



Forthnet / Nova in 5G

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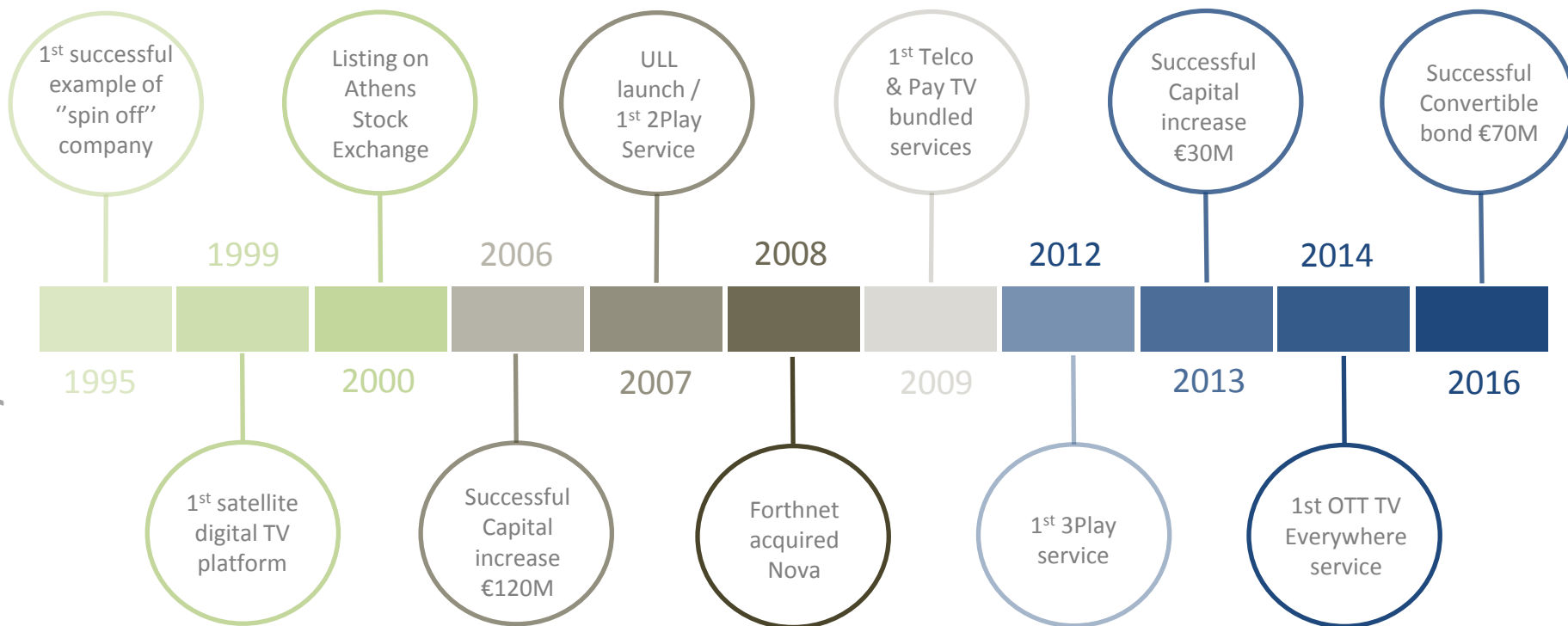
Head of Network Engineering

5G Summit

Thessaloniki, July 2017

Who we are

Forthnet is a market pioneer and the company that brought Internet and Pay TV in Greece



Leading position in Greek Market



1.02m	Broadband and Pay TV subscriptions
720k	unique households
302k	households with 3Play services
325m	(€) total revenues
55m	(€) adjusted EBITDA
126	shops all over Greece
40k	SMEs and Corporate subs
5.8k	km of fiber optic network



Serving **17%** of households in Greece

Company Key figures H2 2016

Number of HHs: 4.2M, Hellenic Statistical Authority

Main strategy of investing in Greek Sports and Culture



355M€ in the Greek Football and Greek sports between 2009-2015

54M€ in the local production and Greek Cinema between 2009-2015

136 co-productions of local movies and we continue...

