SatADSL Presentation at IoT Week Belgrade 01-06-2016

SatADSL
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Agenda

- Introduction to SatADSL
- Latest Developments in Satcom Technology
- Satcom and IoT
- Outstanding Issues
- Conclusions

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SatADSL Profile

- SatADSL offers **professional** and **cost-effective** IP access services over satellite in Africa and in the Middle-East

- SatADSL also designs **specialized** services answering customers' specific requirements

- SatADSL is seated in Brussels, Belgium, close to:
  - Tier 1 Internet backbone connection and professional data centers for server hosting
  - The satellite capacity providers (e.g. SES, EUTELSAT, Avanti)
  - Satellite equipment manufacturer (e.g. Newtec)
  - European Space Agency (ESA), for R&D support

- Since 2010, SatADSL already installed more than **2.000 VSAT** in over **35 countries** in **Africa** and **Middle-East**

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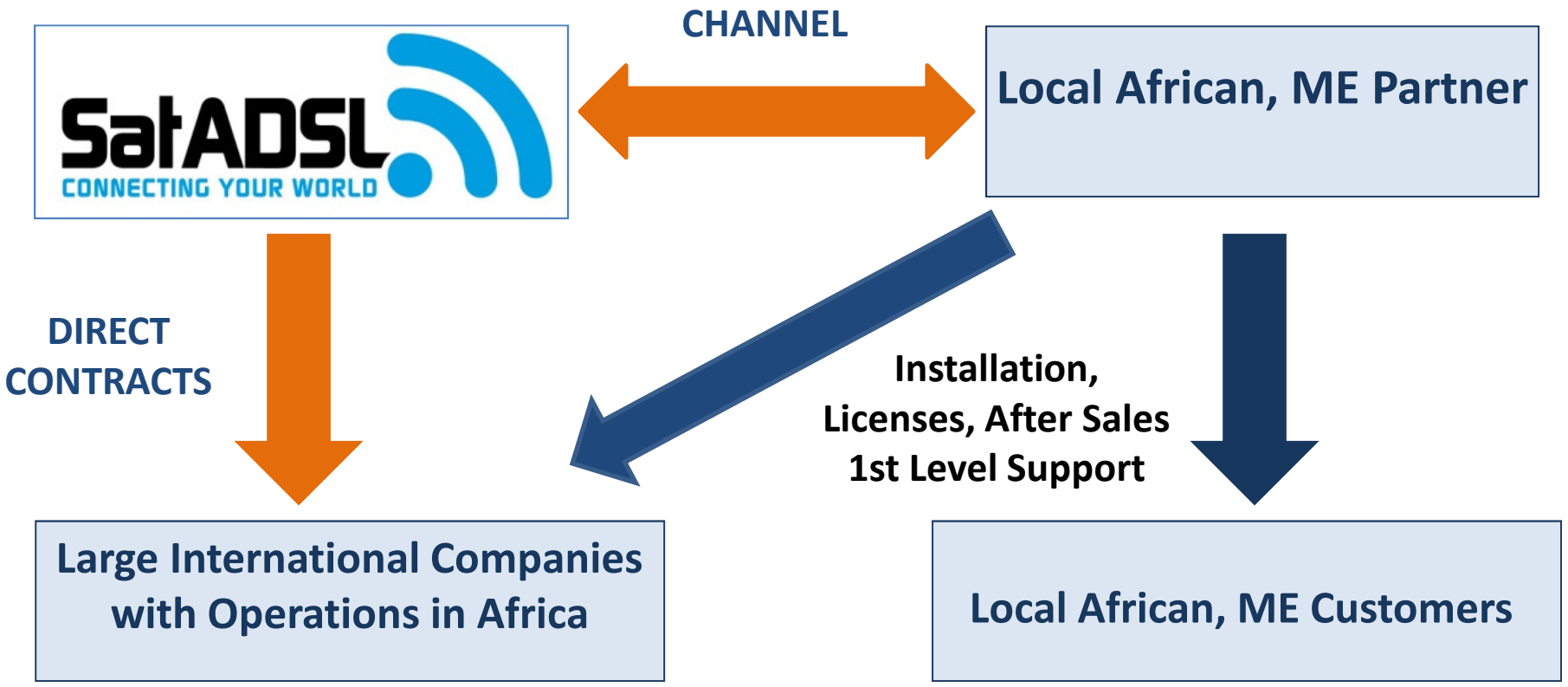
SatADSL Business Model



