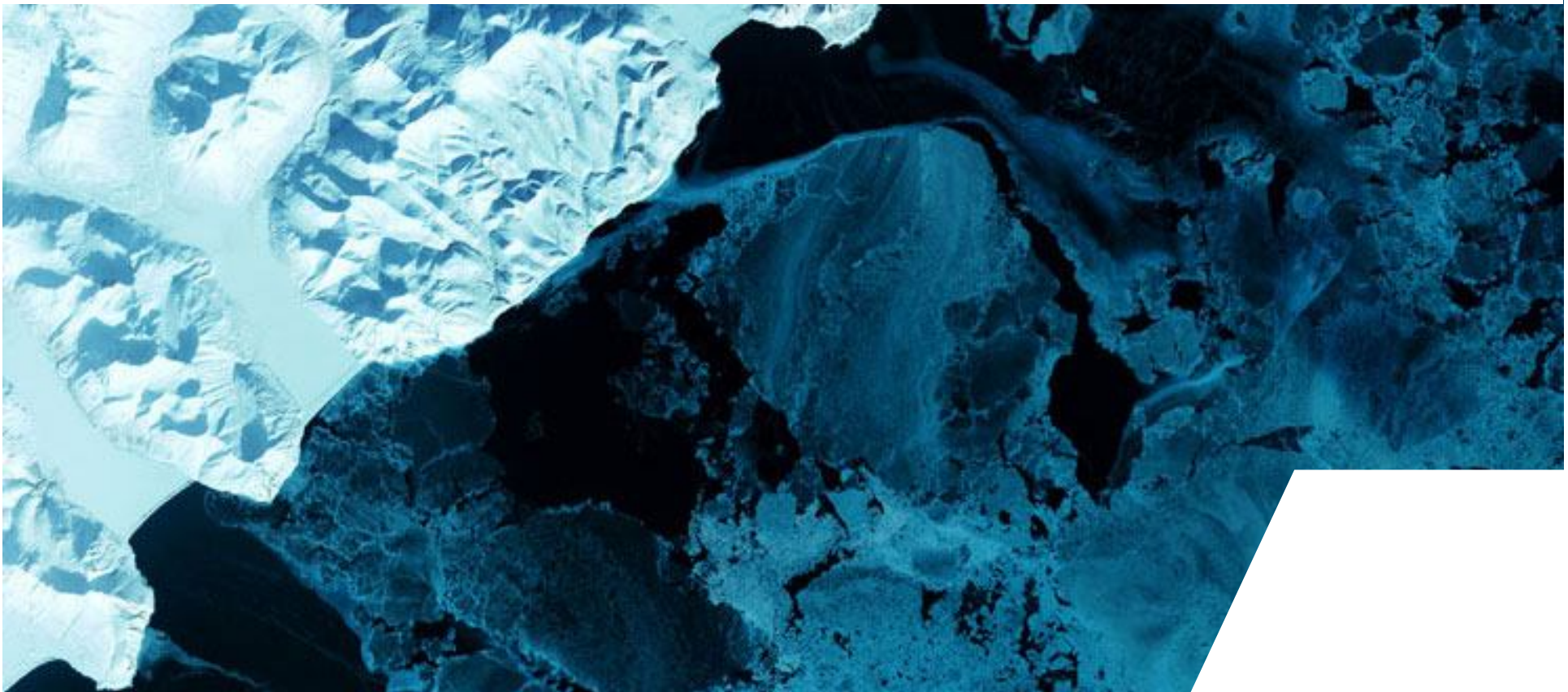# How to overcome Digital Divide for Broadband Internet Access in Slovakia

