



European Satellite Operators Association



"Platforms to Grow Innovation"

Innovation in Satellites & The Future European Communications Eco-System

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ESOA's Satellite Operators



11 satellite operators in 8 countries

161 satellites

Global coverage with communications services

A look at some of today's main satellite applications

TV Broadcasting

1958: BLACK & WHITE

Sweden football world cup

➔ **Satellite TV 1962**

1974: COLOUR TV

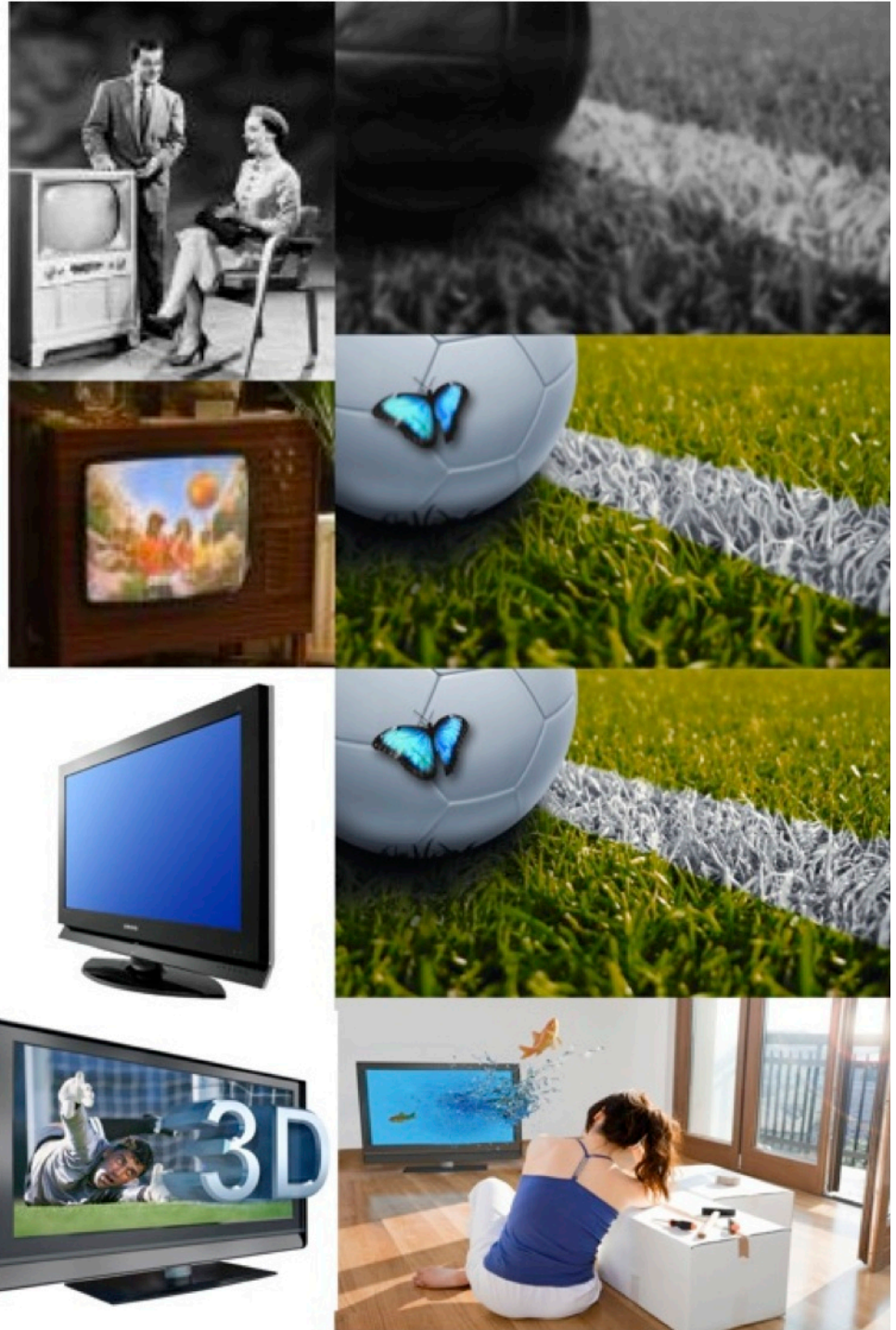
Germany football world cup

2006: HDTV

Germany football world cup

2010: 3DTV

South Africa football world cup



Emergency Communications E.g. Haiti Earthquake/ Sudan



Government & Security Communications



Maritime Communications, Surveillance & Safety



Aid & Development



Broadband via Satellite



- For lower density areas/ remote/ rural users
 - E.g. farms
- For ships/ planes/ vehicles
 - E.g. search & rescue
- For remote industrial uses
 - E.g. oil rigs



What about the Future Role of Satellite?

Does innovation in satellite
respond to tomorrow's needs?

booz&co.

Why satellites matter

The relevance of commercial satellites in the 21st century – a perspective 2012-2020



Amsterdam, Brussels, Frankfurt, Vienna

September 2012

**BOOZ REPORT COMMISSIONED/
PUBLICLY LAUNCHED - SEPT 2012**

Why Satellites Matter?