SatADSL Sectors of Activity

SatADSL Target Sectors:

- Banks (ATM & Back-Up)
- Money Transfer Companies
- Microfinances
- Distribution & Retail
- Cyber cafes
- Radio & TV broadcasting
- Oil&Gas
- ONGs / eLearning
- ONGs / eHealth
- Military and Public Administrations

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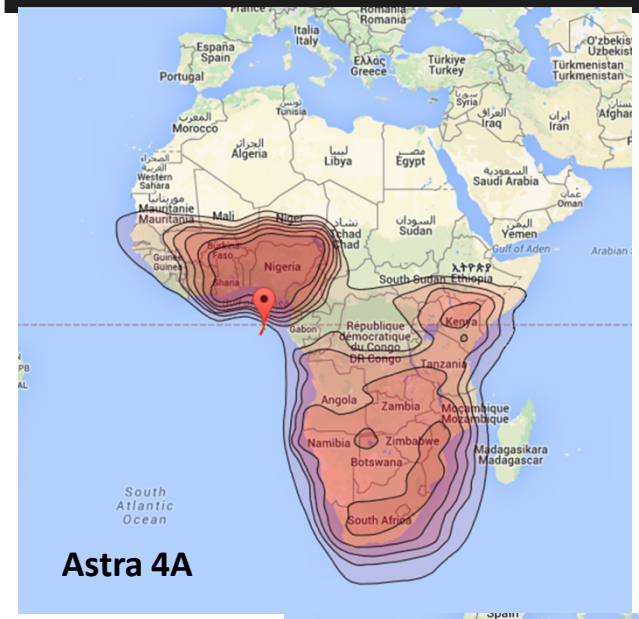
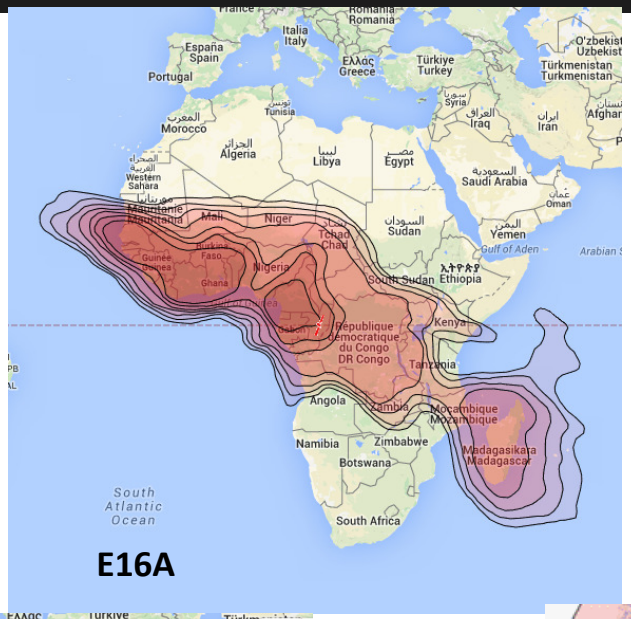
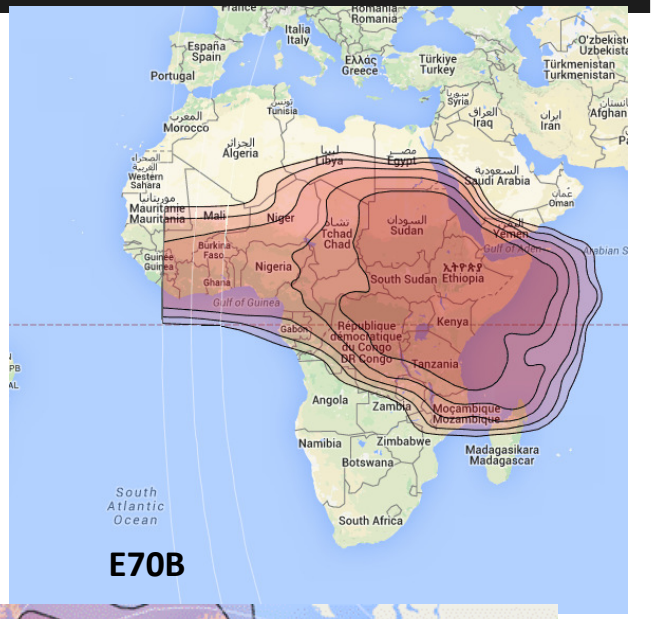
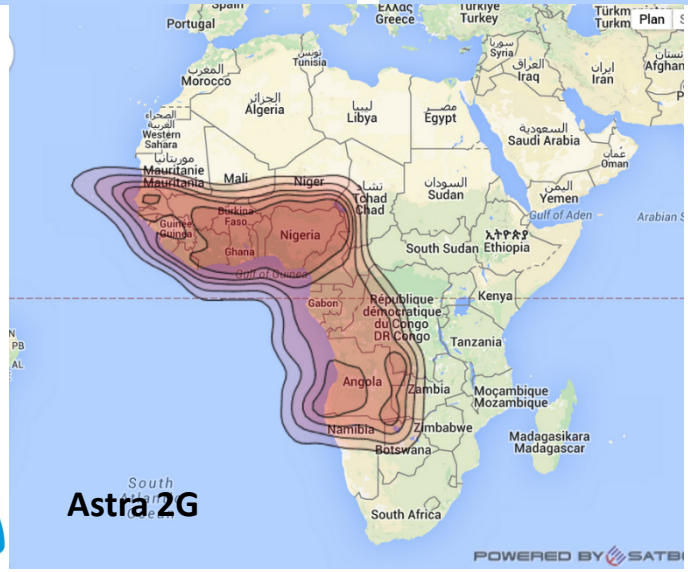
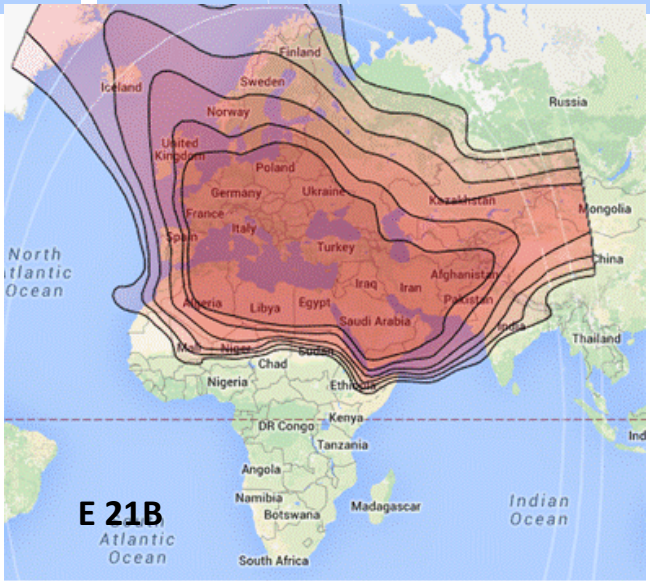
SatADSL Coverage Africa and Middle-East



