GPS	Mobi le	WiFi	Corp App	Dir	Type	email Login	Cale ndar	Login App	Hist.	Patte rn
	Credibility	0.99	0.64	0.71	0.87	0.39	0.58	0.29	0.03	0.01	0.42	0.69	0.49	0.48
Spatial	Tagged													
	At Work													
	Remote													
	At Home													
	Frequent				0.92								0.97	0.93
Temporal	Unknown													
	Hours		0.54									0.83		0.99
	Event													
	Intensive													
	Excessive								0.11	0.41				
Activity	Occasional										0.12			
	On leave		0.14											
	Critical													
	Confidential													
	Business	0.98							0.93			0.99	0.85	
Destination	Travelling													
	well-known													
	Untrusted													
	Essential													
	Business													
	Internal													
	Unrecogniz	0.80							0.69				0.74	
	Personal													
	Low-priority													

Weighting Table				Aggregation Table			
QoS	Urgent	Secure	Afford	QoS	Urgent	Secure	Afford
				0.142	0.005	0.021	0.077
				0.000	0.051	0.043	0.011
				0.081	0.010	0.010	0.017
				0.009	0.045	0.042	0.011
				0.009	0.009	0.014	0.020
0.009	0.009	0.042	0.071	0.007	0.006	0.010	0.001
				0.000	0.000	0.000	0.000
0.081	0.051	0.043	0.017				
0.000	0.000	0.000	0.000				
0.007	0.006	0.010	0.011				
0.090	0.010	0.040	0.020				
0.009	0.045	0.014	0.001				

- The definition of level of **impact of QUSA profiles** on service modes scores is up for interpretation by CSP
- Not all service modes are **available** at any moment and any location...
- The website can keep **user preferences**, which are negotiated between both calling parties
- QUSA profile accuracy was proven by tests on 200 use cases.

Table 2a: Service Mode Impact Rates							
Service Modes:			QoSweb	OTT	Enterprise	Mobile	PMR
Service Mode	Profiles		Impact Rates				
	Quality:		0.39	0.12	0.42	0.20	0.22
	Urgency:		0.08	0.00	0.18	0.50	0.33
	Security:		0.12	0.05	0.33	0.30	0.45
	Affording:		0.41	0.83	0.07	0.00	0.00
Table 2b: Computing Service Mode from QUSA Profiles							
Case201: Availability			1	1	1	1	0
QoSweb	Q	0.142	0.056	0.017	0.060	0.028	
	U	0.005	0.000	0.000	0.001	0.002	
	S	0.021	0.003	0.001	0.007	0.006	
	A	0.077	0.032	0.064	0.005	0.000	
	1 Totals		0.088	0.081	0.072	0.037	0.000
Case202: Availability			1	1	1	1	1
PMR	Q	0.212	0.083	0.025	0.089	0.042	0.047
	U	0.253	0.020	0.000	0.045	0.126	0.083
	S	0.275	0.033	0.014	0.091	0.082	0.124
	A	0.009	0.004	0.007	0.001	0.000	0.000
	5 Totals		0.134	0.046	0.210	0.232	0.234
Case 203: Availability			1	1	1	1	1
Enterprise	Q	0.181	0.071	0.022	0.076	0.036	0.040
	U	0.070	0.006	0.000	0.013	0.035	0.023
	S	0.152	0.018	0.008	0.050	0.046	0.068
	A	0.066	0.027	0.054	0.005	0.000	0.000
	3 Totals		0.117	0.082	0.138	0.113	0.126
Case 204: Availability			1	1	1	1	1
Mobile	Q	0.239	0.093	0.029	0.100	0.048	0.053
	U	0.324	0.026	0.000	0.058	0.162	0.107
	S	0.272	0.033	0.014	0.090	0.082	0.122
	A	0.034	0.014	0.028	0.002	0.000	0.000
	4 Totals		0.157	0.069	0.231	0.267	0.257
Case205: Availability			1	1	0	1	1
OTT	Q	0.110	0.043	0.013		0.022	0.024
	U	0.076	0.006	0.000		0.038	0.025
	S	0.118	0.014	0.006		0.035	0.053
	A	0.229	0.094	0.190		0.000	0.000
	2 Totals		0.150	0.206	0.000	0.092	0.099

- To stay in the **Voice game** – offer web calling
- Give users what they want - '**Good Enough**' service that is affordable and fits the context
- To differentiate from OTT, the bi-lateral model should be adopted, with **reciprocal policy negotiation** - especially for Business
- To determine the GENOME service mode, the **QUSA profiles** compute required affordability and privacy, as well as QoS and urgency.
- It is doable, but if not Telcos, web service providers will do it.







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Thank You!

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