



LEO Satellites & Polar Connectivity

Arctic Shipping Forum 2018

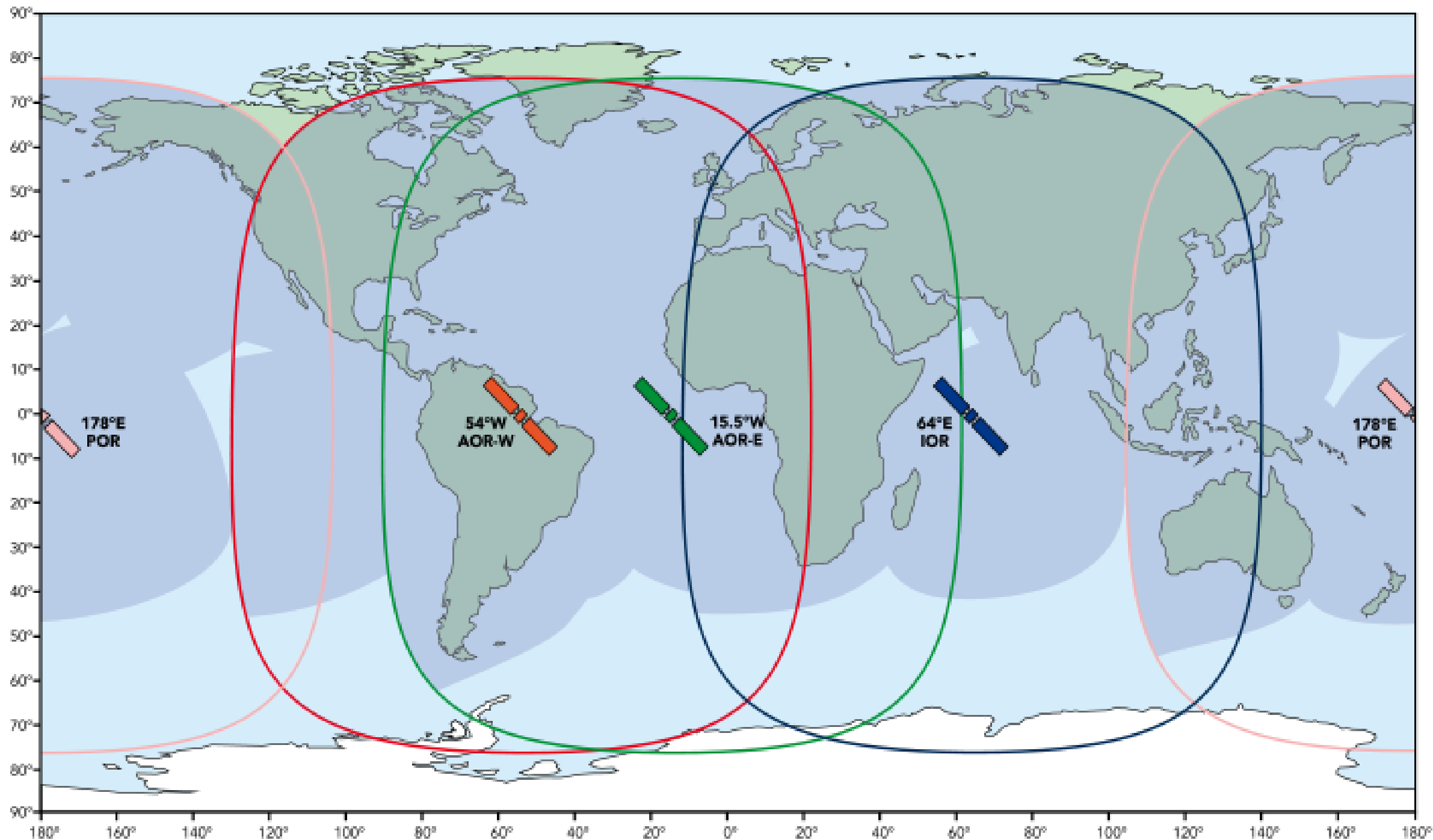
St. John's, Newfoundland

2018/10/18



“With the Kepler system, for the first time we are able to send massive files like operational data, scientific data, videos, or photos. These are bandwidth intensive and we have no other way to send the data if we used traditional systems.”