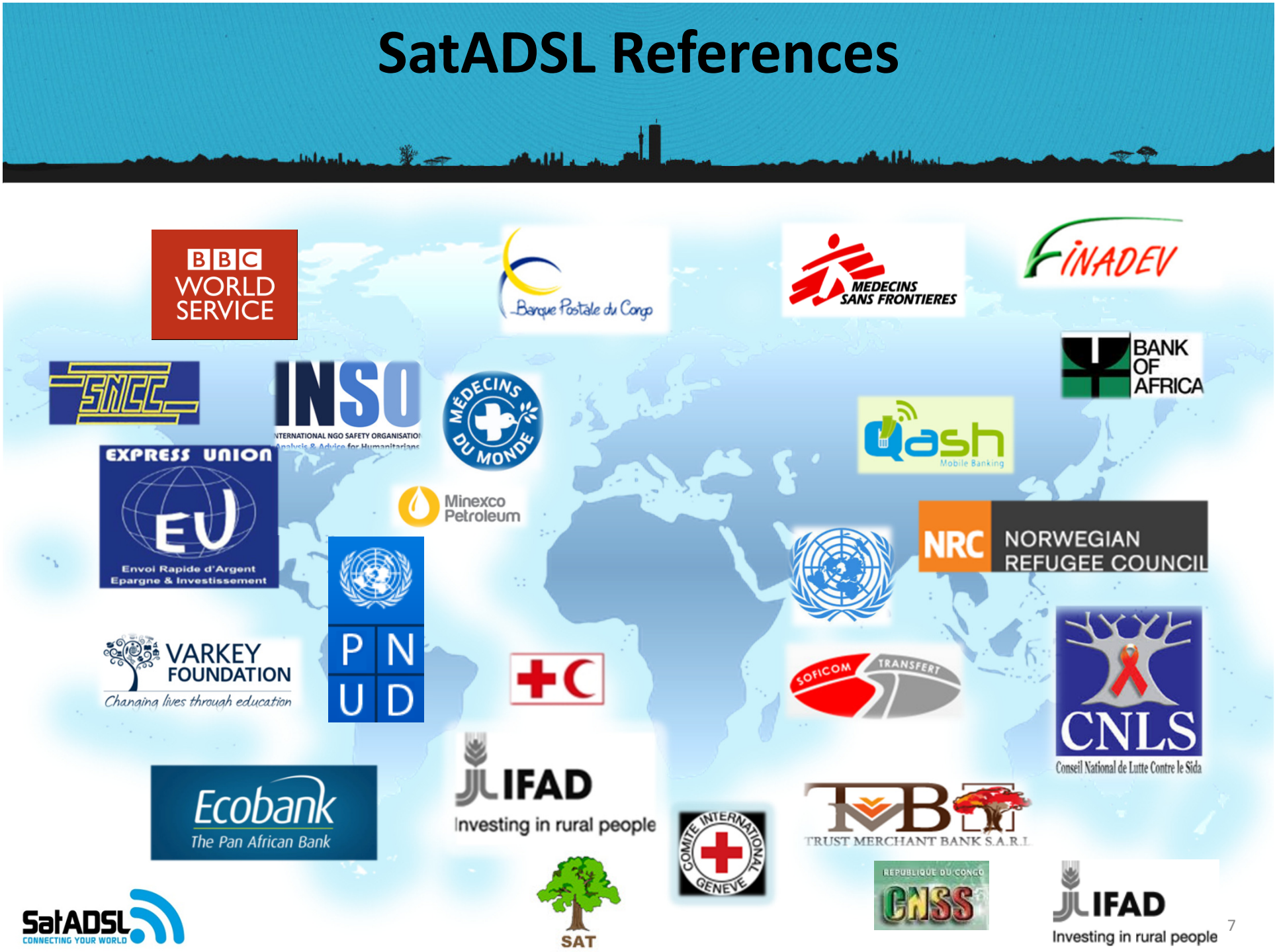








SatADSL References



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Satcom Technology

- A **very small aperture terminal** (**VSAT**) is a two-way satellite ground station with a dish antenna that is **smaller than 3 meters**!! (Wikipedia)
- Legacy VSAT systems required bulky end-user terminals costing tens of thousands of dollars. Services were also very expensive.
- Today, satellite broadband end-user terminals use 1m antennas (or even smaller) and cost few hundreds Euros
- Consumer services in Europe start from few tens of Euros per month.
- Prices might be a little higher in Africa and Middle-East were satellite bandwidth is more expensive