They are & must be an integral part of the future communications eco-system because:

- They provide unique & differentiating key capabilities for communications systems
- &
- Satellite services significantly contribute to European policies & their implementation

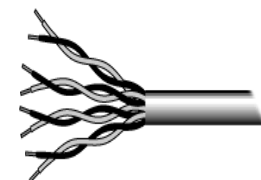
Look Forward to 2020 DAE Objectives

30Mbps/ 100Mbps

- Today: Users already watching AV content on tablets/ iPhone's; equipment suppliers & content producers are ultra-HD ready
- 2012: New open standard to allow satellite content to be viewed in IP on multiple devices (SatIP)
- 2015: Commercial launch of Ultra-HD TV
- 2016: Cisco says: 86% of all IP traffic will be video-based



The Future Communications Eco-System demands Innovation!

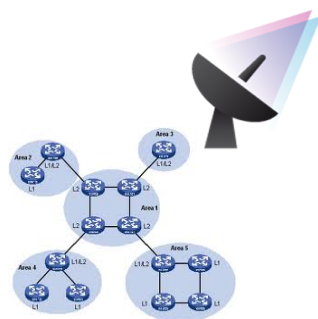


**HYBRID/
INTERACTIVE
SOLUTIONS THAT
TAKE THE
STRENGTHS OF
EACH TECHNOLOGY
TO DELIVER A
COMPREHENSIVE
SOLUTION ENABLING
THE ULTIMATE USER
EXPERIENCE**

Innovation for Multi-play Growth



**TV, VIDEO STREAMING,
INTERNET & PUSH CONTENT**



Trunking

International or National trunking on C-band and with O3b



Backhauling & Tower Feed

Backhauling cellular Base Stations or DSLAMs with data or (mobile) video
Feeding a DVB-T/H emitter
Feeding edge CDNs



Off-loading & De-clustering

“1 dish per village” :
backhauling a femto/picocell or a WiFi repeater + possibly a DVB-T/H gap filler



