



Agility, Flexibility and Creativity The Future International Carriers

The 6 technological revolution waves



The 6th wave Digital revolution cycle

Automation, virtualization technology shift

Automation and virtualization of
everything

The internet of everything

Everything as a mobile device

Nascent use of Blockchain

Move to artificial intelligence

Digitalisation

Security is increasing in importance

Rise of advertising driven services

Automation of jobs

Business Darwinism (evolve or dissolve)

**Everything, everywhere,
now businesses**

Empowerment of the people

Hyper-personalization

The control in real time

We are our own media generators

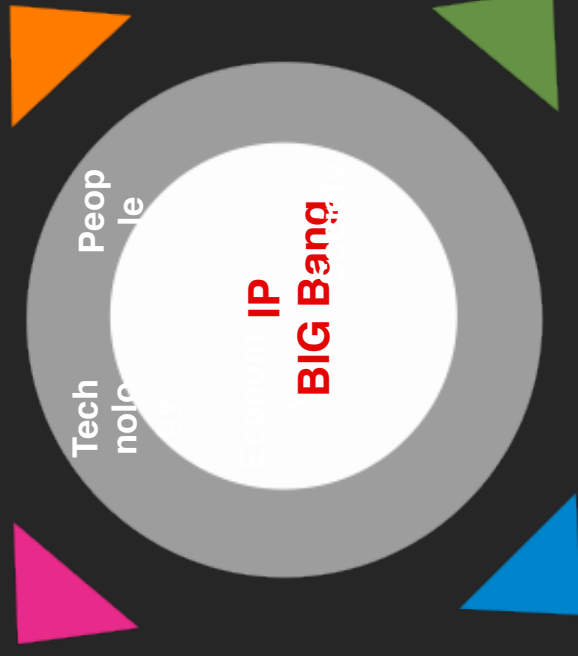
Everything, everywhere at all time

Global / transient people centric society

Increasing cultural sharing

User privacy increasing in importance

Global people centric society





**Life is like a dance,
no matter how
the music changes
you have to keep dancing
but to a different beat**

Service evolution

- **Evolution towards high quality interconnects and termination**
- **Speeding decline of traffic growth and margins**
- **Voice evolution: VoLTE, RCS, WebRTC, VoWiFi**
- **Convergence of voice and data services, voice is no longer just voice**
- **Evolving role of the wholesaler above and beyond connectivity and voice/data termination**

Customer evolution

- **Blurring of the lines between wholesale, enterprise and OTT customers**
- **Empowerment of the end-user requires an evolution of the interaction: real time, personalized, self-served and intuitive**
- **Service usage evolution: VoLTE, content and video**
- **End-users expecting: one plan while using multiple technologies, devices and services**

Business model evolution

- **Possible disappearance of the per minute pricing model for VoLTE termination and roaming**
- **Growing popularity of automation in voice termination**
- **Traditional vs innovative pricing approaches: bundles, sponsored, free**
- **Service mashup business models will be required but yet unknown (voice, video, media transfer, messaging, etc...)**