Thomas Liebe, Chief Operator of the RV Polarstern



Current Satellite Data Pricing

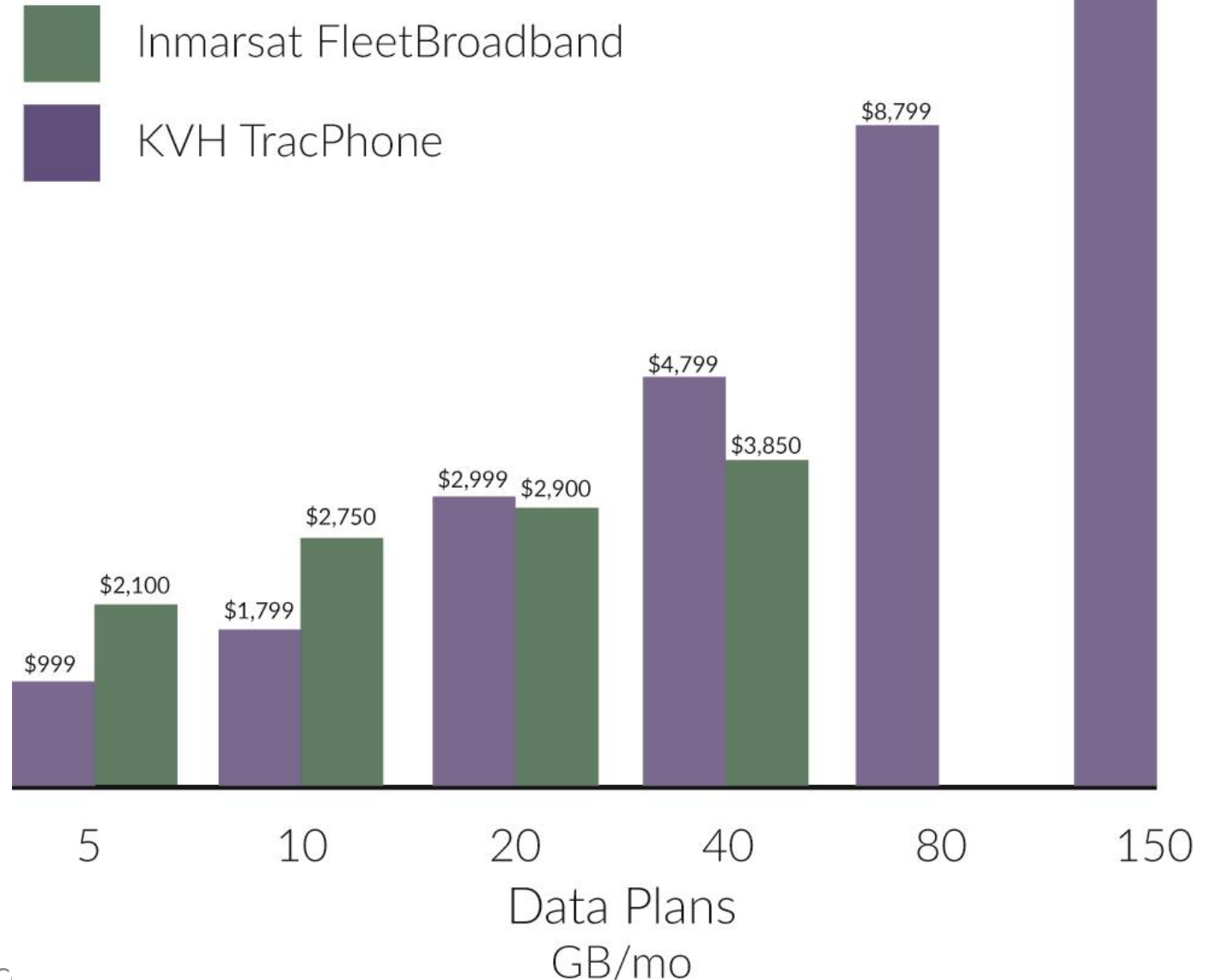
High Data Fees

Existing broadband satellite services offer data plans with pricing between \$100 – 400/GB

