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The VSAT Congress

Washington 14.11.2017

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Email: susan@comsys.co.uk

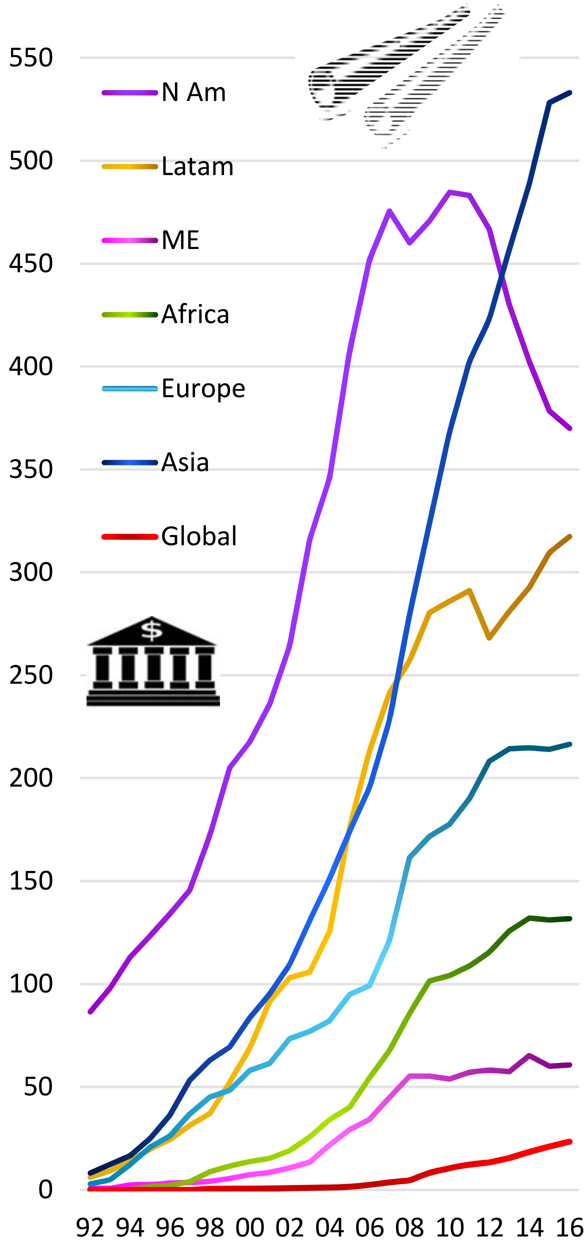
Tel: +44-1727-832288

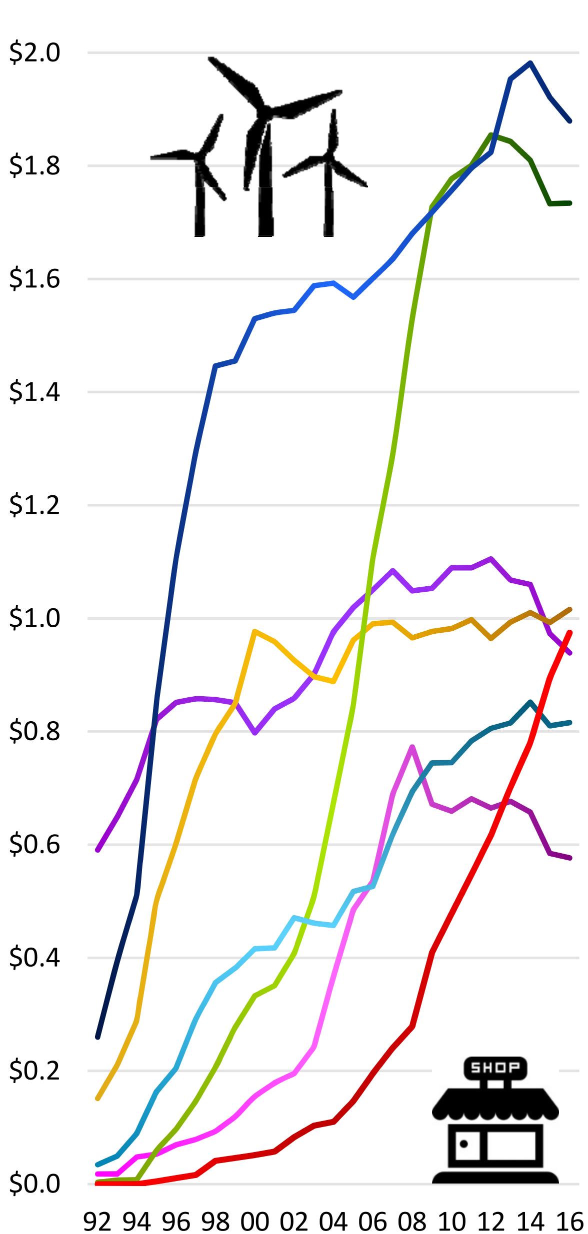
Susan Bull

Senior Consultant

COMSYS LLP

London, UK





4.8m enterprise VSATs shipped

1.65m enterprise VSAT sites in service

0.8% 3 year CAGR

$7.9bn revenues

-0.9% 3 year CAGR

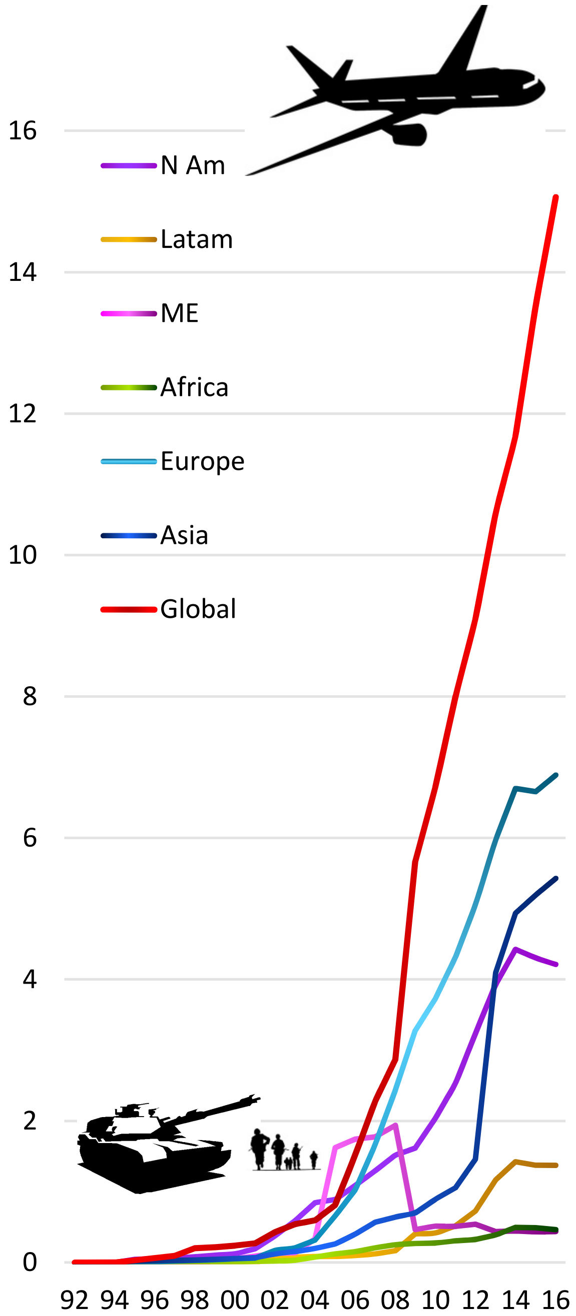
Bandwidth rising

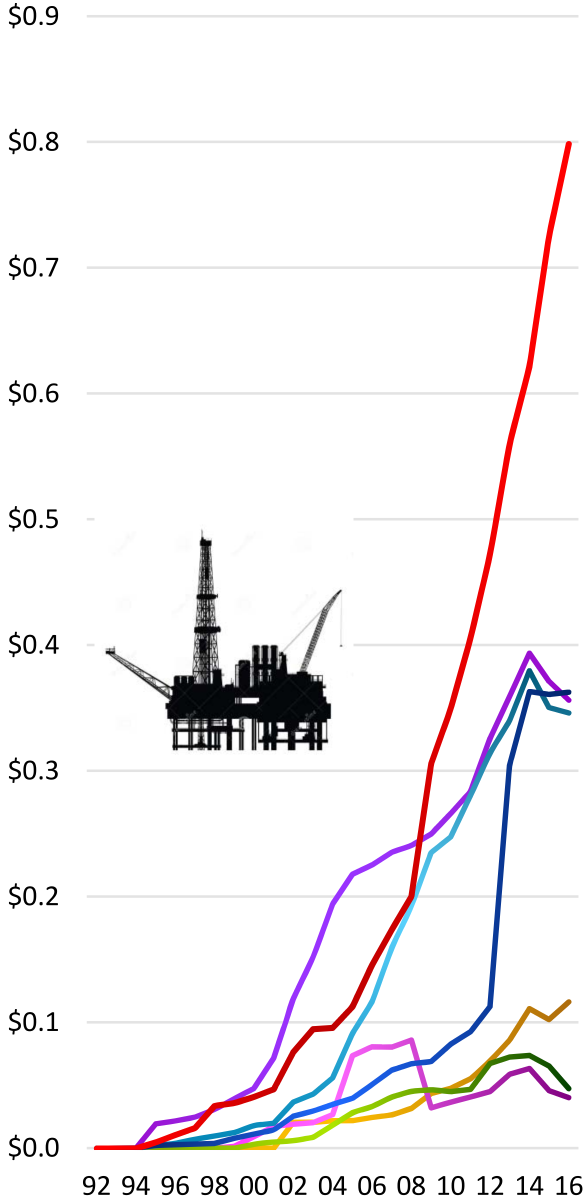
Margins pressured

Connection growth minimal

Hardware challenged