Hybrid & 2-way Multiplay

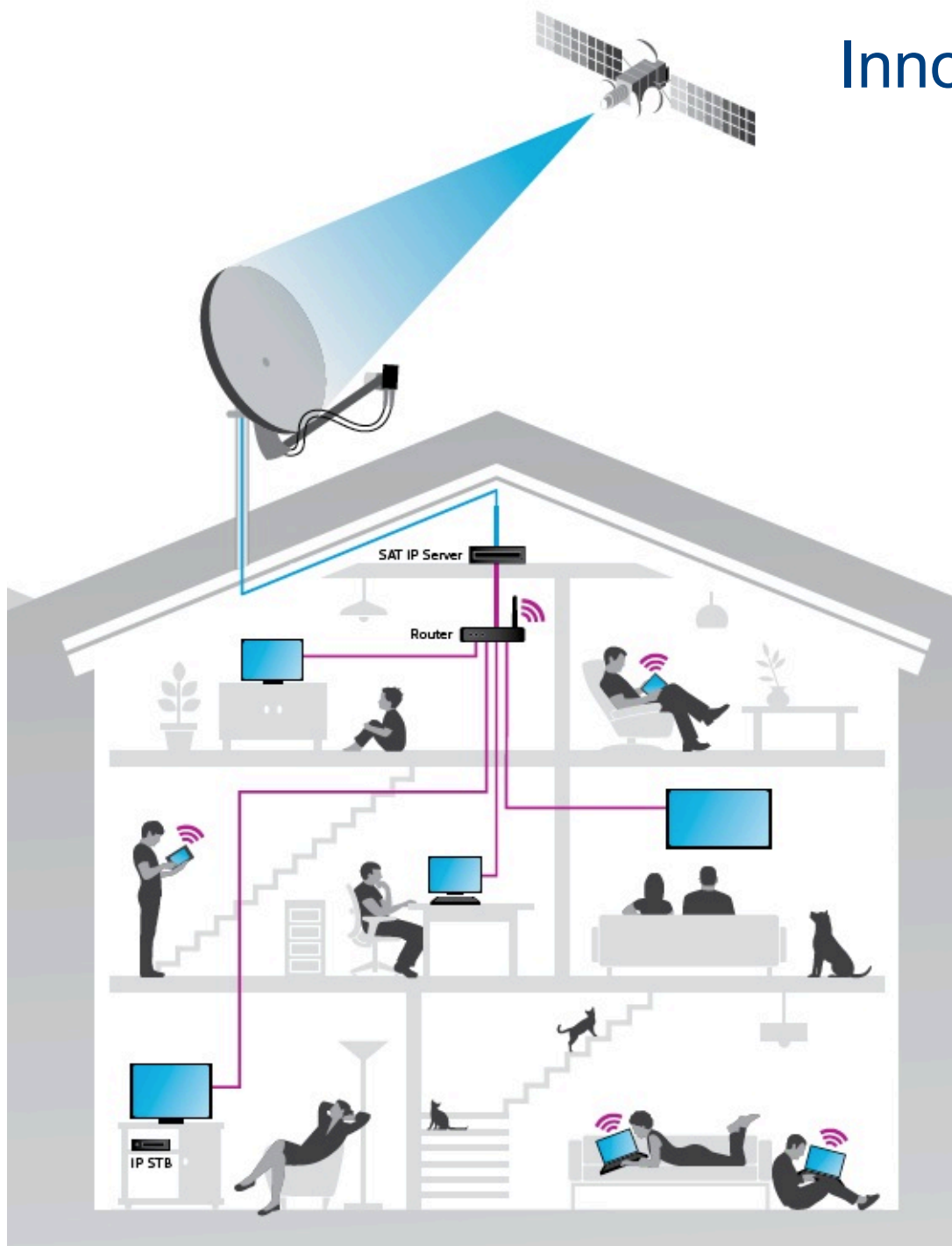
Homes : delivering sustainable multi-play to multi-screens;
complementing DSL & cellular broadband (1-way) or stand-alone (2-way)

Innovation in New Standards

SAT > IP

Need for **SEAMLESS INTEGRATED Solutions**

- SatIP ensures high quality TV on any IP enabled device: Tablets/ mobile phones/ laptops/ traditional TV sets
- Converts DVB signals to IP, so allowing connection to home network infrastructures (e.g. WLAN)
 - Available everywhere: even rural/ isolated areas
 - No physical connection to Internet required



Need for HYBRID Solutions

Leading Satellite Operators are part of a new standard that brings the best of terrestrial & satellite broadband/ broadcasting abilities together

- ◆ A pan-European specification for interactive TV applications for television
- ◆ Designed for hybrid broadcast / broadband receivers
- ◆ Targeted application types:
 - ◆ “Red Button” applications
 - ◆ Enhanced TV, interactive ads, voting, betting, etc.
 - ◆ Broadcast-independent applications
 - ◆ Accessed from broadcaster’s application or manufacturer’s portal: Catch-up (on-demand) TV, games, photo sharing, etc.