Limited Bandwidth – Overage Charges

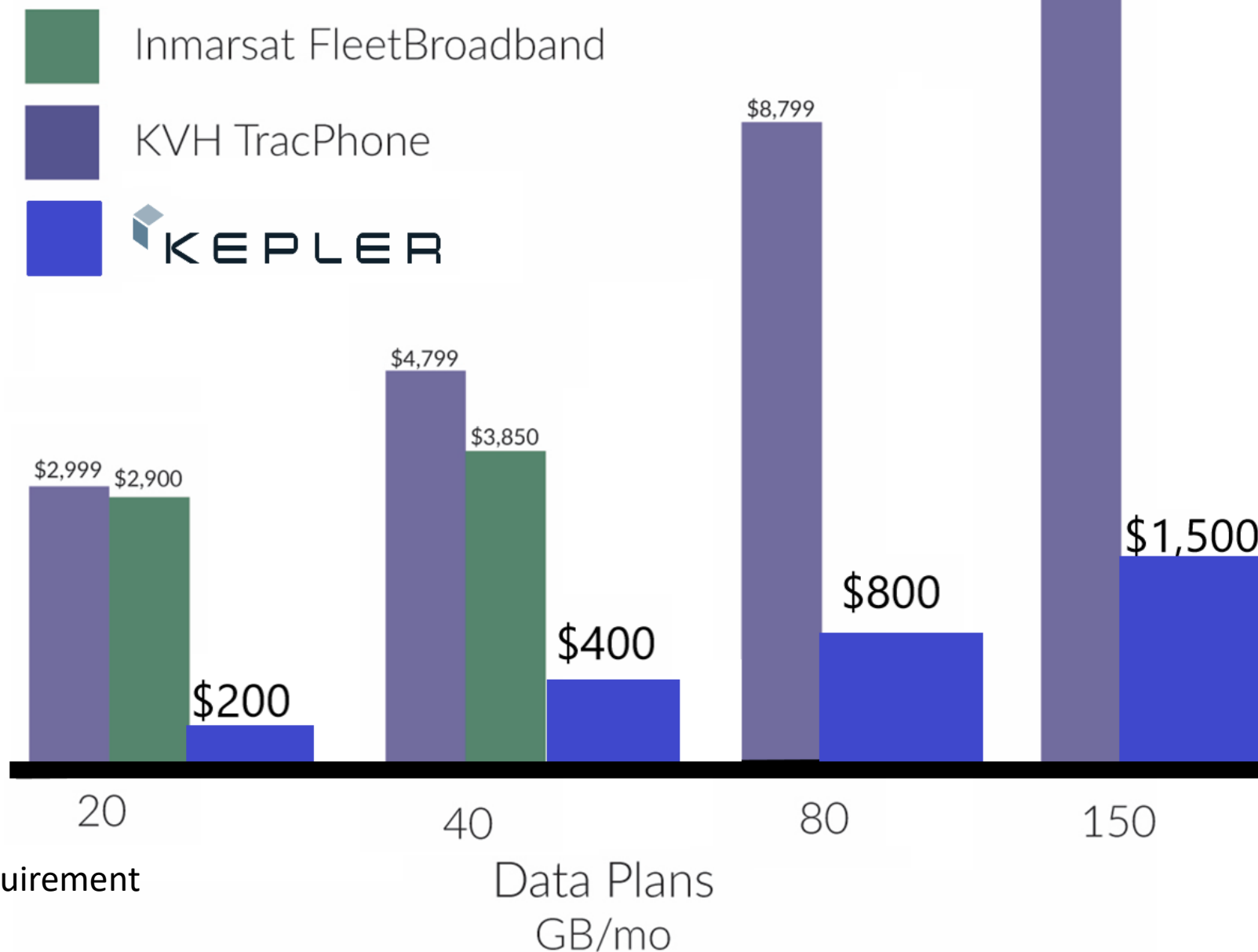
Inmarsat's FleetBroadband bills at \$0.12/MB beyond the 40GB/mo, whereas KVH charges \$0.10/MB for overage (on the 150GB/mo plan).

