Backdrop ruminations

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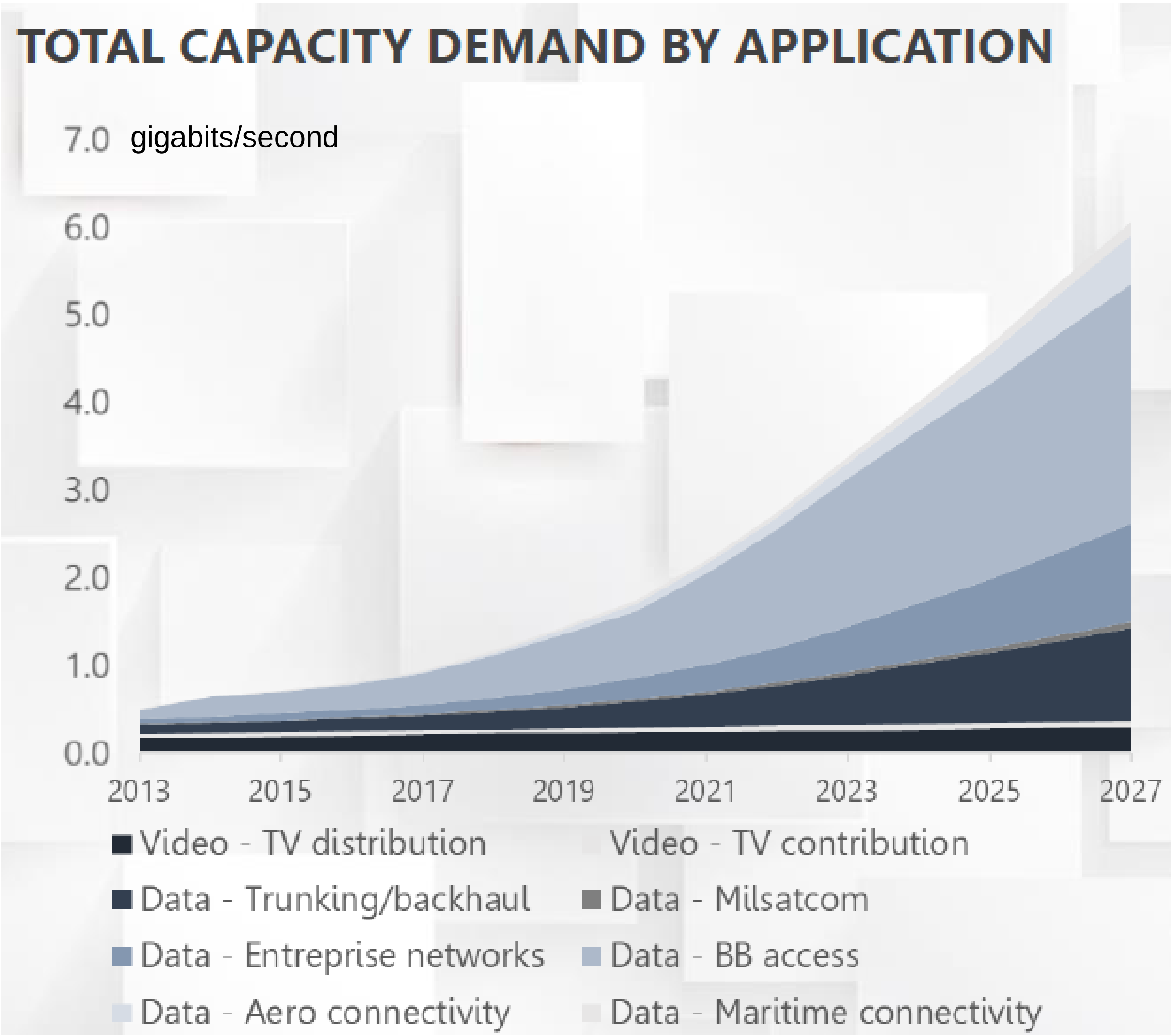