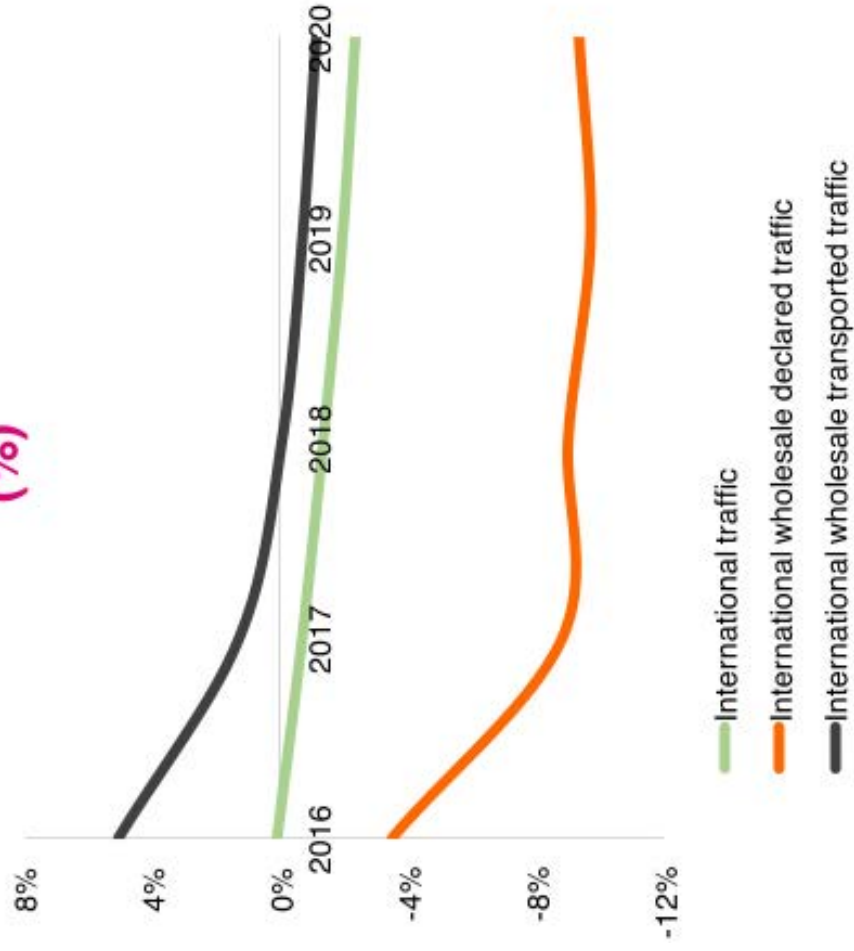
Ecosystem evolution

- **Slow disappearance of the wholesale middle-men**
- **Distribution model evolution: Partnerships, white label, federations**
- **Growing power of the groups in the wholesale ecosystem**
- **Possible creation of islands of wholesalers with specific capabilities**

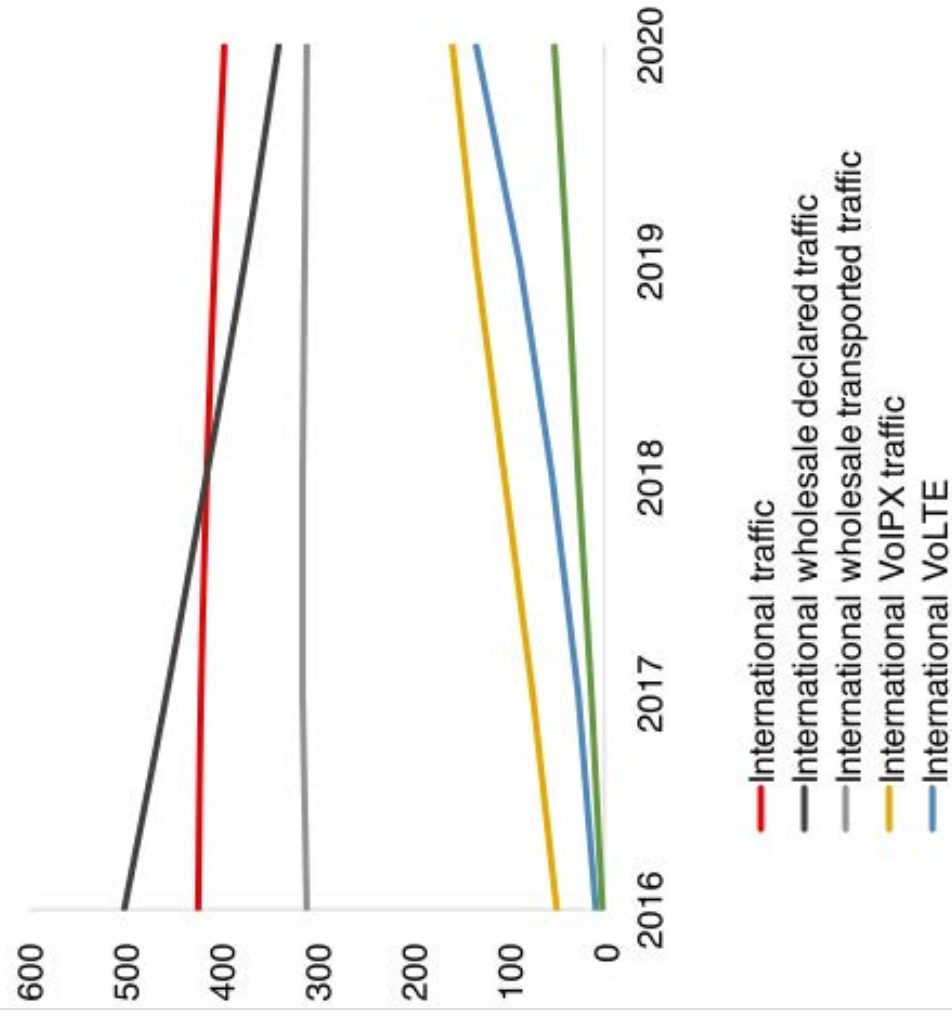
Technology evolution

- **Coexistence of multiple technologies, networks and types of players (TDM, IP, Fixed, Mobile)**
- **Virtualization, Automation and cloud**
- **Blockchain could become a game changer**
- **Device evolution: Everything as a device**
- **Continued evolution to 4G and mobile with 5G coming**