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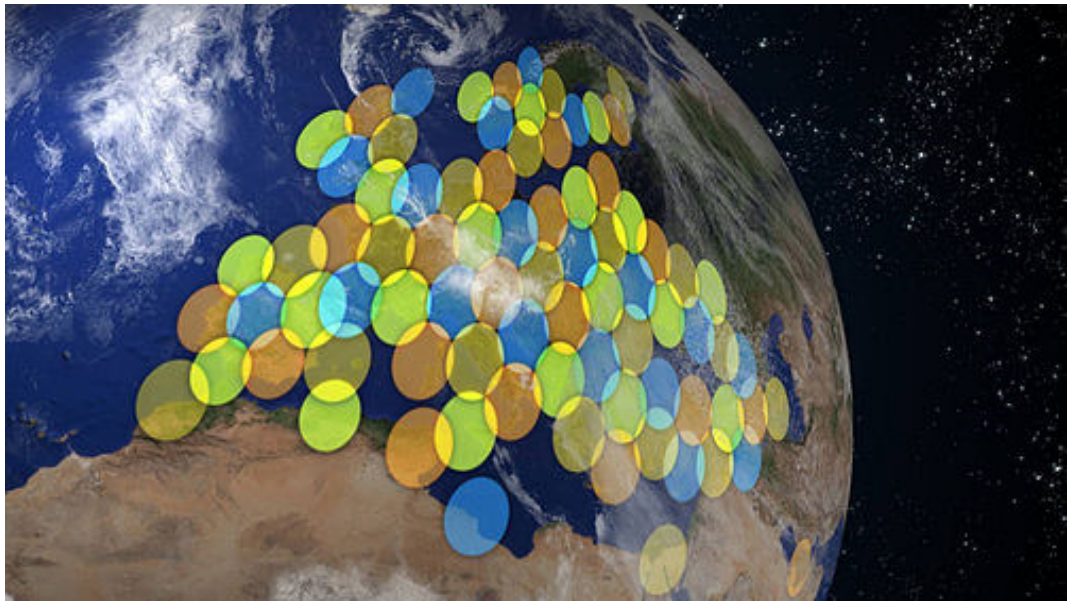
Satcom technology: High Throughput Satellites

- **High-throughput satellite** (HTS): communications satellites providing usually a factor of 20 or more the total throughput of a classic FSS satellite
- Significantly reducing cost-per-bit (up to a factor of 5)
- HTS becoming available all over Africa and ME in the coming months