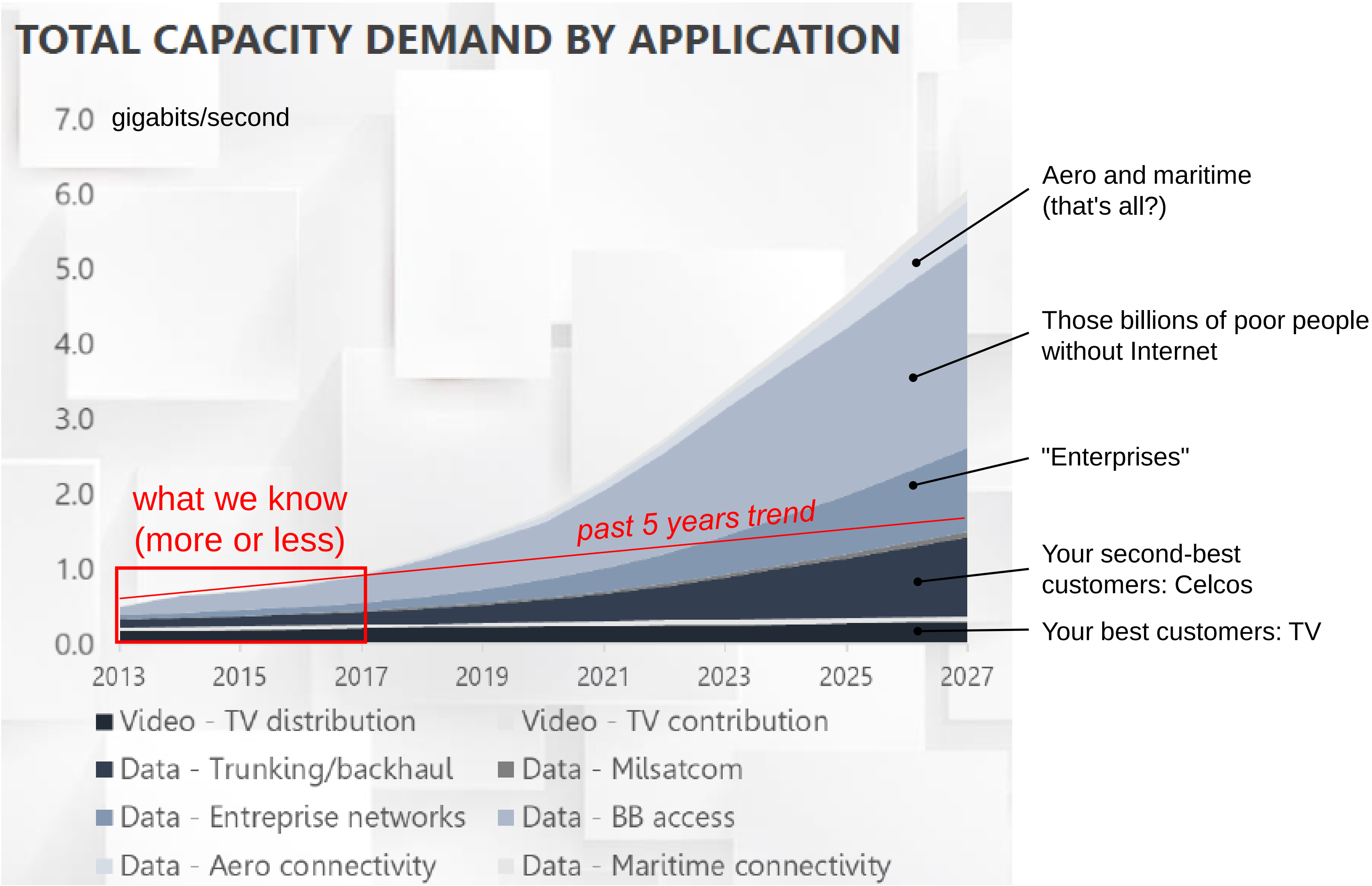
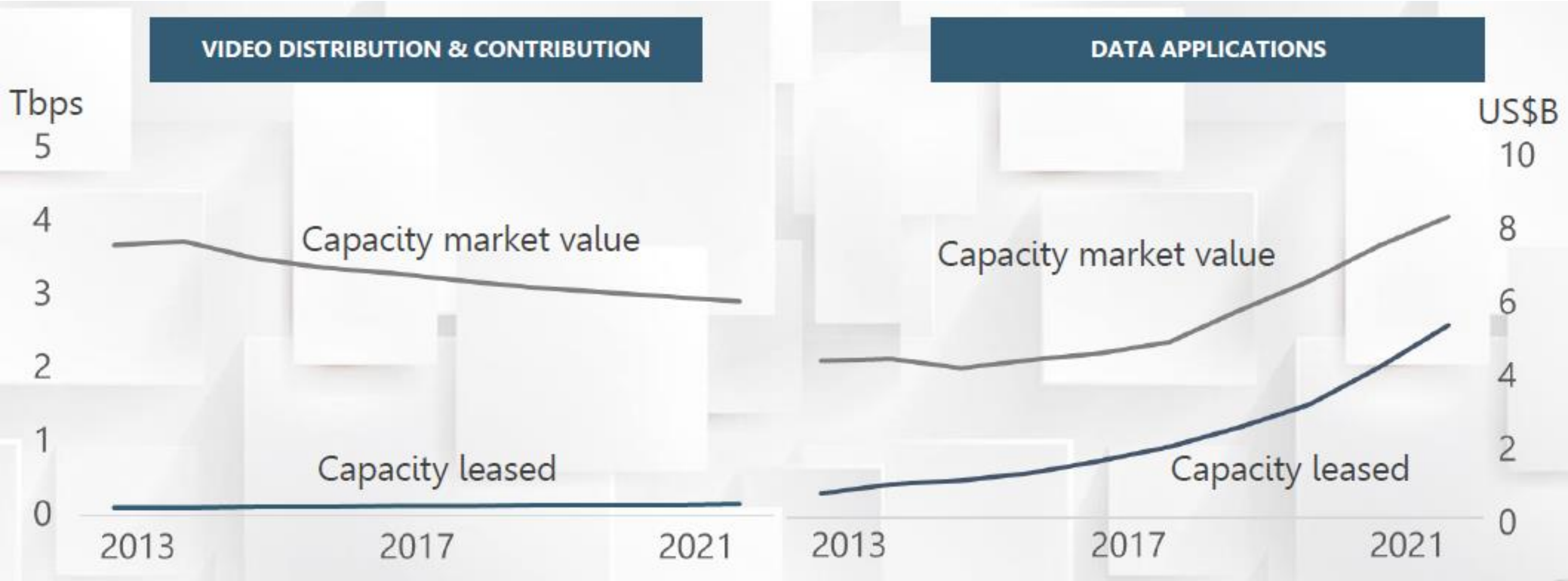
Do you like this picture?