Social solidarity initiatives



ΠΑΙΔΙΚΑ ΧΩΡΙΑ
SOS
ΕΛΛΑΔΟΣ



ELPIDA YOUTH

Initiatives to support recreational sport

novasports



beach volleyball
TOURNAMENT

novasports

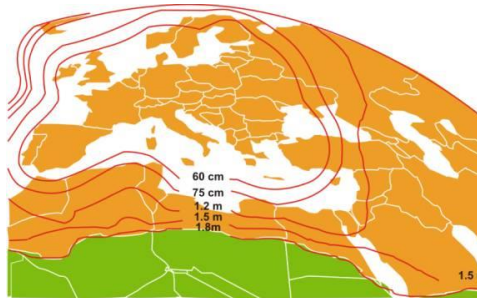


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novasports

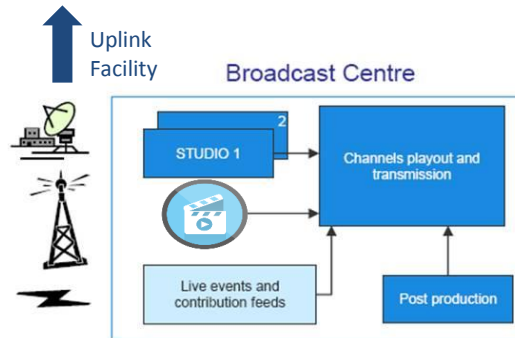
Running Team

HotBird 13° Satellite



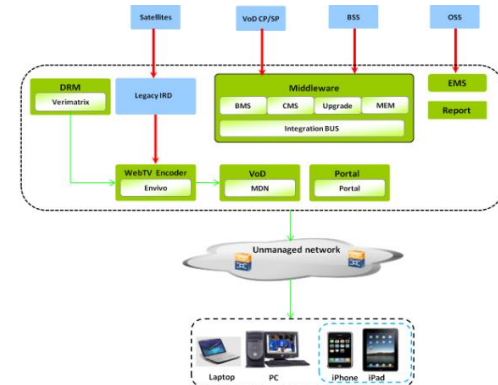
- **100% DTH** coverage in Greece and Cyprus .
- Leasing of 4 HotBird transponders from Eutelsat
- Four digital Multiplexers with uplinks to HotBird Satellite.
- Earth Station Services.
- Optimized picture quality with latest MPEG, statistical multiplex technology
- IP and MPEG-4 infrastructure

Broadcast Centre



- HD broadcast infrastructure
- HD production studios, editing, graphics and recording facilities
- HD multi-channel play-out, monitoring and continuing rooms
- HD live coverage of sports events
- Latest generation tapeless technology
- OTT facilities to prepare content for Mobiles
- VOD platform

OTT platform



- Present in all Mobile devices with Live & VOD
- Premium Content offering (sport and movies)
- Forthnet CDN in all Major Cities
- Service features: Live TV / VoD / CatchUp TV / Favorite List / Bookmark / Timeshift TV
- OTT Platform: Integration with existing BSS, Complete NMS System, Recommendation Engine



- 5,850 km fiber optic MAN and WAN
- 476 collocations to incumbent's local exchanges
- 94% of active customers served from private network
- 100% population coverage through SAT BB
- DWDM with 100G λ capacities



- Full IPv6 network
- IMS to provide Voice & VAS
- 160 Gbps international connectivity
- 70 Gbps national connectivity & 136 Gbps CDN in Athens & Thessaloniki

Innovative new products driving multi-platform offering



Upgraded STBs with connected functionalities leads to better customer experience, builds customer loyalty and gives opportunities for growth

New services

novago



- **132K** registered users
- **32%** penetration in active base
- Live TV and On demand titles at any mobile device / anywhere / anytime
- 23 linear channels, over 1.500 VoD titles

nova On Demand



- **30K** Connected STBs
- **10%** penetration in eligible base
- Wide choice of top Movies, series , docs and kids programs for all family members on the big screen
- Excellent quality through Nova VDSL

Wide range Retail product portfolio



Retail propositions



A wide range retail product portfolio under
Nova brand

3play

Broadband,
Telephony and
Pay TV

2play

Broadband,
Telephony

Internet

ADSL 24
VDSL 50

Telephony

Telephony,
SmartTalk

Pay TV

Full / Sports /
Cinema & Start
pack

VAS

Nova On Demand,
Nova Go,
Nova HD,
Nova Multiview

Distribution channels

Company promotes its services through more than 750 points of presence nationwide