Create a new ecosystem which is a win-win situation for TV manufacturers, broadcasters (& software vendors)



NEXT GENERATION DIGITAL FORMATTING

SATELLITE OPERATORS WILL CARRY ULTRA HD TV CHANNELS ON FUTURE SATELLITES

- Consumers are spoiled for choice with how to watch video content
- They constantly demand better quality
- Broadband will co-exist alongside linear TV viewing
- ***Satellite operators lead transmission in the latest digital formats & will continue to do so***

SD	<ul style="list-style-type: none"> •MPEG-2: ca. 4 Mbit/s •MPEG-4: ca. 2 Mbit/s •HEVC*: ca. 1 Mbit/s
HD	<ul style="list-style-type: none"> •MPEG-2: ca. 19 Mbit/s •MPEG-4: ca. 10 Mbit/s •HEVC: ca. 5 Mbit/s
UHD	<ul style="list-style-type: none"> •MPEG-2: ca. 80 Mbit/s •MPEG-4: ca. 40 Mbit/s •HEVC: ca. 20 Mbit/s

* HEVC: High Efficiency Video Coding



- ***30Mbps (EC 2020 objective) will allow for only 1 UHDTV channel***
- ***Satellite strengths must be exploited to ensure best user experience for maximum number of citizens***

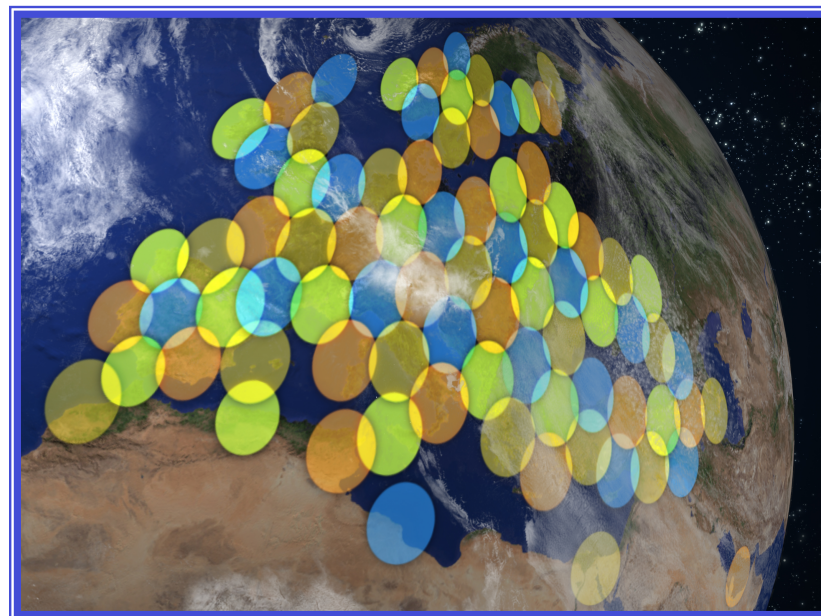
Innovation in Next Generation Infrastructure