Are you sure?


TOTAL CAPACITY DEMAND BY APPLICATION
7.0 gigabits/second
6.0
5.0
4.0
3.0
2.0
1.0
0.0
2013
2015
2017
2019
2021
2023
2025
2027
what we know
(more or less)
past 5 years trend
Aero and maritime
(that's all?)
Those billions of poor people
without Internet
"Enterprises"
Your second-best
customers: Celcos
Your best customers: TV
Video - TV distribution
Video - TV contribution
Data - Trunking/backhaul
Data - Milsatcom
Data - Entreprise networks
Data - BB access
Data - Aero connectivity
Data - Maritime connectivity

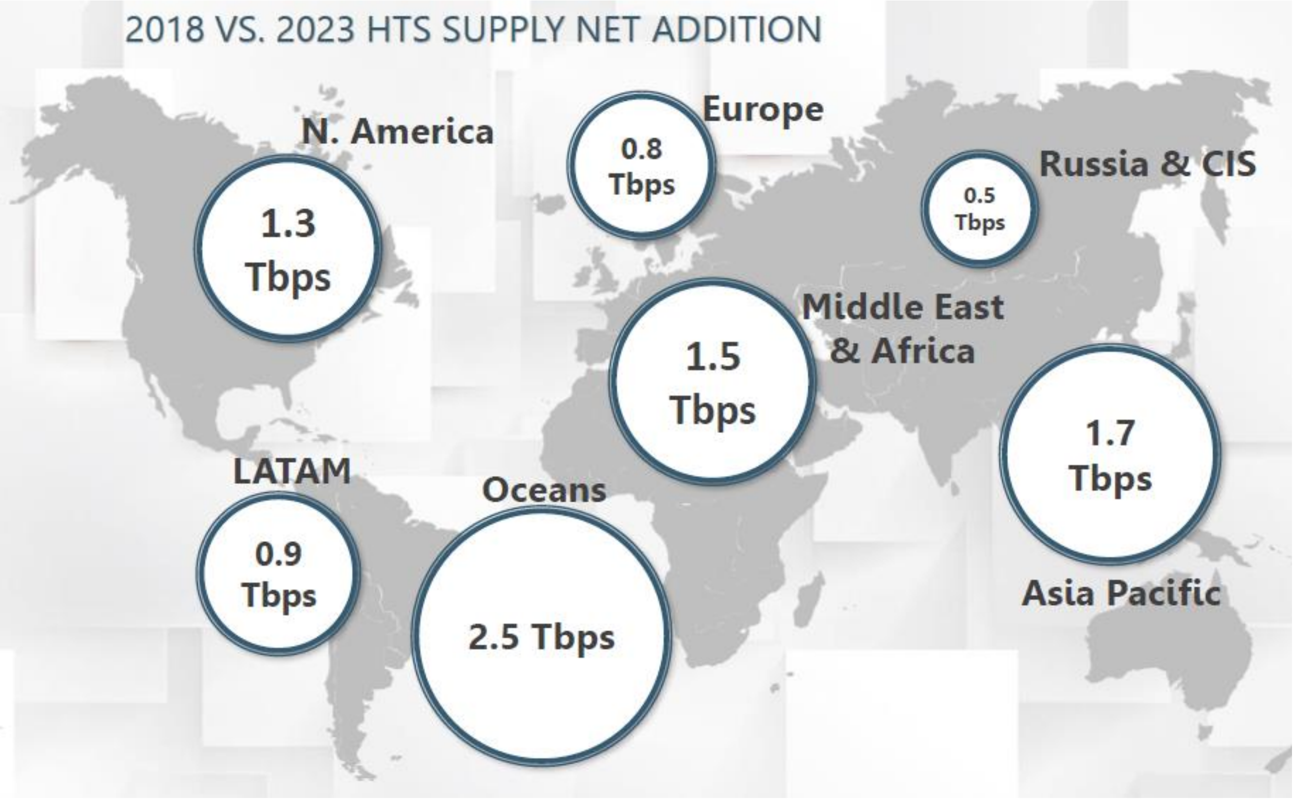
Broad rebalancing from video to data



- 25 years of exploding demand have ended
- Video was still 42% of demand in 2017 but grows at 2%
- Pricing and tenors are still better than for data but the story is no longer simple
- So deal with it; nothing grows forever; consumer tastes are not fixed

- Potentially more opportunities but...
- More complicated demand, applications, sales cycle, pricing
- Not a lot of evidence that 5 years of free-falling price cuts have unlocked commensurate demand

It's still all about supply...

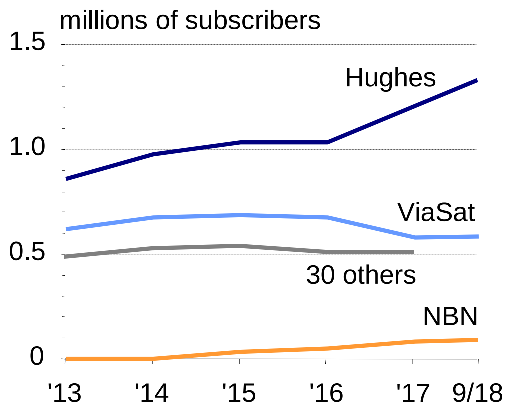


- Supply at YE 2017 was already 1.9 Tbps produced from 797 GHz including reuses on HTS, for 287 GHz of usage
- By 2023 we expect another 5.5 Tbps from satellites in construction, plus maybe as much on a constellation

... and a lot about projects

- Dozens of constellations announced
- All pursued in near-total opacity, making the future supply very hard to tell
- 1-2 in construction
- Firm orders for NGSO communication satellites in 2018: 7 satellites