- **126 shops** (350.000+ visitors per month)
- **2 retail chain stores**, the large and well known retailers (kotsovolos, mediamarkt)
- **350 resellers** throughout Greece includes more than 120 authorized partners / nova technicians
- External call centres

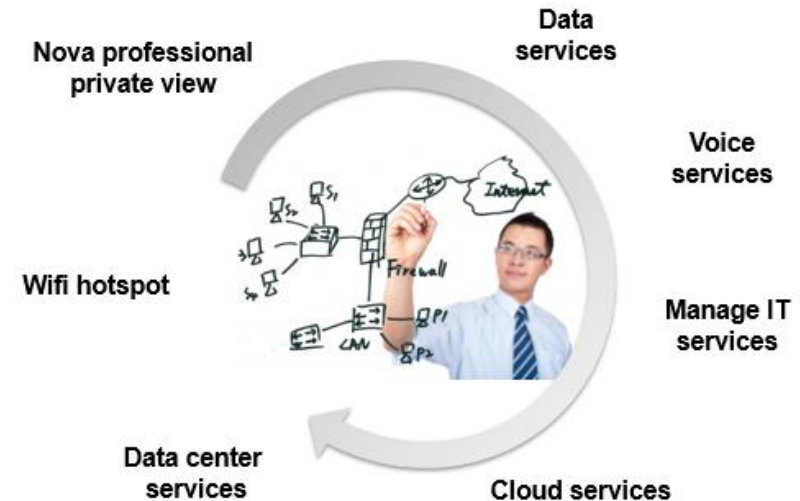
Strong commitment in Business sector



Highlights

- 20 years experience in Telco and Pay TV Business sector
- Specialized service portfolio for every sector (tourism, commerce, etc)
- 360 communication solutions for advertising market
- Service Level Agreement (SLA) to meet today's demanding business needs
- Premium technical support line (13858)
- Certified for quality services provision (Cisco Cloud & Managed services master certification, ISO certification)

Complete service portfolio



nova3playprofessional
public



nova
hotspot
private



novamedia

Content Services

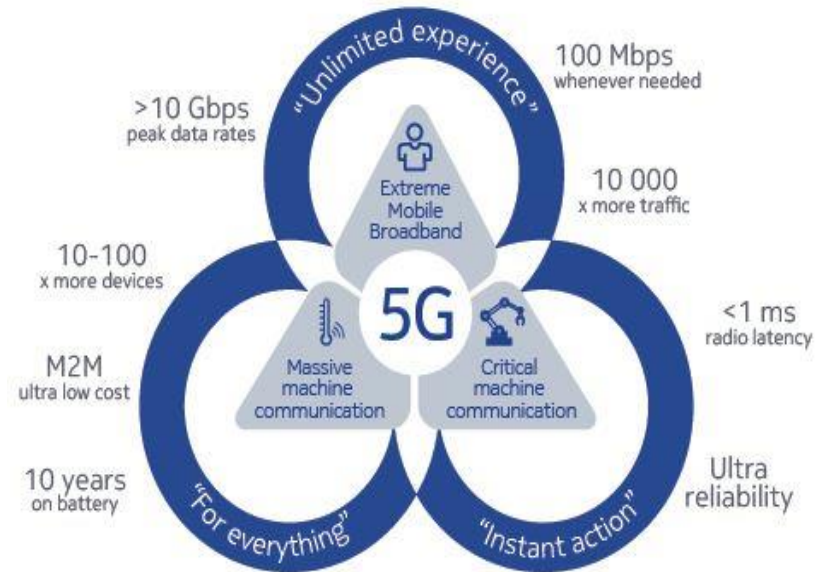
M&E will be a major Vertical Market of 5G ecosystem

“Unlimited Experience” + “For Everything”
compose an ideal Transport for our Content

Issues to be solved:

Volume, Concurrency, QoS, Anywhere,
Anytime, Any device

Introduction of more demanding services (4K,
VR, AR,...)