<http://www.satphonestore.com/>



Kepler Polar Connect Pricing

Store & Forward
Data Plans at
~\$10/GB*



*Dependent on Plan and Annual Data Requirement

Traditional Satellite

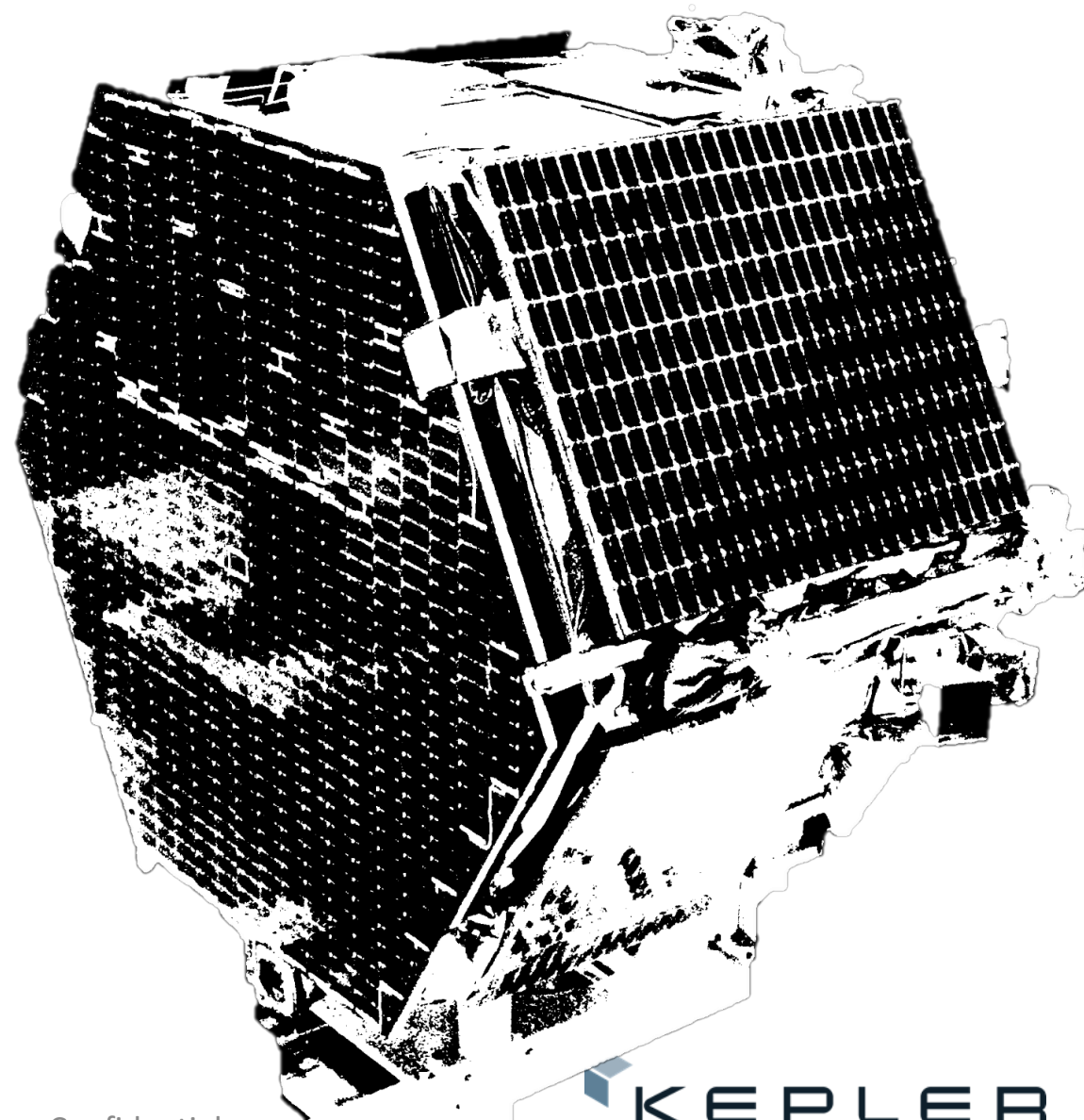


113 MM
13 YEARS
TO BUILD



REFRESHED EVERY
15 YEARS

LAUNCHED IN 2013



Kepler Satellite



1/100TH THE
SIZE & COST

01100
10110
11110

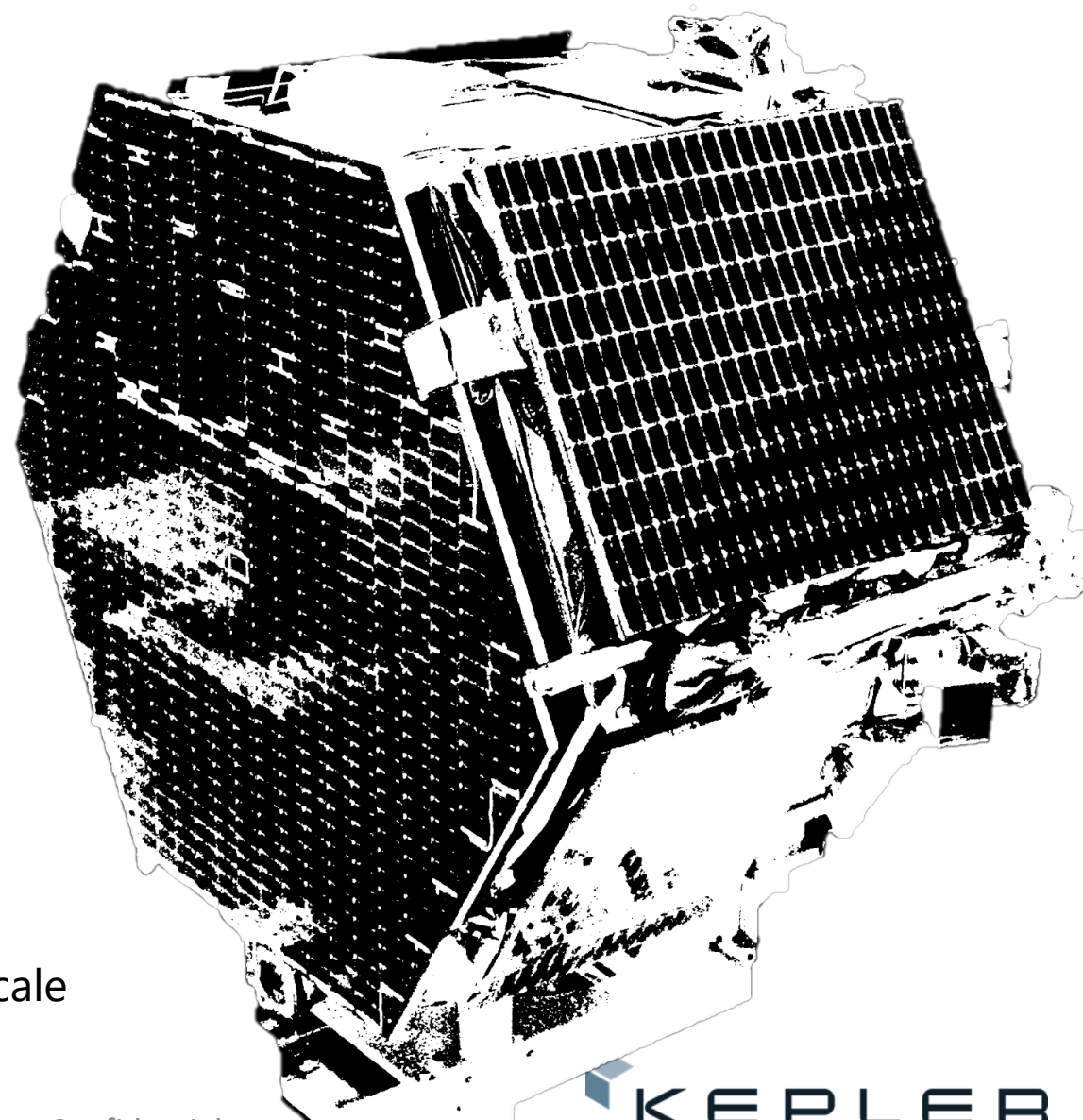
SOFTWARE
DEFINED
(DIGITAL)