ASTRA

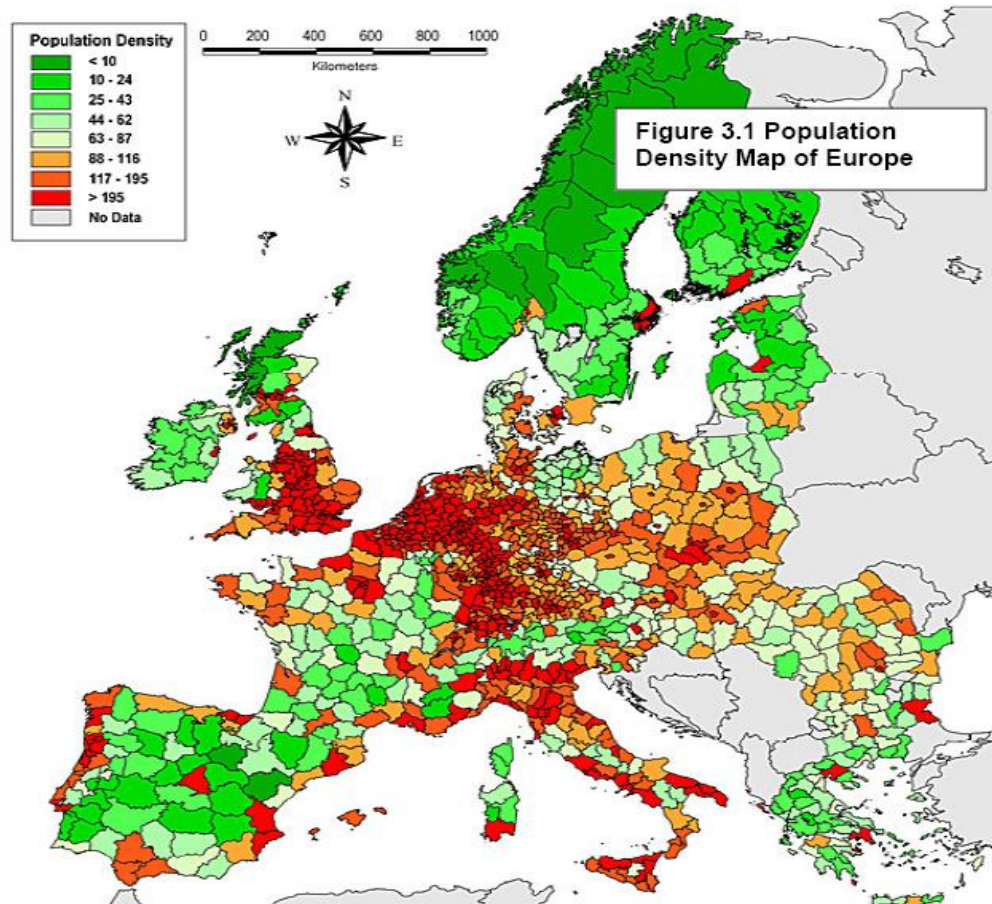ITAPA, Bratislava, 4th November 2009

Who we are

- A wholly-owned SES company

- Operator of the leading DTH broadcast satellite system in Europe

- 15 ASTRA group (ASTRA + SIRIUS) satellites over Europe
  - new satellites continually in the procurement pipeline

- More than 2,500 TV, radio and interactive channels available

- Employees from 25 countries

- In total, 122 million homes are connected to the ASTRA group satellites

- Headquarters in Luxembourg, 9 affiliate offices in Europe & Africa
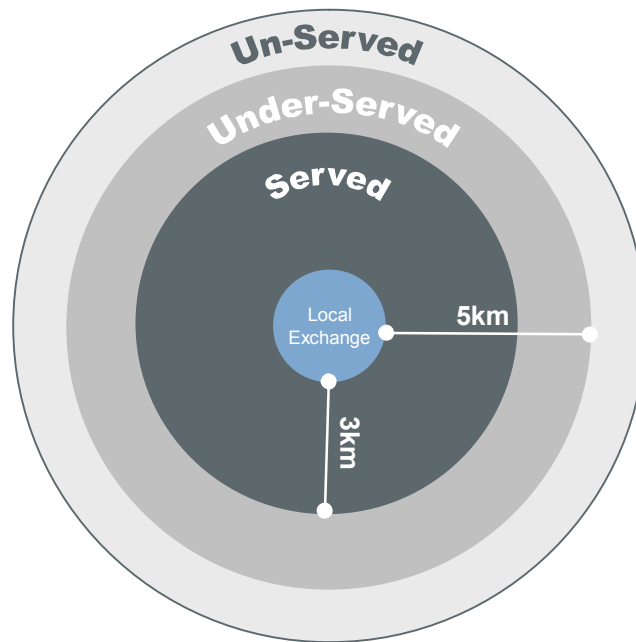 - ASTRA CEE office based in Warsaw

Figure 3.1 Population Density Map of Europe

There is a strong correlation between population density and DSL line lengths: this is at the heart of the digital divide