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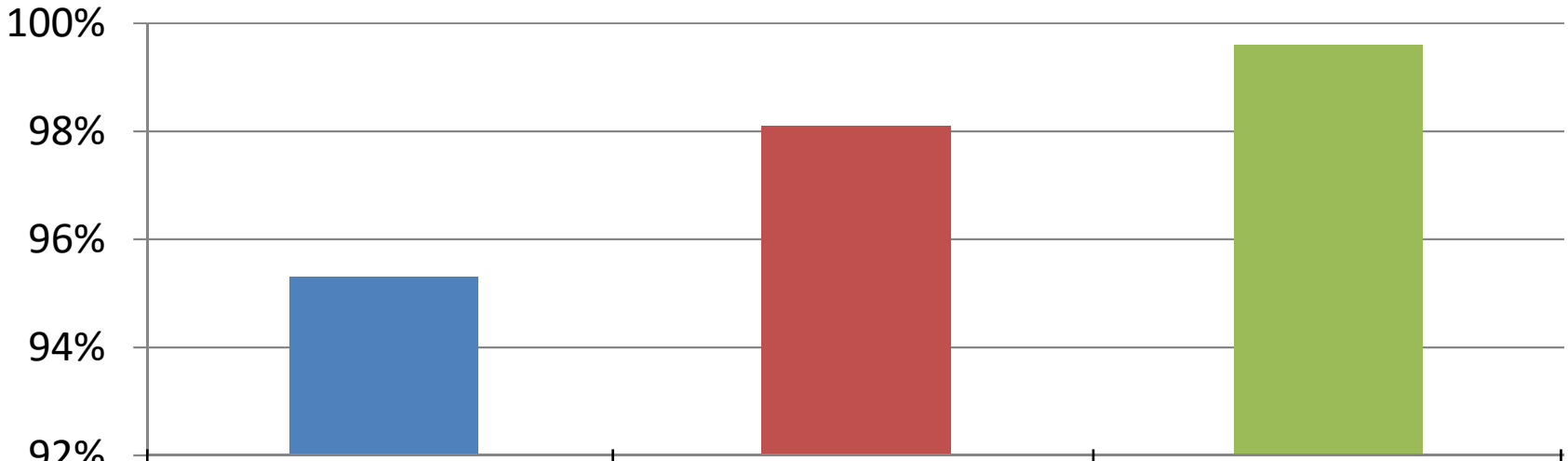
Main VSAT advantage: Reliability



	Cellular (2G, 3G, 4G)	Terrestrial (Fibre, ADSL, LRL)	VSAT (Ku-band)
Typical Failure	Network congestion Some hours/day	Cable interruption Several days/year	Storms, heavy rain Few minutes
Outage duration	**34** h/month	**14** h/month	**< 3** h/month
	95%	98%	**> 99,7%**

Typical availability figures in Sub-Saharan Africa

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SatADSL equipment

- **SAT2200 with MDM 2200 modem**
  - Small equipment (1m antenna) with proprietary Outdoor Unit (ODU)
  - Easy antenna pointing using earpiece
  - Easy and Plug-&-Play installation also by end-user
  - Low power consumption (< 30 watts)
  - Up to 6Mbps download and 512Kbps upload
  - Total cost less than an high end smartphone