Gap filler





34,000 mobility VSAT sites in service

4.0% 3 year CAGR

$2.0bn revenues

1.0% 3 year CAGR

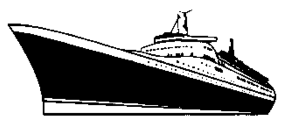
High demand

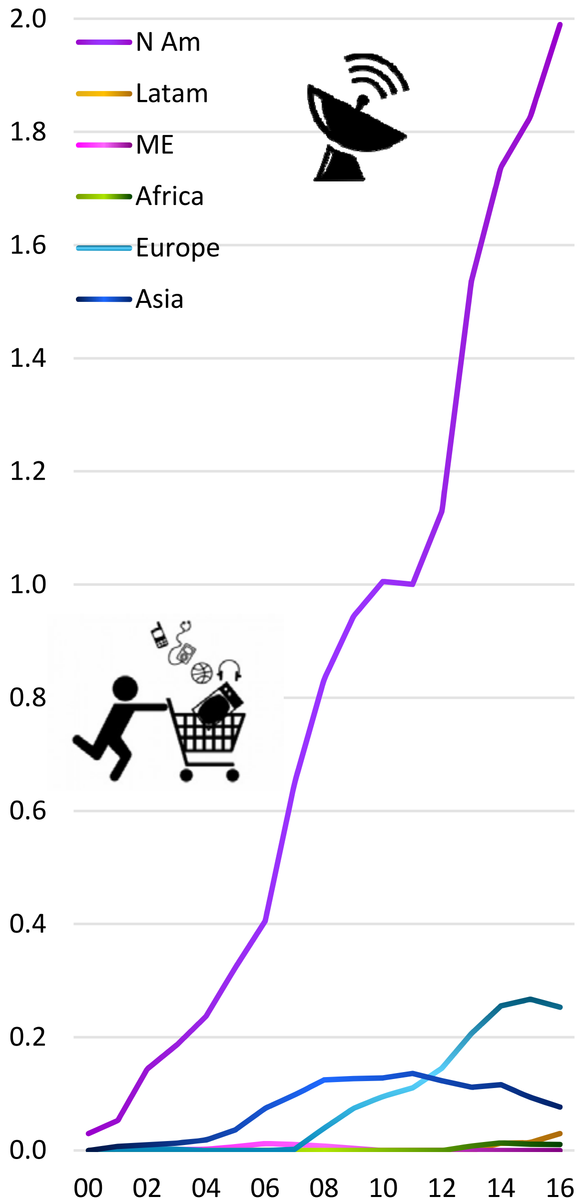
Shakiness

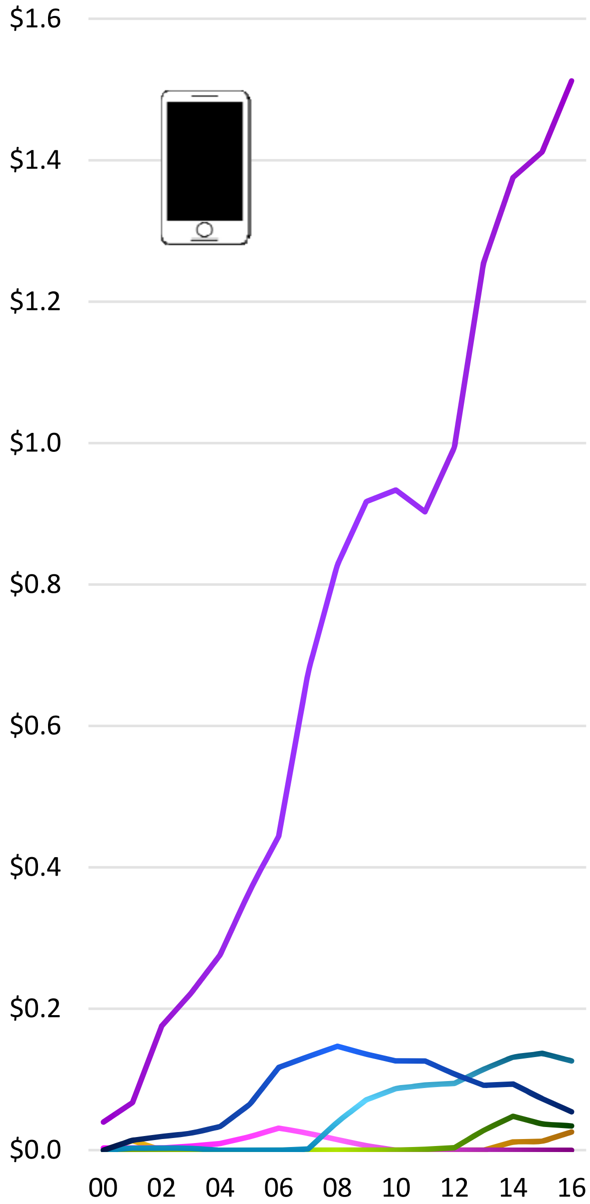
Growing, but

Bandwidth demands rising whilst prices are falling

Risk and investment







2.3m consumer VSAT sites in service

3.4% 3 year CAGR

$1.75bn revenues

1.8% 3 year CAGR

N America outperforms

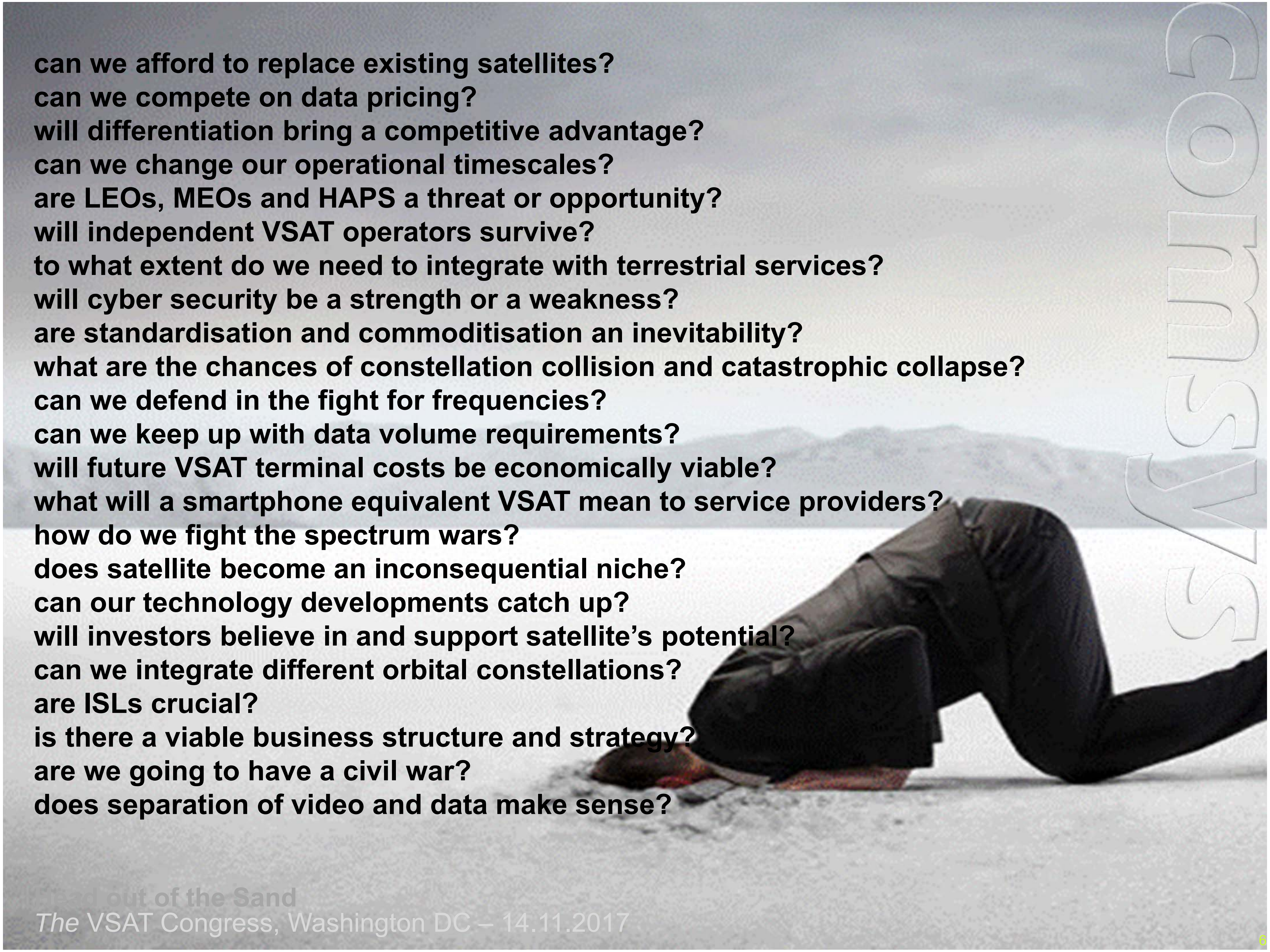
Developing region needs

Evidence of hope

Strategy critical

Affordability and price points


TRUTH AND TECHNOLOGY
WILL TRIUMPH OVER