REFRESHED
EVERY 3 YEARS

Drawn to scale

Traditional Satellite

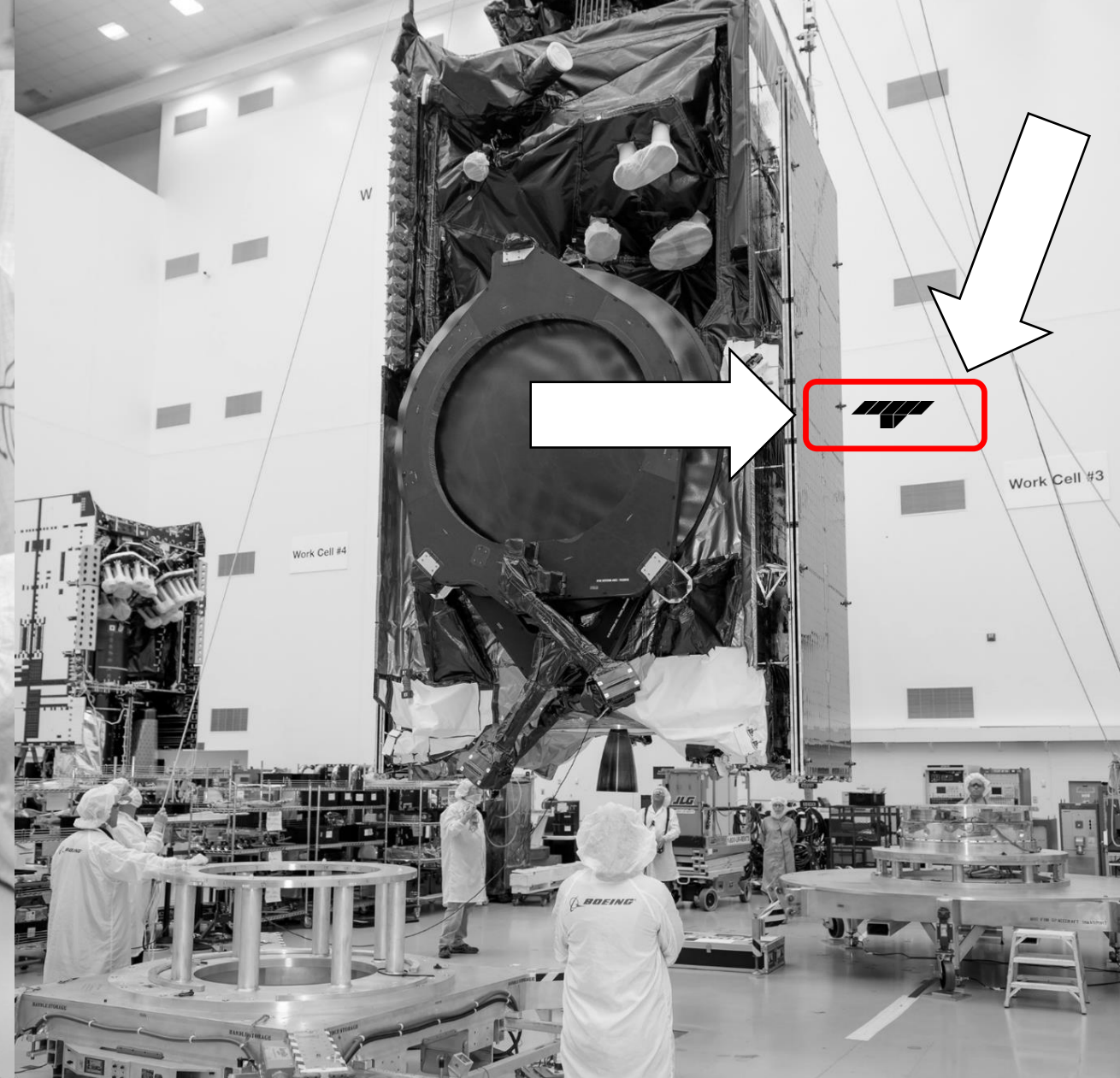


KEPLER

Kepler KIPP Spacecraft



Intelsat 35e Spacecraft



Kepler Video can be found at

<https://www.youtube.com/watch?v=BWWuBLJRPIU>

KEPLER COMMUNICATIONS INC.



Kepler was founded in 2015 with the mission to provide in-space connectivity services to help enable the space economy. To that end, Kepler develops next-generation satellite communication technologies and provides global data services with the intent on incrementally deploying products and technology in the pursuit of building the internet in space.