Market Demand

Population Density

■ High → Urban
■ Medium → Sub-Urban
□ Low → Rural

Technologies

■ 2 to 50 Mbps: FTTx, xDSL
■ Up to 2 Mbps: ADSL
□ None

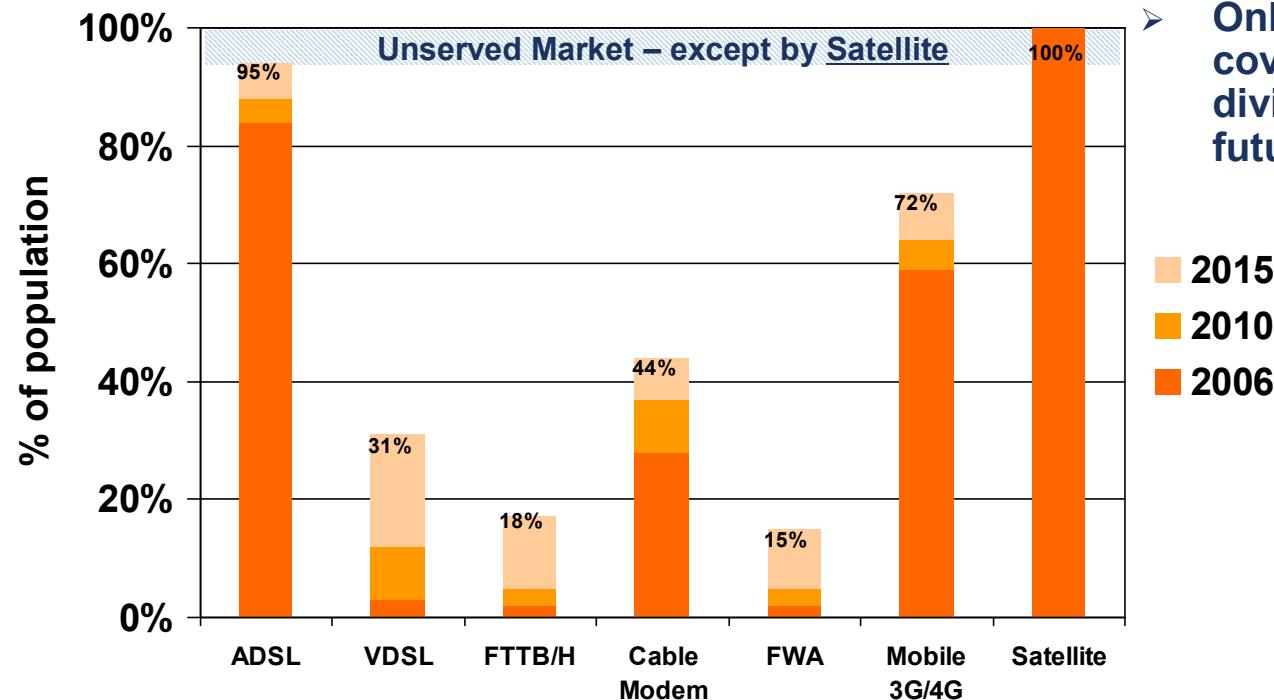**Factors affecting broadband market demand:**

- **Penetration** – strong correlation with population density;

- **Coverage** - generally urban areas are well served;

- **Prices** - competing technologies will be limited in low pop. density areas; resulting in higher prices;

- **Speed** - DSL Broadband speed is inversely proportional to the distance from the exchange;

Broadband coverage in the EU27 until 2015

> Only satellite can provide the coverage to bridge the digital divide – now and in the future.