BULLSHIT AND BUREAUCRACY


can we afford to replace existing satellites?
can we compete on data pricing?
will differentiation bring a competitive advantage?
can we change our operational timescales?
are LEOs, MEOs and HAPS a threat or opportunity?
will independent VSAT operators survive?
to what extent do we need to integrate with terrestrial services?
will cyber security be a strength or a weakness?
are standardisation and commoditisation an inevitability?
what are the chances of constellation collision and catastrophic collapse?
can we defend in the fight for frequencies?
can we keep up with data volume requirements?
will future VSAT terminal costs be economically viable?
what will a smartphone equivalent VSAT mean to service providers?
how do we fight the spectrum wars?
does satellite become an inconsequential niche?
can our technology developments catch up?
will investors believe in and support satellite's potential?
can we integrate different orbital constellations?
are ISLs crucial?
is there a viable business structure and strategy?
are we going to have a civil war?
does separation of video and data make sense?
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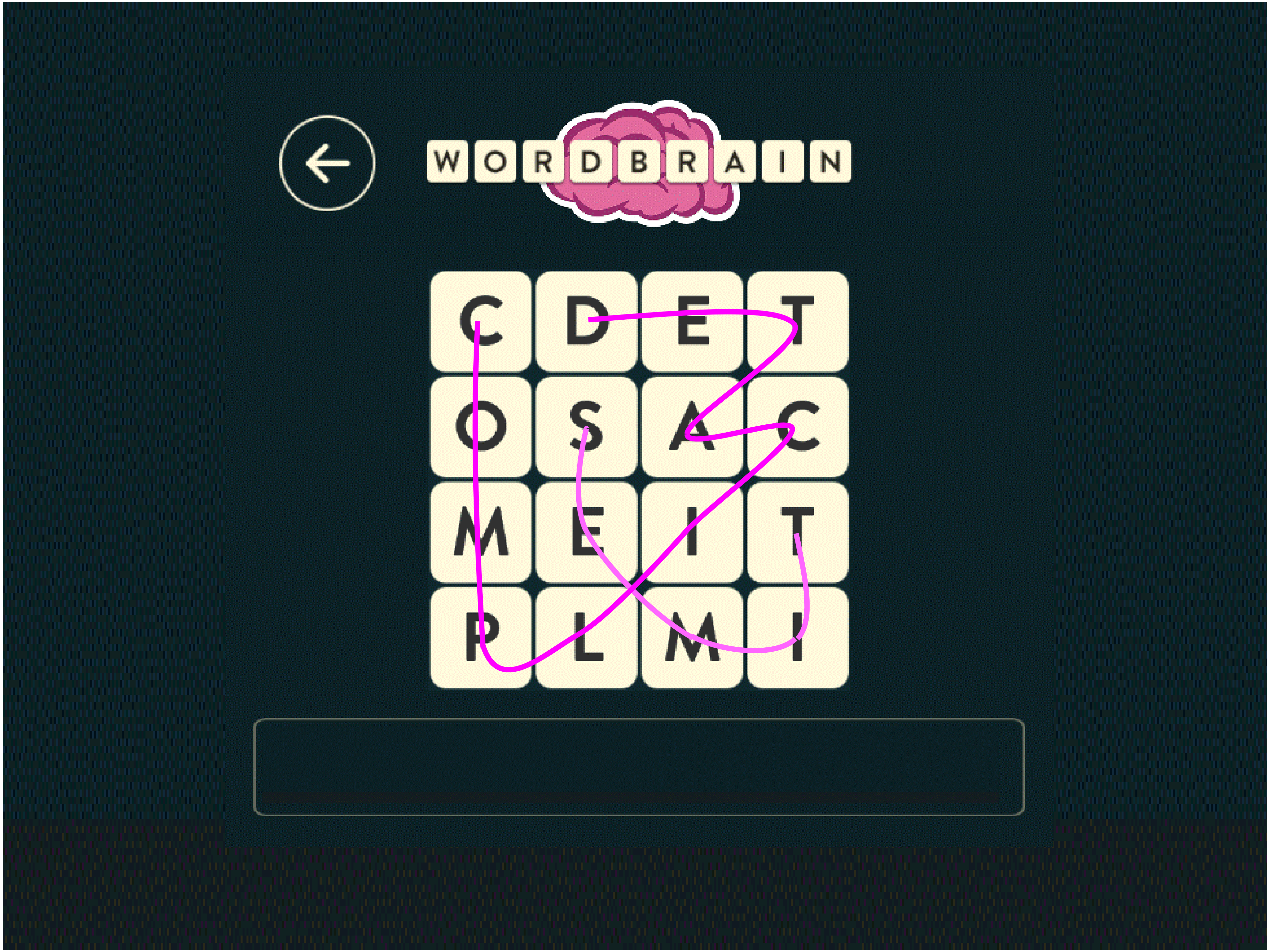
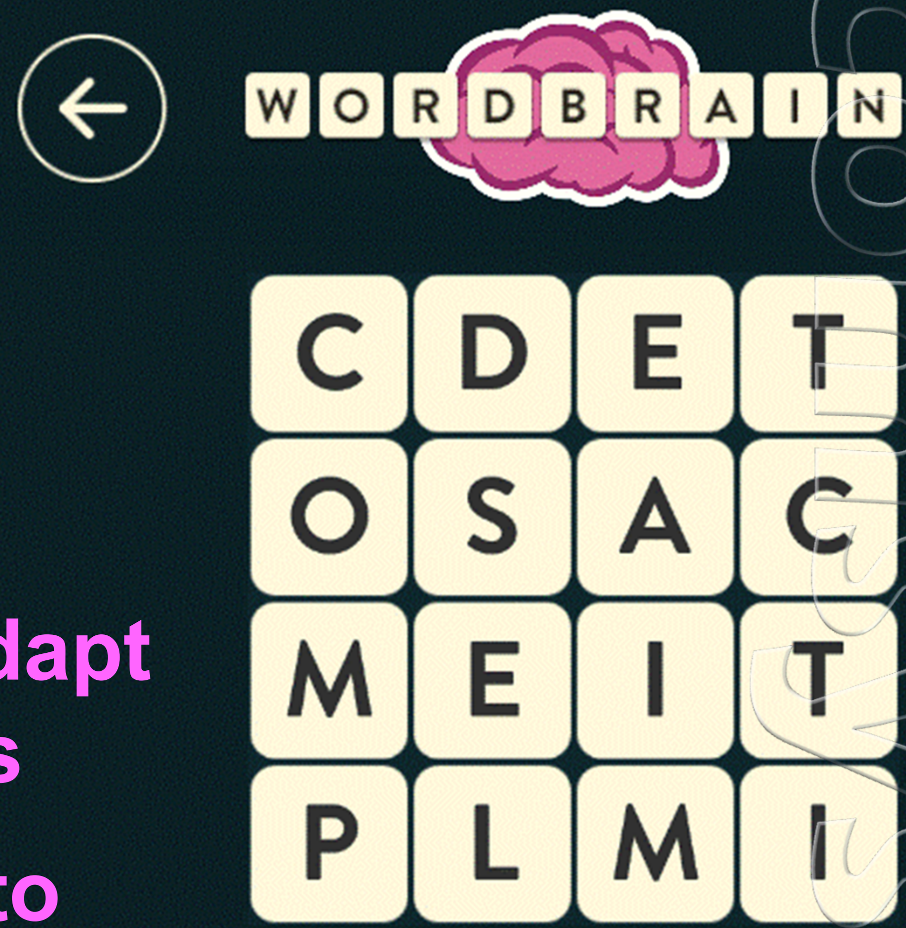