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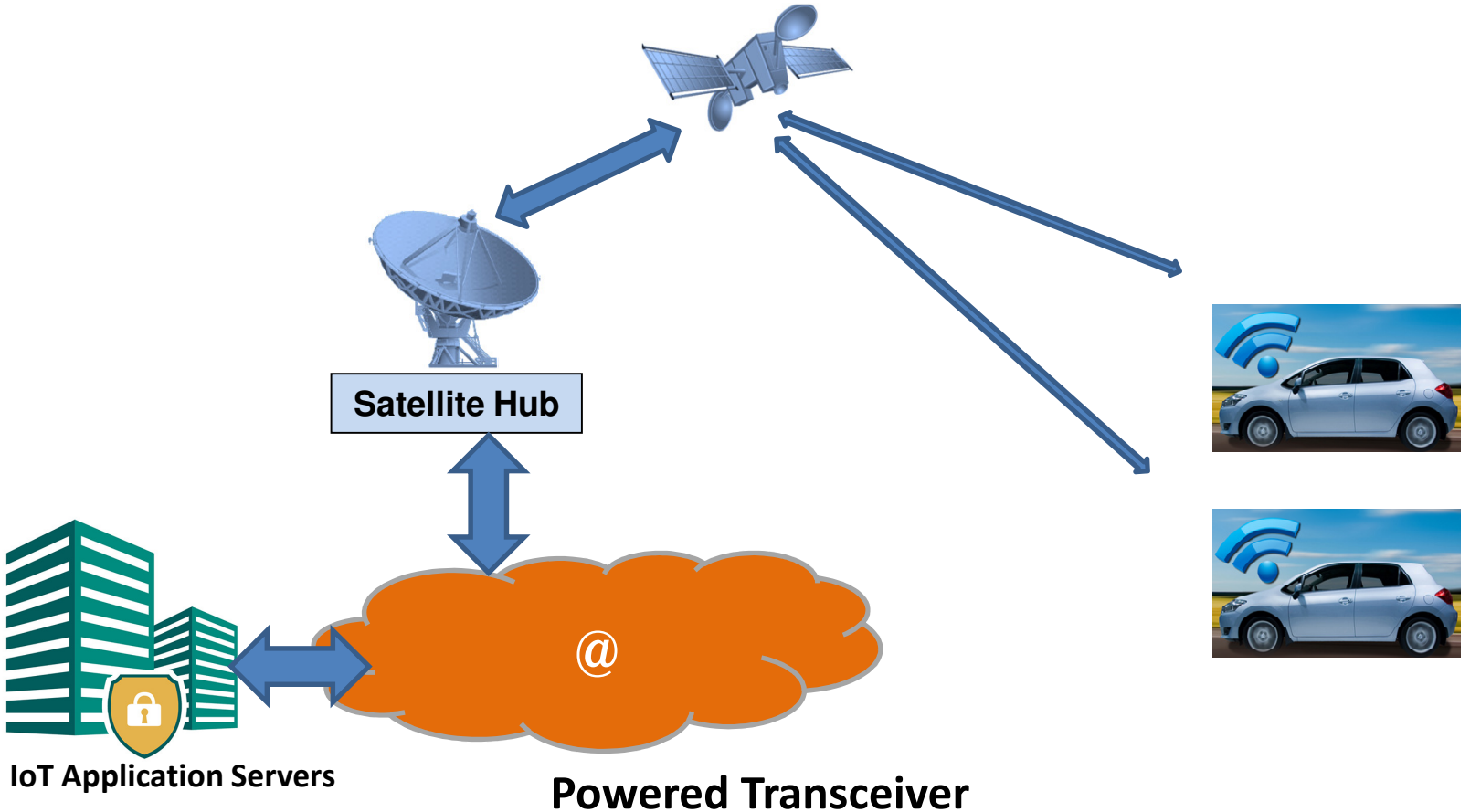