Legend:
- 2015
- 2010
- 2006

Chart labels: ADSL 95%, VDSL 31%, FTTB/H 18%, Cable Modem 44%, FWA 15%, Mobile 3G/4G 72%, Satellite 100%
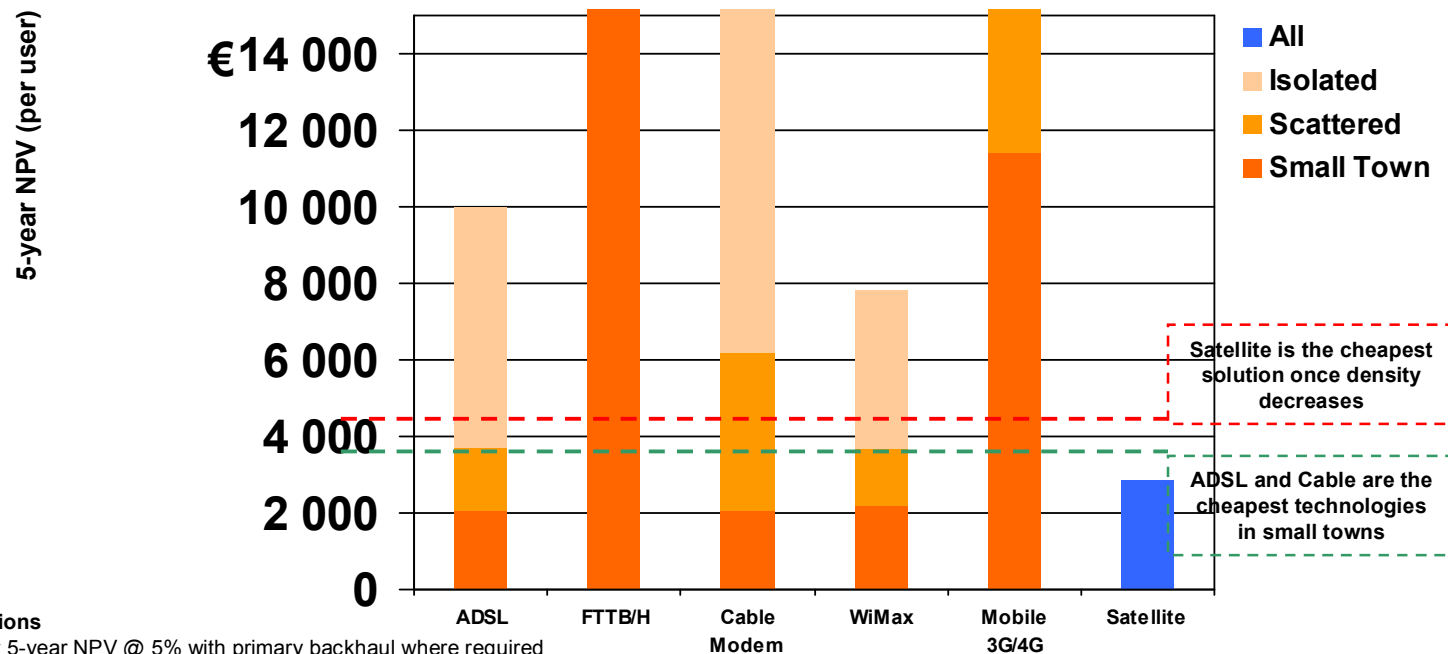
Unserved Market – except by Satellite

Source: EC commissioned MICUS 'The Impact of Broadband on Growth and Productivity' 2008

Even with continued investments in ground infrastructure, satellite technology is the only solution that can provide coverage for 100% of the EU population

Satellite Broadband Coverage

Over a 5-year period, Satellite is the most cost-effective solutions in low density areas

5-year NPV (per user)

€14 000

12 000

10 000

8 000

6 000

4 000

2 000

0

ADSL	
FTTB/H	
Cable Modem	
WiMax	
Mobile 3G/4G	
Satellite	

Legend:
- **All** (blue)
- **Isolated** (light tan)
- **Scattered** (orange/gold)
- **Small Town** (dark orange)

Satellite is the cheapest solution once density decreases

ADSL and Cable are the cheapest technologies in small towns
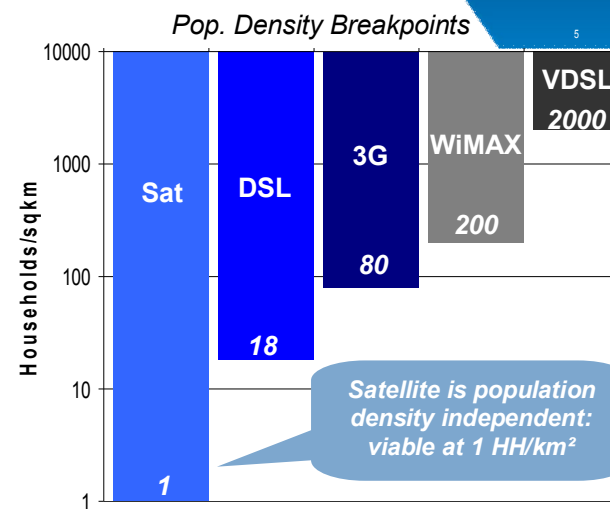
Assumptions
- Per user 5-year NPV @ 5% with primary backhaul where required
- **The small town** is a clustered community in a rural area 10 km from a larger town, where 80 users take service.
- **The scattered** is a more scattered community 25 km from a larger town, where 40 users take service.
- **The isolated** is a wilderness area with isolated dwellings whose centre is some 60 km from a large town. 20 users take service.