International traffic growth (%)



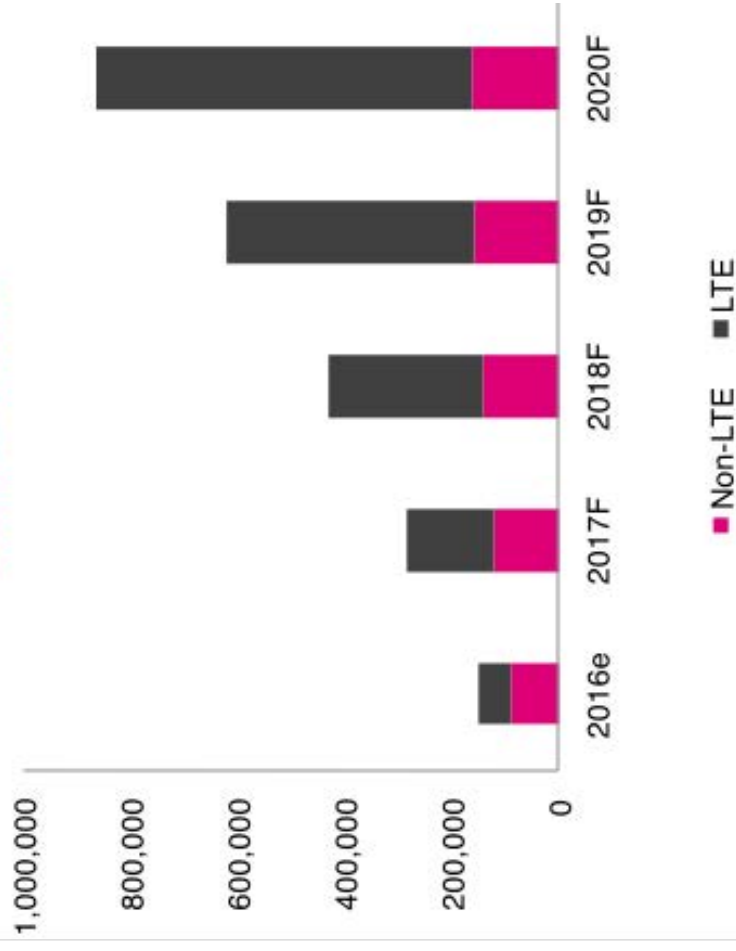
International traffic, 2016-2020



**VoLTE vs Non-VoLTE roaming traffic
2016-2020 (billion minutes)**



**LTE vs Non-LTE data roaming traffic as
portion of total**



New opportunities



New opportunities – The enabler

IPX

- **Interoperability / Interworking**

- IMS and VoLTE roaming
- Different business models
- Different types of players

- **Service enabler – trusted party**

- Bridge between innovators and operators
- Bridge between content providers and operators

- Value added / Monetization / Sponsored offerings

- Content and hosted services

- IoT enabler

- Security enabler

- Voice routing automation

IPX value added service evolution

IPX providers	Capabilities						Value added services					
	Signalling interoperability	Signalling interworking between 2/3G and LTE	Number portability in call / session flow	Transcoding In call / session flow	Self-help or automated service provisioning	WiFi Roaming	Number portability query as a service	Fraud management	Sponsored roaming	IoT solutions	Access to cloud based services via IPX	
BICS												
BT												
DT ICSS												
Etisalat												
Hutchison												
iBasis												
NTT Com												
Orange												
PCCW												
SAP MS												
Syniverse												
TATA												
Telefonica												
Telia Carrier												
Sparkle												
Vodafone												

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Note: Information valid as of October 2016.

Source: IPX Competitive analysis 2017

Mantras

Innovation
Monetization
Simplification
Quality/Security



Agility
Flexibility
Creativity

Agility



Agility

Innovative services

New target customers

Repositioning - Try fast, fail fast

Real time business

Innovate through partnerships

Flexibility



Flexibility

Innovative business models
Hyper-personalization
Virtual business and network

Creativity



Creativity

Cultural shift through diversity

Age

Culture

Gender

Innovation through partnerships

Innovative vendor relationships



**Don't just dance
Move the world**

Information of interest

The Future of International carriers report 2017

www.hottelecom.com/reports/wholesale-2017.html

IPX Competitive Analysis 2017

www.hottelecom.com/reports/ipx-2017.html

360 vision - Simplifying VoLTE Roaming, From dream to reality

www.hottelecom.com



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**Dare to dance
to a different beat**