- Plenty of teasing and question marks on funding, terminals, performances, licensing, distribution, launchers, debris...
- Major progress is needed in 2019 or investors will start losing interest

Meanwhile, on the demand side



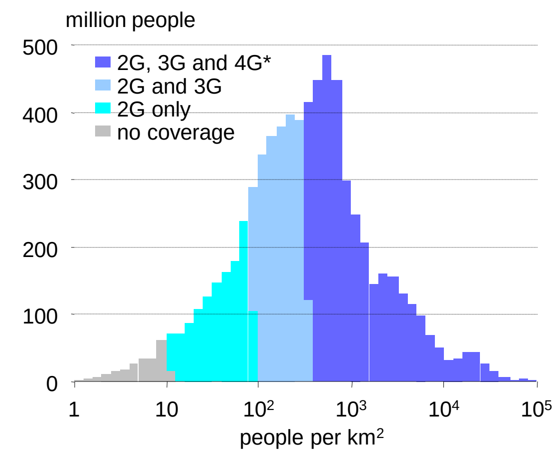
Consumer broadband, the expected growth engine

- Net adds rebounded a little from their recent flattening, to ~12,000/month in 2017
- The market still struggles to develop beyond the U.S.; take-up encouraging in Brazil, but still early days
- Operators have absorbed that market share requires hundreds or thousands, not dozens, of retailers
- Not a very convincing demo of HTS power so far. Let's see with bigger satellites.

About those 3 billion people without Internet...

- Lots of fuzzy statistics
- "Demand" is not in doubt; disposable income and priorities are the problem
- USO money starts to trickle, but still at a glacial pace; many governments just have other fish to fry
- Hybrid systems with long-range WiFi can help the market considerably, if they can scale

Cellular coverage vs. population density, 2015



Enterprise VSATs remain a comparatively small and complicated market

- Small and complicated means barriers to entry; you can live well inside those
- However many legacy markets are fading
- Vast growth markets exist on paper; many are tough, idiosyncratic and hard-to-enter industries
- Cracking them now requires mastering their rules, data centers, applications, content – oh yes, and VSATs

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