Satellite is the most cost-effective solution in serving inhabitants outside of towns. To bridge the digital divide while maintaining fiscal responsibility, satellite must play a role.

6

Source: EC commissioned 'Digital Divide Forum Report: Broadband Access and Public Support in Under-Served Areas' (15.07.2005)

NGN deployment takes time & money

ASTRA

- Fibre (FTTH, FTTC, FTTN), VDSL, WiMAX:

  - NGN not considered for national roll-out: beyond 80% coverage deemed uneconomical;

  - Low coverage in rural/remote areas;

  - High CAPEX per home passed: 400 – 5000€ depending on technology and deployment area;

  - Total CAPEX to reach all European HH via NGN: >300b€;

  - Time horizon for roll-out up to economic limit: 20-25 years.

Pop. Density Breakpoints

Source: Analysys Q2 2008

Rural Capex Requirements by Technology

	€ per HH		'000s HHs per €1bn in Capex
WiMAX*	1,380	**	725
FTTC*	1,120		893
FTTH*	3,000		333
HSPA*	1,800		556
Satellite	300		3,333

* assumes viable population density; satellite is not affected by population density
** Average capex per HH; range between 400 and 5000€ per home passed

Satellite complements terrestrial networks in order to deliver triple-play offers, while closing the *digital divide*

Source: Idate Q4 2008, Analysys Q2 2008

ASTRA2*Connect* – the answer to digital divide

ASTRA2Connect – new generation two-way satellite broadband:

- Enables always on, high-speed Internet access regardless of geographical location,

- Designed to complement terrestrial broadband services, especially in those areas of Europe where DSL or cable services may be limited or non-existent

ASTRA*2Connect* - key benefits

- **always-on** connectivity for broadband and Voice-over-IP

- **flat-rate** monthly fee

- **broadband speeds** e.g 2 Mbit/s

- **low-cost** subscriber equipment

- **simple to install** and use

- **no infrastructure investment** required

- "**Dual or Triple play**" capabilities

ASTRA2Connect

End user equipment

ASTRA2Connect – standard end user equipment

Low cost & easy to install satellite equipment

- Satellite dish, typically 75 – 80cm

- Receive/Transmit interactive LNB

- satellite modem with Plug & Play Ethernet interface and IP bridge

- Point & Play installation tool

* Optional equipment possible e.g. multifeed clamp or VoIP gateway

Dish

Mount

Ethernet

Cable

i-LNB

Modem

"Point & Play" antenna pointing device

ASTRA2Connect – service providers in Europe

Irland   UK

Germany

Benelux

Poland

Switzerland   Czech Republic

Austria   Slovakia

France   Slovenia

Croatia

Spain   Bosnia - Herzegovina

Italy

More info at: www.astra2connect.com

ASTRA2*Connect*

Case studies & Testimonials

Broadband internet can be just a stone throw away!

PK Doprastav, a quarry company in Slovakia specialising in production of the crushed stone. The production site is located far away from populated areas and has always lacked a reliable internet infrastructure.

"We operate our business far away from any town and do not have access to terrestrial broadband networks. That's why we were dependent on GPRS and EDGE services. But the connection is limited as well and can be quite expensive."

We use ASTRA2Connect for ERP data transfer, emailing and the operation of secured web pages. We can even use a webcam!"

Peter Gabaj, Senior Solution Architect

The Netherlands - Bauke Jan Bierma:
Sowing the seeds of the future

ASTRA

The customer

Farmer Bauke Jan Bierma leaving in Flevopolder, The Netherlands – rural area without access to ADSL or cable internet. Associated in LTO Commerce – farmer's association.

The challenge

Establish broadband Internet connectivity to allow fast and reliable access to applications & information related to i.e. agricultural business such as current weather forecasts, communication with Ministry of Agriculture. Get away from dependency on dial-up connection.