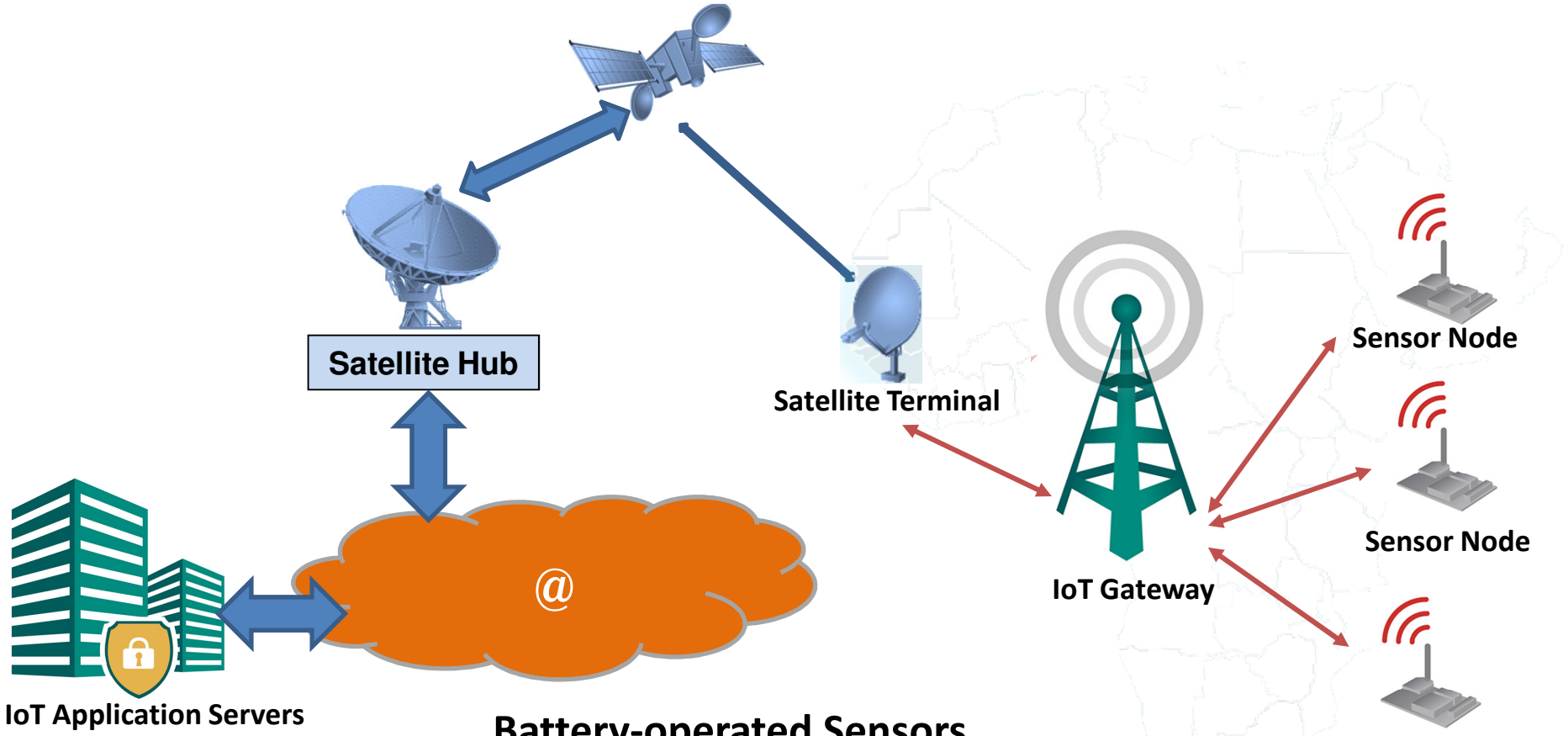
Mobile Satellite Systems