WORDBRAIN
C D E T
O S A C
M E I T
P L M I

our kodak moment is here

the picture is taken

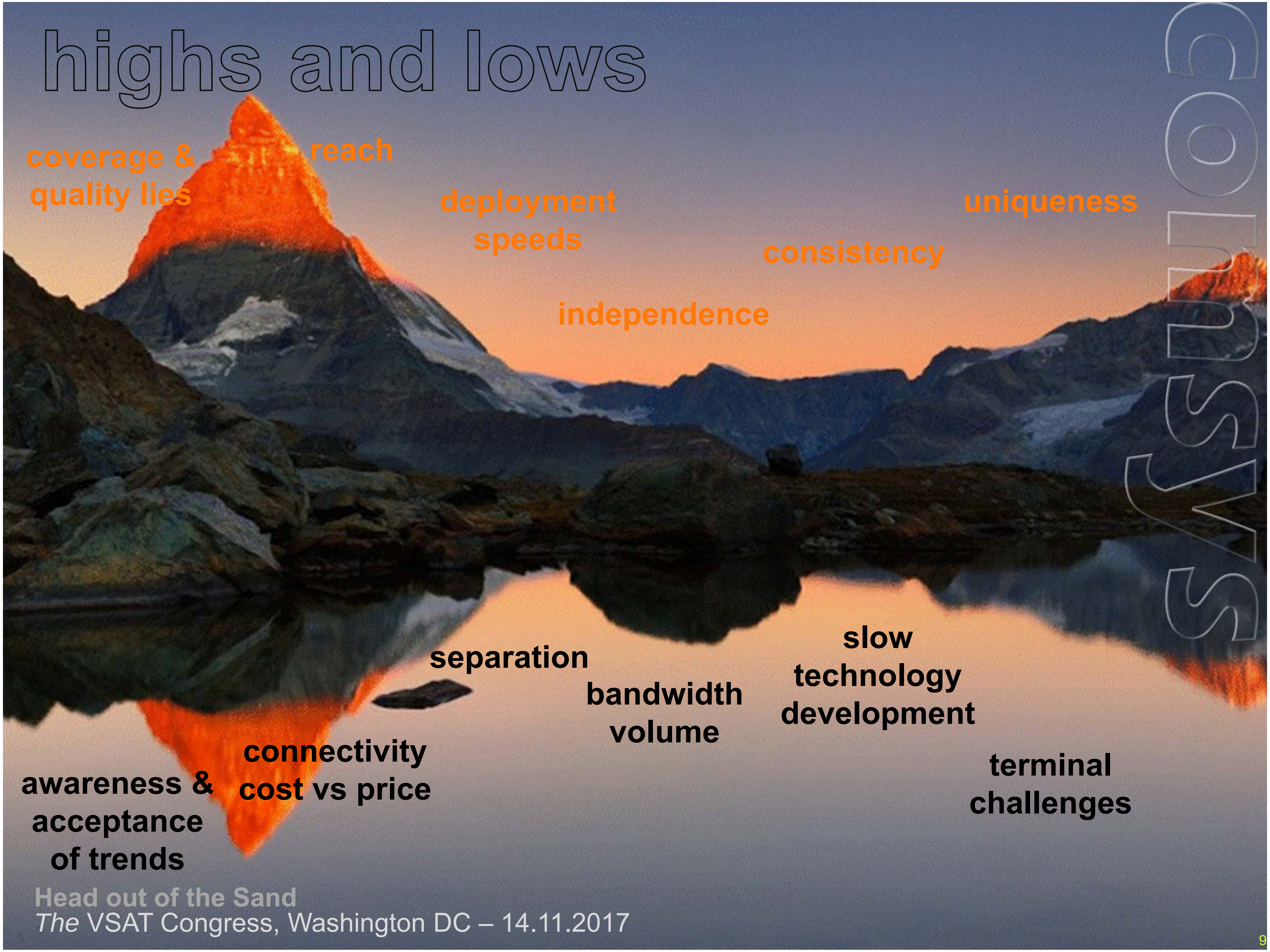
we need to see it for what it is



our business has to adapt to technology changes

VSAT operators need to re-strategize and diversify

technology needs to deliver on time, but most importantly – on budget


highs and lows
coverage & quality lies
reach
deployment speeds
uniqueness
consistency
independence
separation
bandwidth volume
slow technology development
terminal challenges
connectivity cost vs price
awareness & acceptance of trends
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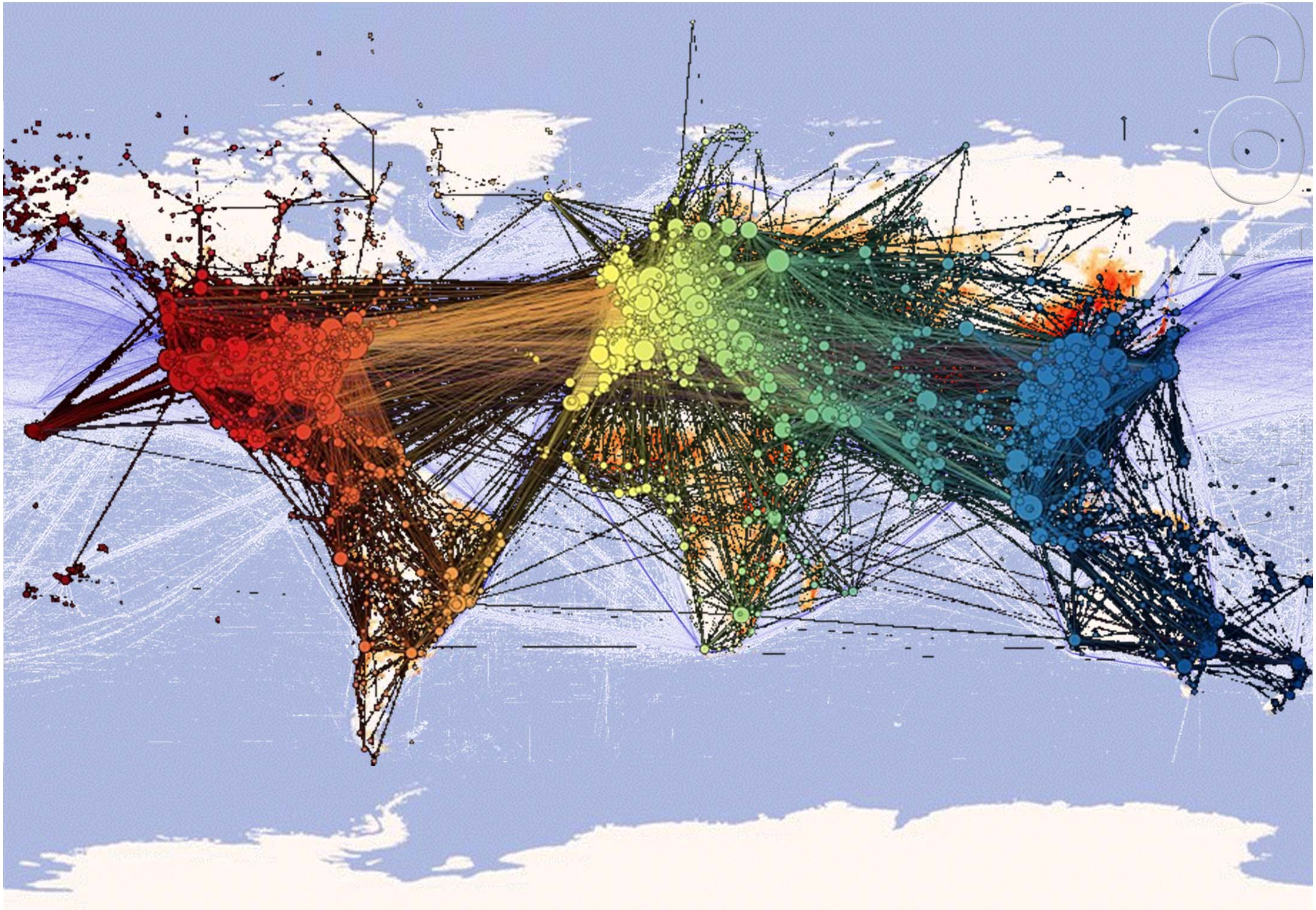