Kepler's First Satellite
Internal Name - KIPP
NORAD ID 43157

LAUNCHED

January 19th, 2018

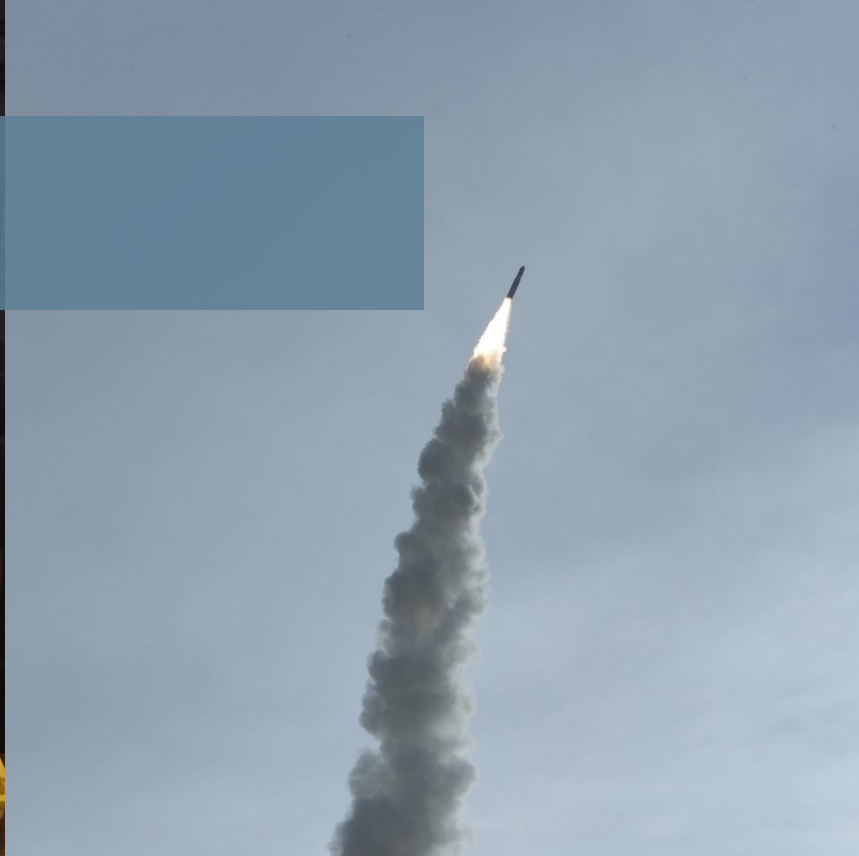
CONFIRMED

HEALTH

January 20th, 2018

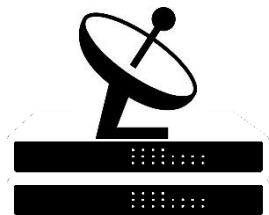


FIRST MISSION
READY TODAY



USER TERMINAL

✓ READY



SATELLITE

✓ LAUNCHED



GATEWAY

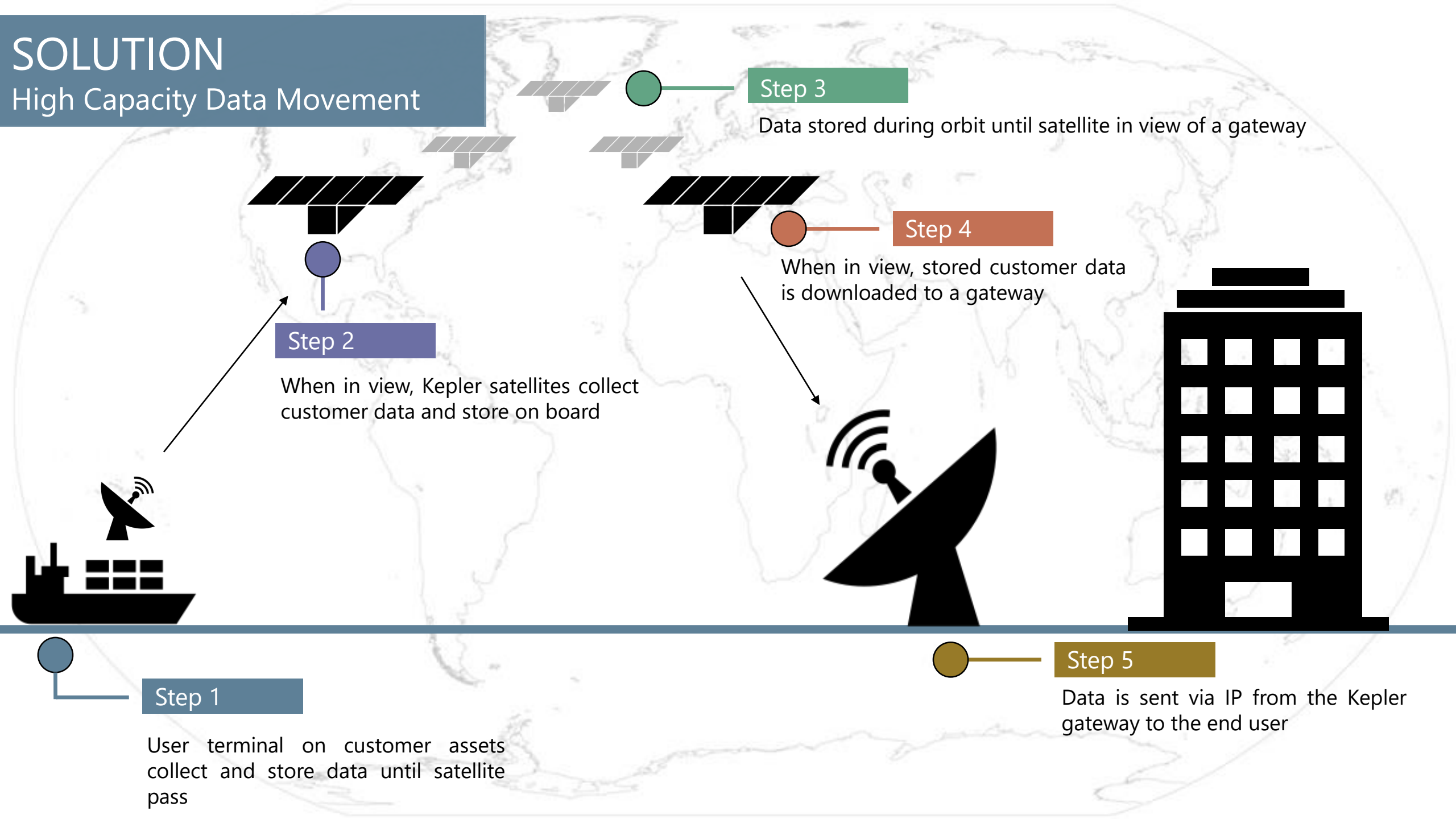
✓ COMMISSIONED



 KEPLER

SOLUTION

High Capacity Data Movement



Step 1

User terminal on customer assets collect and store data until satellite pass

Step 2

When in view, Kepler satellites collect customer data and store on board

Step 3

Data stored during orbit until satellite in view of a gateway

Step 4

When in view, stored customer data is downloaded to a gateway

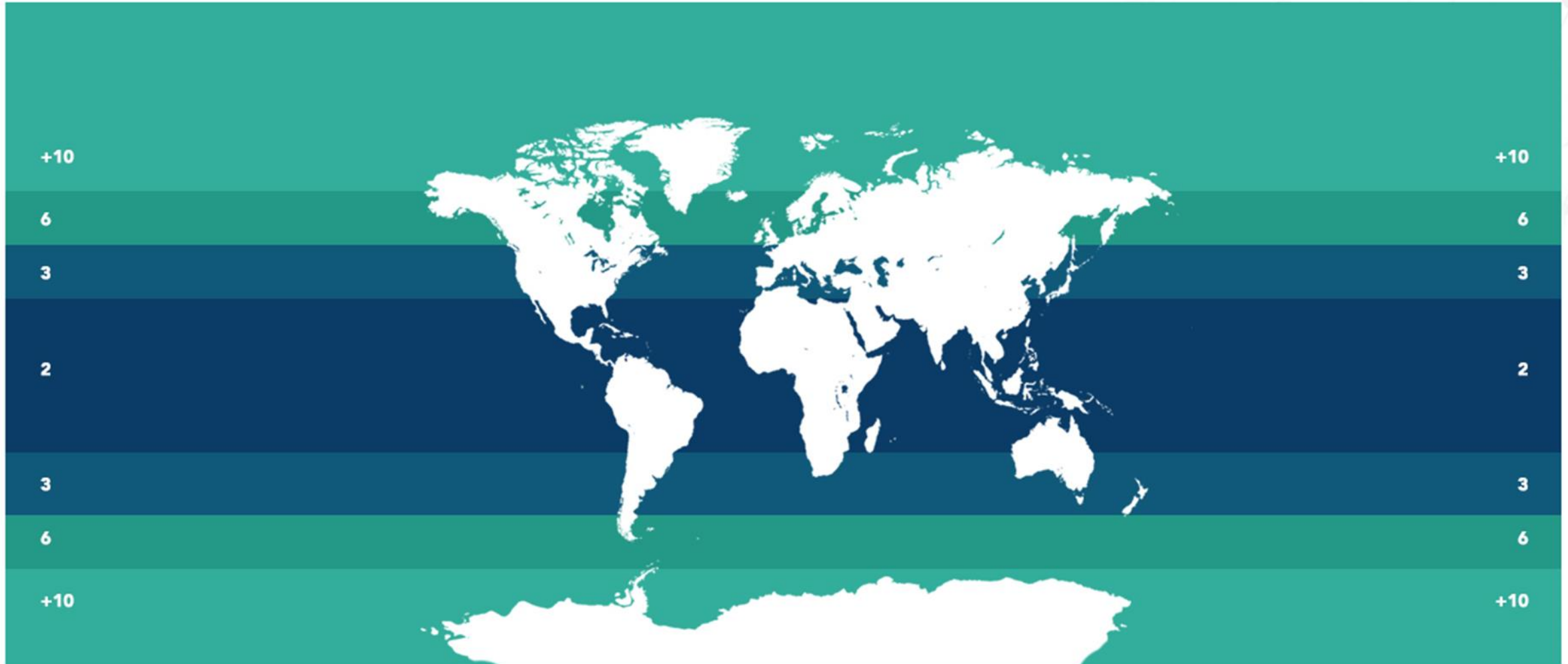
Step 5

Data is sent via IP from the Kepler gateway to the end user

Satellite Passes Per Day

Number of passes is based on the latitude of the user site.