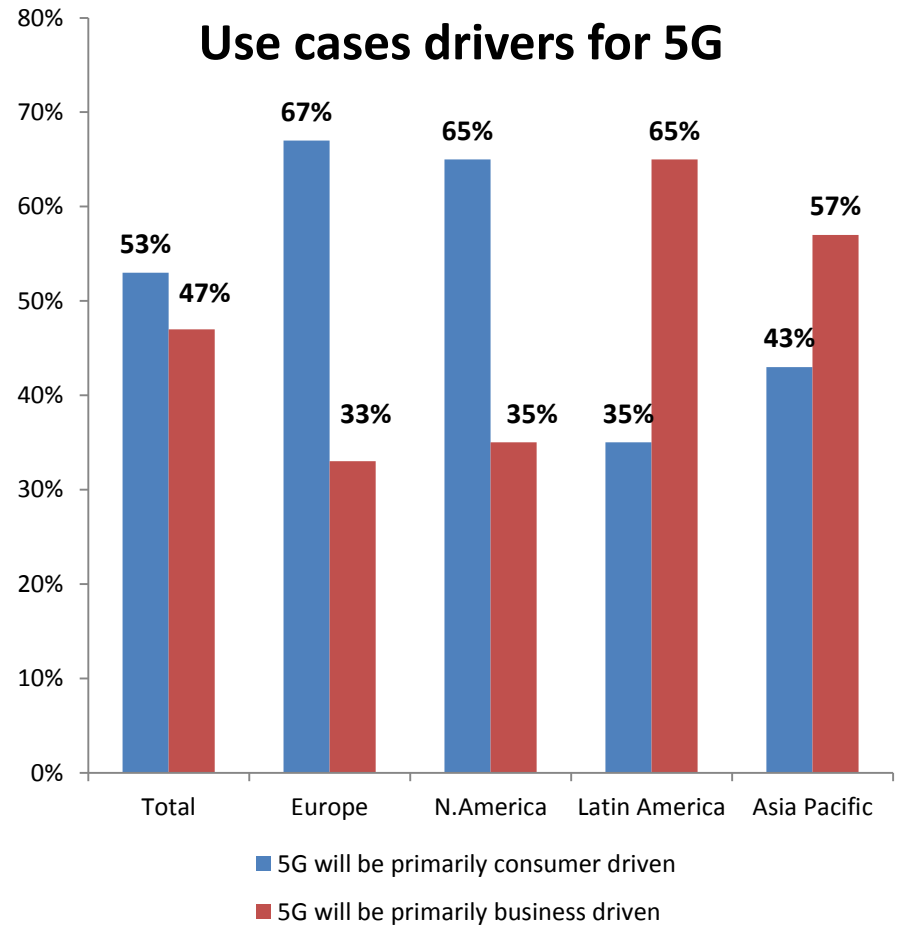
New Business Models

5G & Verticals will revolutionize IoT services business models

New kinds of Services to be offered either by

- Existing Market players (n-play), or
- Emerged & “Vertical” SPs

New perspectives on what can be considered as Customer



Source: Ericsson Business Review, issue 1,2016

Openness for MVNOs

MVNOs contribute significantly to the market competition

E2E Network Slicing pushes toward efficient use of resources by both MVNOs and MNOs

Slices from all layers should be presented to MVNO

Users perception & experience

In the before 5G era, Voice and Internet perceived as the main services offered by mobile networks

Smart devices & Apps explosion emerged OTT, but mostly without guaranteed service levels

Quite heterogeneous services to be offered by 5G, through various business models.