we are not alone

terrestrial problems

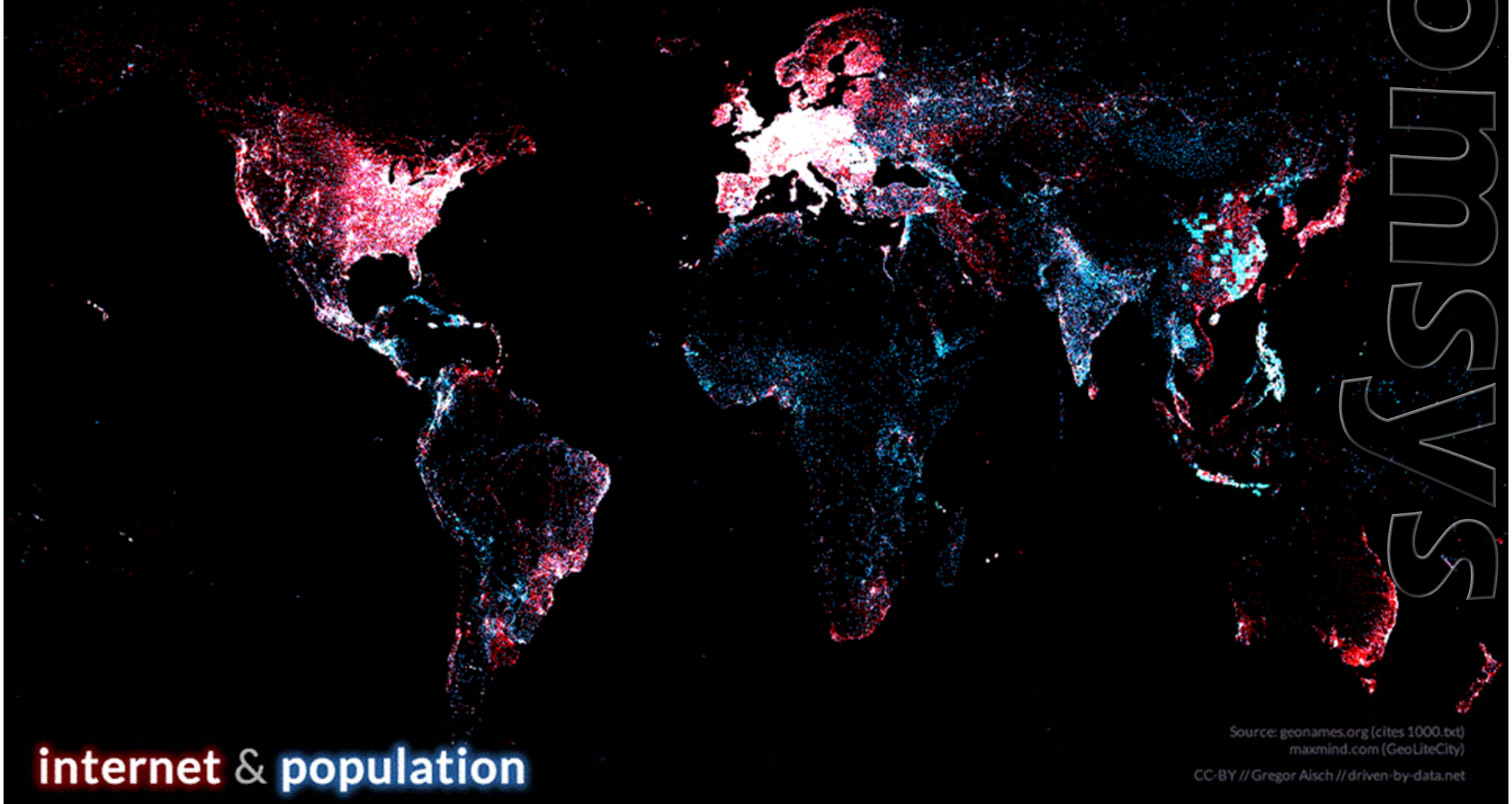
- telcos are either moving towards application value – BT, AT&T – or simplified low cost mass market – Reliance Jio, Free Mobile
- carriers are mostly regionally restricted and geographically limited
- terrestrial telcos have to deal with legacy architecture
- infrastructure and network management costs and complexity are rising
- consolidation has brought extreme complication to telco systems
- infrastructure upgrades are more common than expanded roll-out
- Universal Service Obligations are expanding
- competition is almost exponentially unrecognisable