NEED FOR MORE BANDWIDTH

SATELLITE OPERATORS HAVE ANTICIPATED THIS & NOW INVEST IN NEXT GENERATION SYSTEMS FOR VARIOUS APPLICATIONS

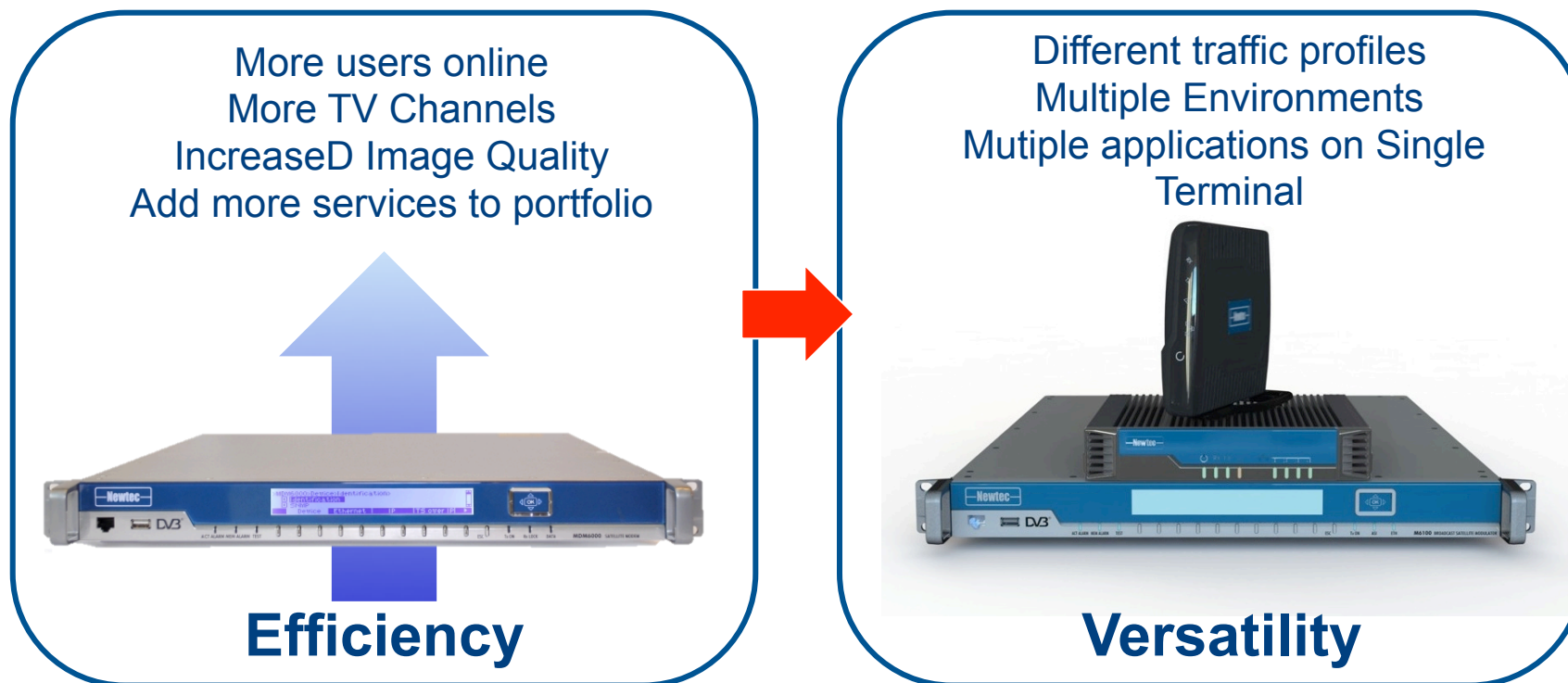


- MEO Constellations allowing fibre-like bandwidth
- Multi-spot beam satellites to allow frequency re-use



Innovation in Next Generation Terminals

Need for Greater Efficiency & Flexibility



- *More efficiency (getting more bits through the Hertz) to increase profitability/ grow satellite market*
- *Efficiency technologies based on (new) DVB-standards*
- *Do more with existing bandwidth, reduce costs or increase service availability*
- *Barrier-Breaking Throughput over satellite (e.g. 506 Mbps over a 72 MHz Ku transponder)*
- *Reducing overall OPEX and CAPEX*

Satellite Operators:

- Are at the heart of Europe's Digital Future
- Continue to invest in & drive new technologies & solutions
- Are & will remain essential to making the EU 2020 objectives a reality

- They depend on:
 - *An appropriate push in Europe's Space Industrial Policy*
 - *Clear recognition in Europe 2020 policy*
 - *Continued access to key satellite spectrum*
 - *Specific support in Horizon 2020*