Graphic below is based on a per-satellite orbit – as the constellation grows the passes indicated are multiplied by the number of satellites.



Kepler Ku-Band Data Rates

Data rates are dependent on the dish size at user site – a representative sample of data rates is shown below.

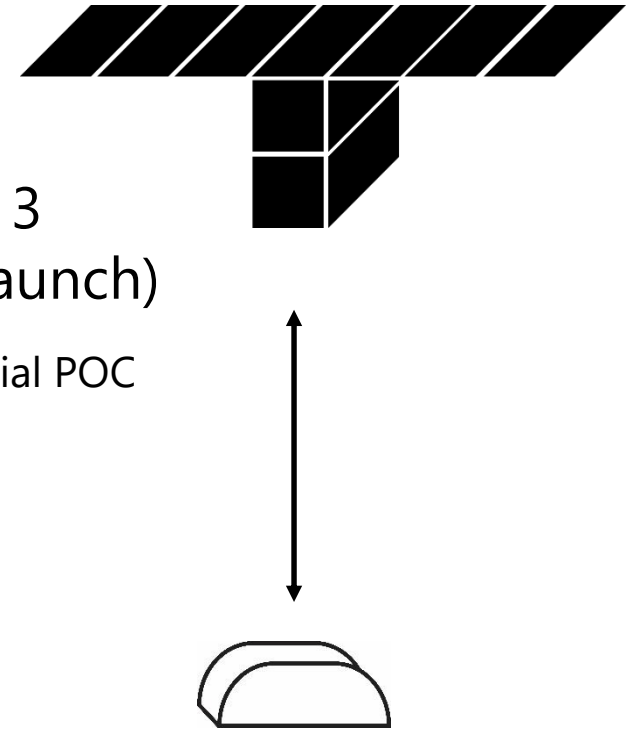
ANTENNA DIAMETER	60CM	1.25M	2.4M
BUC Power (W)	4 W	8W	16 W
Data Rates	U: 20 Mbps D: 50 Mbps	U: 90 Mbps D: 110 Mbps	U: 120 Mbps D: 150 Mbps
Time per pass (Average)	5.5 Minutes	5.5 Minutes	5.5 Minutes
Data per pass (Average)	835 MB	3.75GB	5.0 GB

Kepler's User Terminal – Today

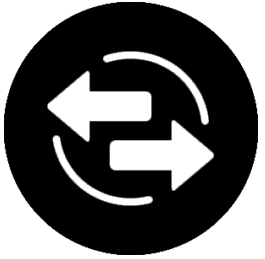


Kepler's IoT Module – Tomorrow

Satellite 3
(Mid-2019 Launch)
S/L band for Initial POC

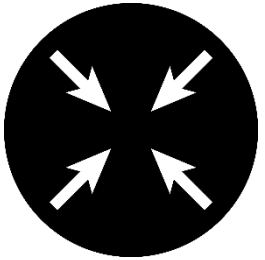


Kepler's Generation 1 Direct To Satellite Module



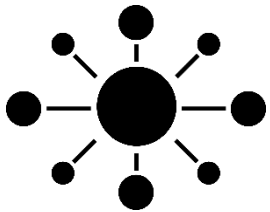
Bi-Directional

Firmware Updates
Acknowledgements



Small Size

Self-Contained
User-Friendly



Large No. of Devices

Many applications
Lower per-unit costs



Electronically Steerable Antennas

Phasor and Kepler Usher in New Era of Satellite Communications

September 10th, 2018 · **NEWS**



Washington D.C./Toronto – September 10, 2018 – Phasor, the developer of leading, enterprise-grade electronically-steerable antenna systems, and Kepler, a low-Earth orbit (LEO) satellite operator and telecommunication services provider today announce successful tests between Kepler’s first in-orbit LEO nanosatellite and Phasor’s wideband electronically-steered antenna.

<http://www.phasorsolutions.com/news-1/phasor-and-kepler-usher-in-new-era-of-satellite-communications>

CONTACT US TO DISCOVER
HOW TO TAKE ADVANTAGE
OF LEO SATELLITES FOR
YOUR OPERATIONS

Nathan Robinson
nrobinson@kepler.space



www.kepler.space