………………. AND

CLOSE ENCOUNTERS OF THE THIRD KIND



white many people, many IP addresses
red few people, many IP addresses
blue many people, no IP addresses



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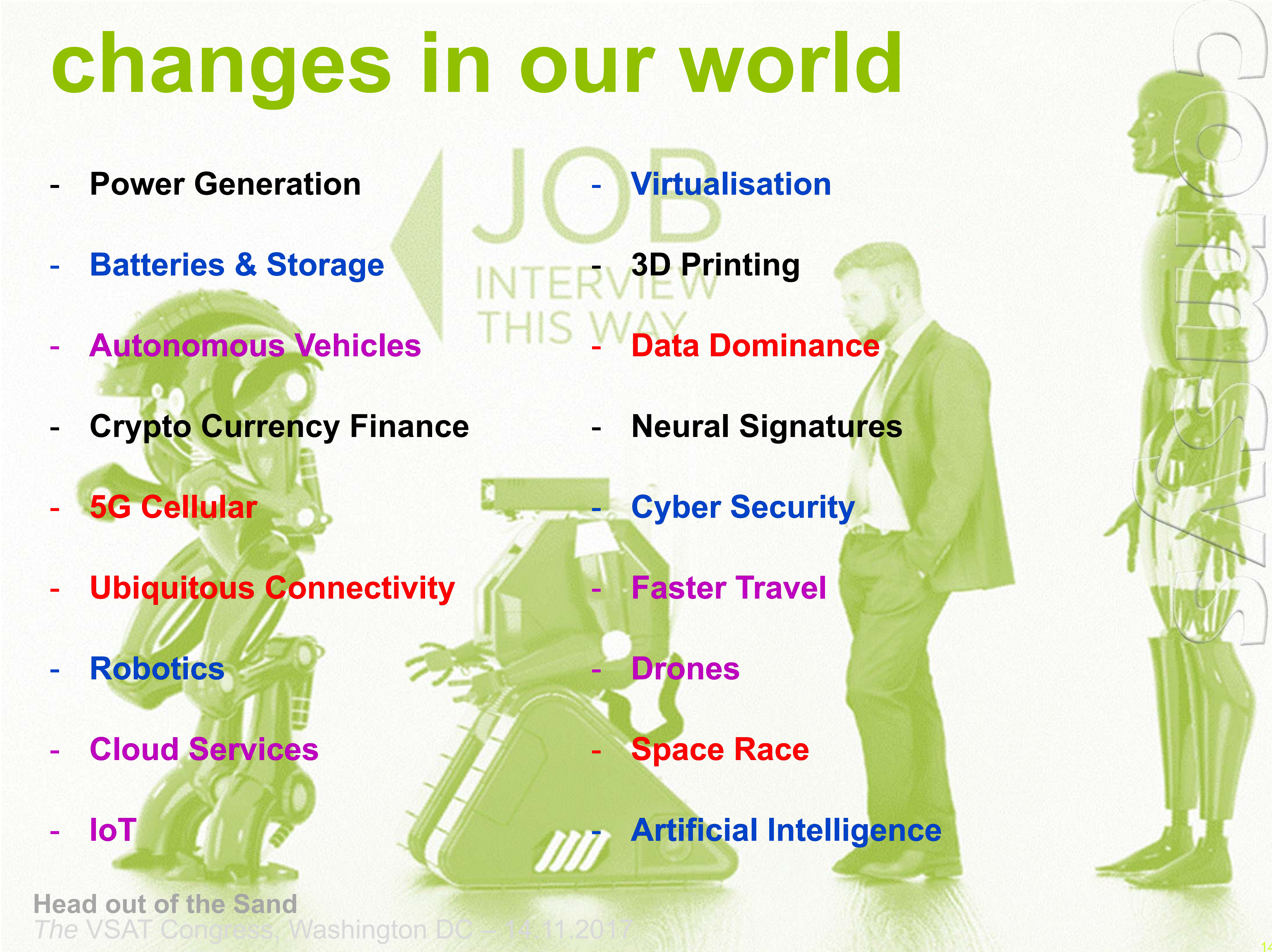
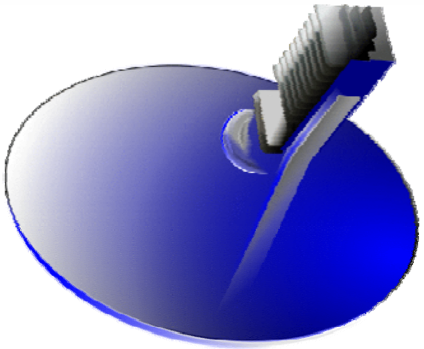
changes in our world