User adoption level is critical for Success

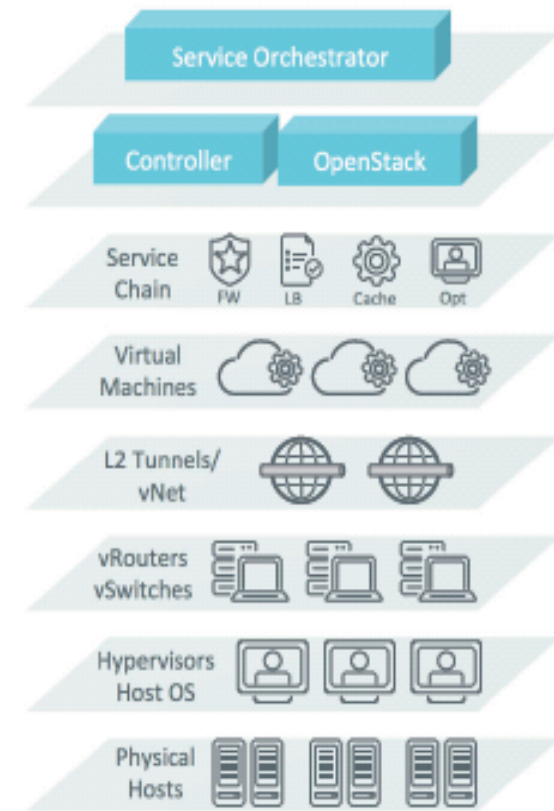
Networks Transformation

Backhaul challenges and Fiber role

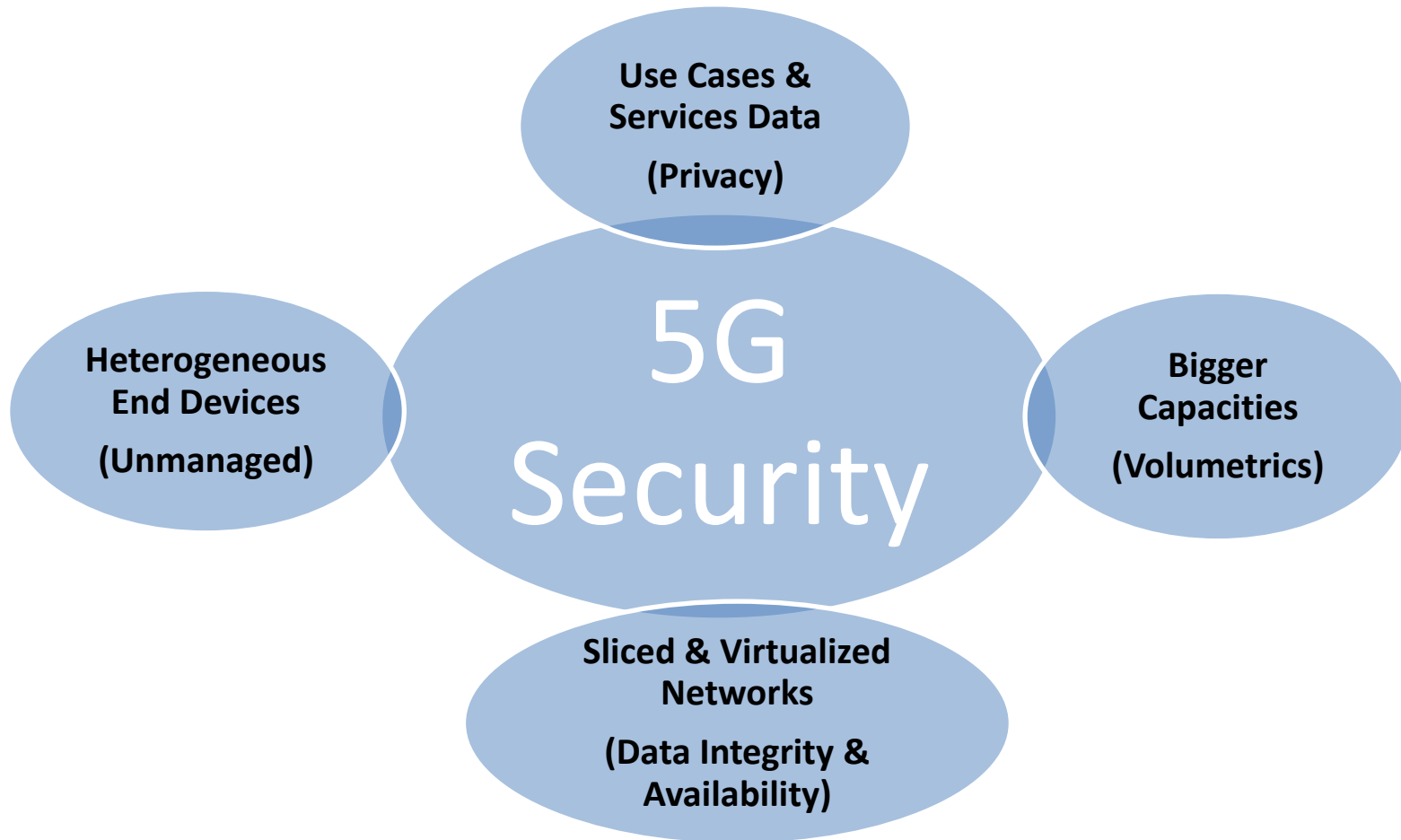
- Capacity & Latency requirements best fulfilled by dense fiber networks
- Fiber must be in place during rollouts

SDN/NFV significant role in 5G

- Limited NFV deployments
- Strong orchestration required to avoid operational complexity



... and as always



Confidence Level and Availability are crucial



Thank you.

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