Italy - Frescobaldi Group:
The toast to technology

ASTRA

The customer

The Frescobaldi Group, one of the Italy's principal agricultural holdings and one of Tuscany's main wine producers

The delivered solution

ASTRA*2Connect* two-way satellite internet access – package of 1 Mbit/s download speed and 128 Kbit/s upload speed

"*ASTRA2Connect has appreciably improved my way of working and way of managing my time and resources. I think that solutions like ASTRA2Connect can genuinely make a significant contribution to bridging the Digital Divide and improving quality of life.*"

Geddes da Filicaja, CEO

ASTRA2Connect brings English classes to Hallig schools
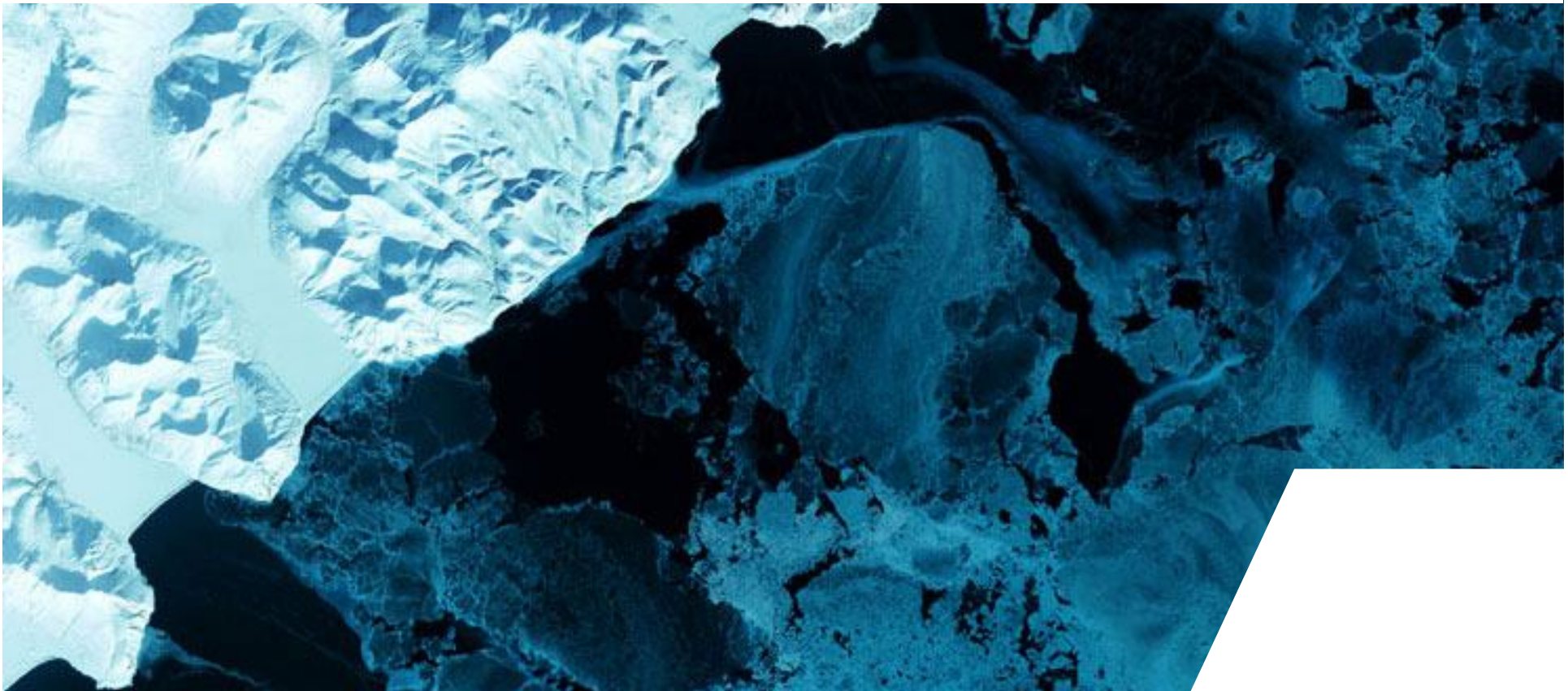
- ASTRA2Connect is part of an E-learning
  project initiated by the Ministry of Education
  in Schleswig Holstein:

  - Pupils on the German Halligen (islands in the
    North Sea) receive live English lessons via the
    ASTRA2Connect satellite technology

  - A teacher on the main land in Kiel
    communicates with the pupils three times per
    week to

  - Filiago installed ASTRA2Connect equipment on
    three Halligen without access to terrestrial
    broadband: Gröde, Oland und
    Nordstrandischmoor

- „Thanks to the solution via satellite,
  we can further improve our educational
  opportunities at the Hallig schools."
  (Jost de Jager , State Secretary for
  Education, Schleswig-Holstein)

Thank you for your attention!

Leszek Bujak

Senior Business Development Manager

Leszek.Bujak@ses-astra.com