- Power Generation
- Batteries & Storage
- Autonomous Vehicles
- Crypto Currency Finance
- 5G Cellular
- Ubiquitous Connectivity
- Robotics
- Cloud Services
- IoT
- Virtualisation
- 3D Printing
- Data Dominance
- Neural Signatures
- Cyber Security
- Faster Travel
- Drones
- Space Race
- Artificial Intelligence

VSAT has always had one big problem



the game is afoot

GEO progress

HTS flexibility

VSAT adaptation

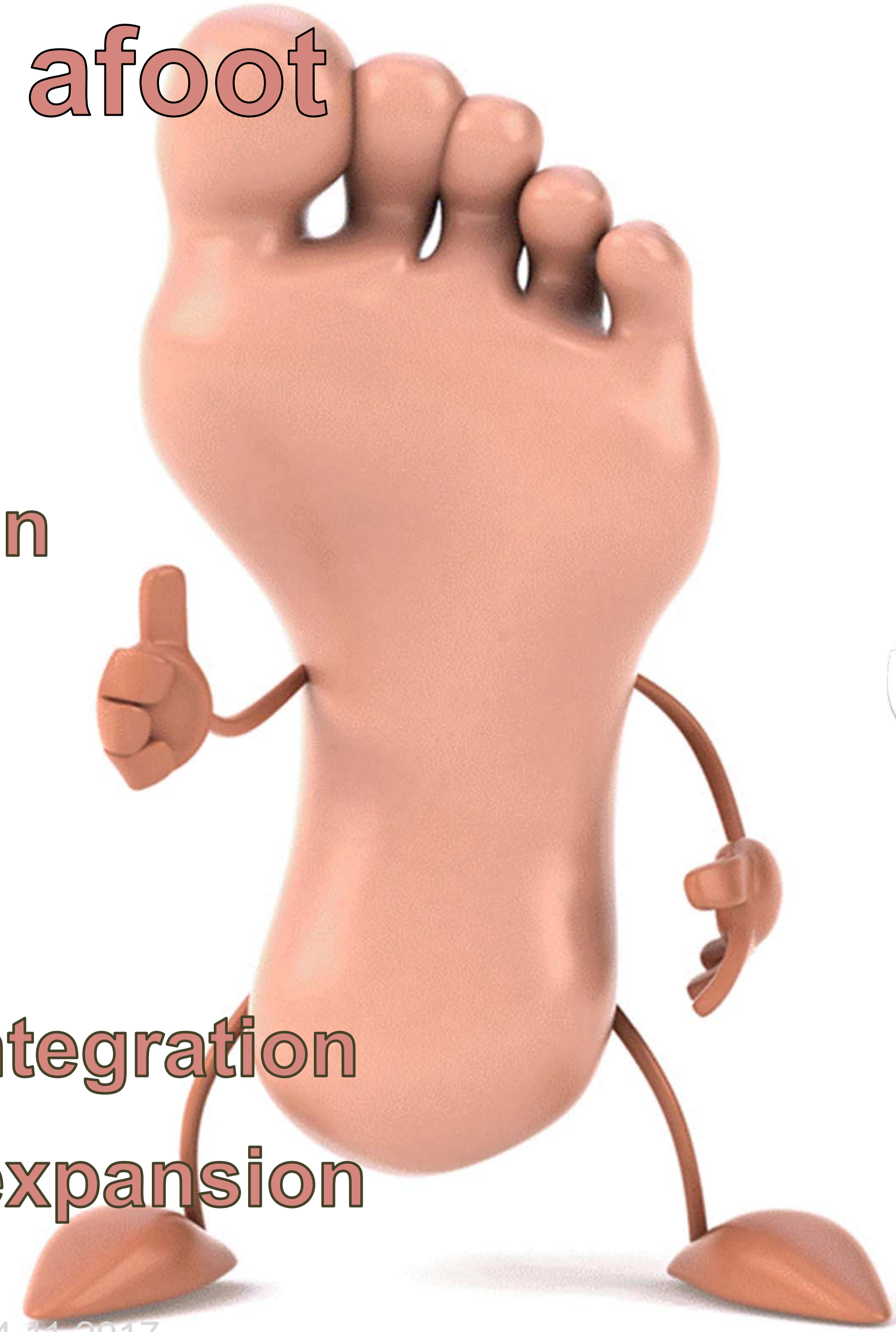
LEOs

FP-CESPAAs

HAPS

4G .. 5G .. 6G integration

Q-V .. W-band expansion

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predictions

satellite companies will not look the same in five years

spacecraft will evolve to be a configurable standard production

in-orbit refuelling will sustain GEO economic viability

software will define how traffic is routed

the cloud will come to space

chip manufacture redefinition may transform system direction

LEOs and HAPS will cloud the skies

FP-CESPAAs will be the key to unlock the doors

VSAT operators will be redefined

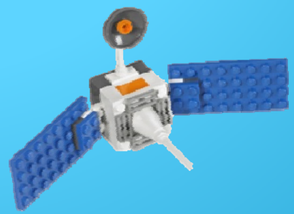
service will be the value, not the bandwidth

consolidation, verticalisation and acquisitions will accelerate satellite operators could kill the asset of VSAT operators by stealing from them …

thoughts and solutions

- VSAT operators know how to serve customers and support applications
- VSAT operators have the value, satellite operators have the assets and manufacturers have the technology … co-operation not competition
- a smart consolidation strategy will be key – mergers, acquisitions, partnerships (and trust)
- enable/invent/integrate applications not just focus on connectivity – but unique and individual apps

VSAT's future



high bandwidth

operational adaptability

low latency

universal global coverage

uniformity

flexibility & focus

simple installation

intelligent connection

hard to beat

I want to see

realisation of reality

recognition of VSAT operator value

industry cooperation

promotion of affordable universality

integration of service platforms

proactive and versatile strategic directions

focus on advantages

collaborative value


we need to
recognise
accept
talk