Powered Transceiver
High value objects
Typical application: Connected Car

Satellite IoT Backhauling



Battery-operated Sensors
Deploy & Forget in remote areas
Typical application: Water management

Advantages of Satellite IoT Backhauling

- Technology neutrality: Satellite backhauling can interface with any IoT technology/standard
- Coverage in Rural Areas: Satellite can provide backhauling even in the most remote areas. You only need view of the sky!
- Reliability: Observed links availability exceeding 99,7%
- Low cost: Very limited CAPEX and OPEX

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Main Outstanding Issues

- Verify compatibility of the satellite connectivity with main IoT protocols through pilot projects
- Disproportionate import taxes on VSAT equipment in many African countries: 35% of value of goods including cost of transport!! Result: more than doubling the ex-factory terminal price
- Many African countries do not apply blanket licensing and impose one-off levies and yearly fees per site. Result: Yearly taxes can be 5 times higher than the yearly service fee asked by the service provider
  - Example: Rwanda. RURA decision 05/2007 of 18-07-2017 fixing satellite licensing fees: Yearly fee per station = 7m RWF = 8.300€
    Typical ARPU <150€/month => 1800€/year
    Ratio License fees/Service fees = 4,6 !

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Conclusions

- Satellite communications can provide a huge benefit to IoT deployment in developing countries, in particular in rural areas
- In particular, satellite IoT backhauling is particularly suited to applications like water management which need to collect information everywhere including remote lands
- There are still some outstanding issues to be solved in terms of:
  - Demonstration of technical protocols compatibility
  - Disproportionate import taxes on satellite equipment
  - Disproportionate licensing fees
- Proposed actions for improvement:
  - Large scale projects in H2020
  - Inclusion of satellite mini-VSAT in WTO Information Technology Agreement
  - Information campaigns supported by EU/EC to National Radio Regulators

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Thank You

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