

Opportunity Statements

Connectivity Lab

4-December-2018

A world map in shades of blue is centered on the page. The map is overlaid on a background of a repeating pattern of small, light blue satellite tower icons. Each icon consists of a tower with a dish and a signal wave. The map shows the continents of North America, South America, Europe, Africa, Asia, and Australia. The text 'OUR MISSION' is positioned on the left side of the map, and the tagline 'Bring more people online to a faster internet' is below it.

OUR MISSION

Bring more people online
to a faster internet



Facebook Connectivity Lab:

Our Role

RESEARCH AND INNOVATION TO CONNECT THE UNCONNECTED

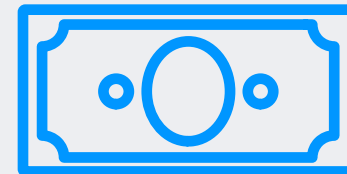
Eliminate connectivity blockers to:



AWARENESS



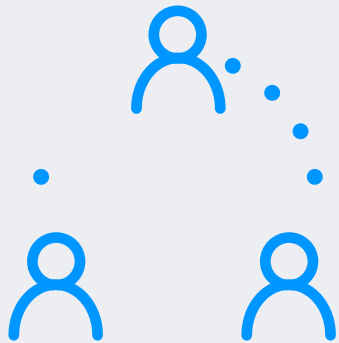
ACCESS



AFFORDABILITY

OUR VALUE PROPOSITION FOR CONNECTIVITY TECHNOLOGIES

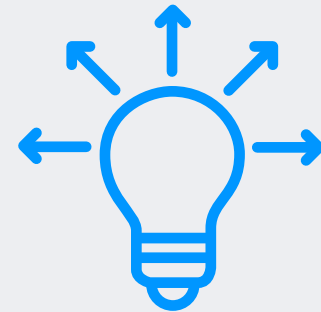
Engage the global community:



CATALYZE



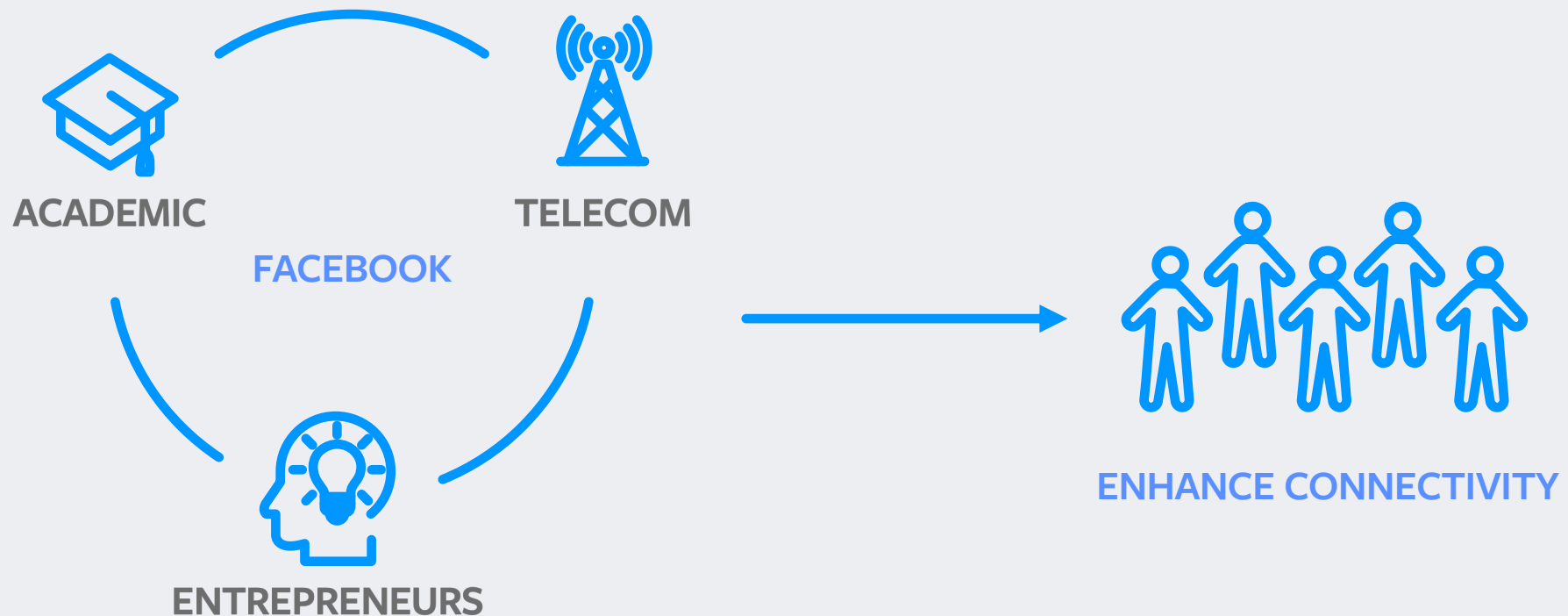
UNDERSTAND



SHARE

CONNECTIVITY LAB CHANGE MODEL

Accelerate change through
Open Science and Open Innovation collaborations



OPPORTUNITIES FOR RESEARCH

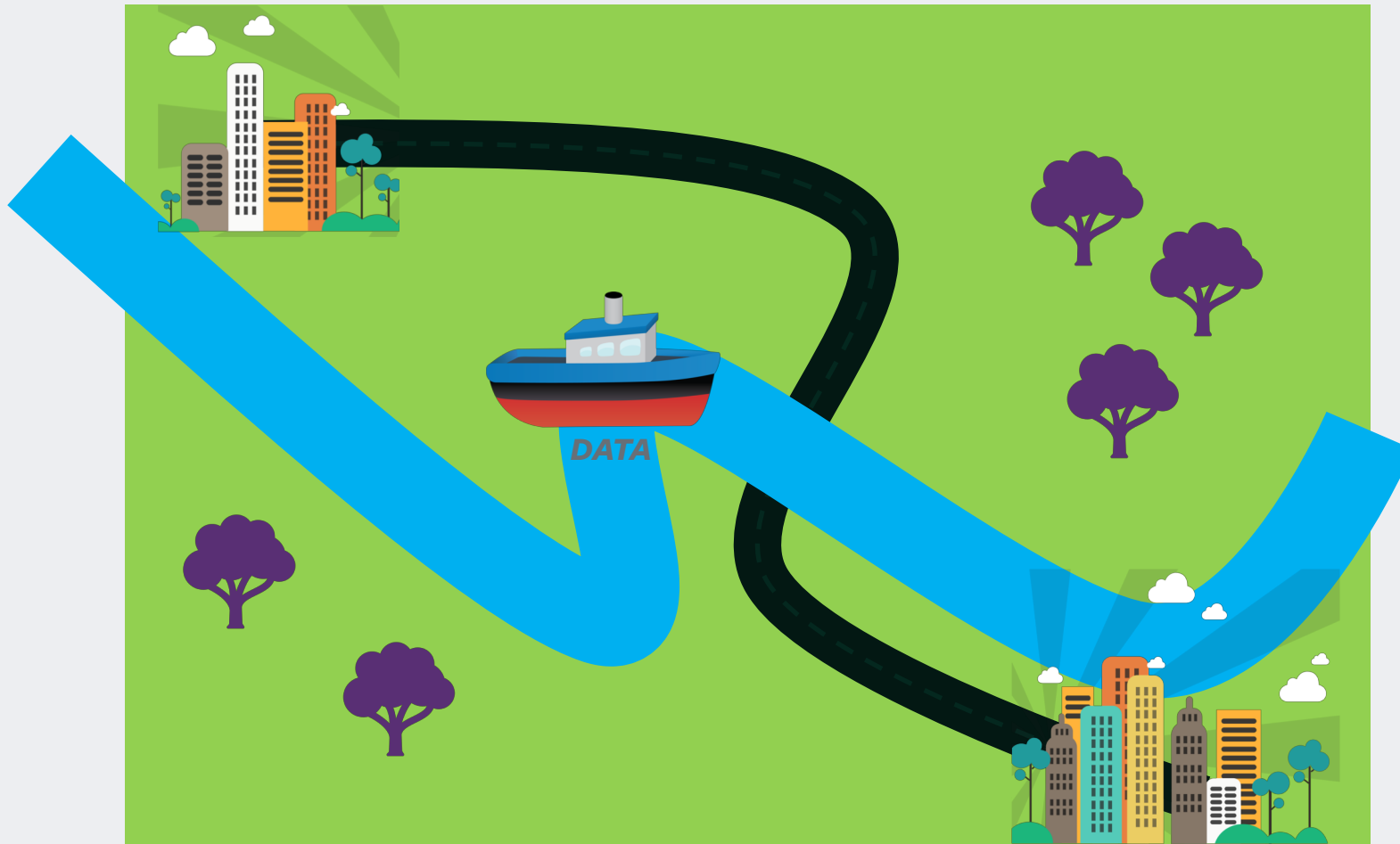
The background features a dark blue gradient sky. At the bottom, there is a silhouette of a city skyline with a satellite dish on the left. Three large, dark blue mountain peaks are arranged across the middle ground. A thin yellow line starts from the satellite dish, goes up to the first peak, then down to the second peak, and finally up to the third peak. The text 'OPPORTUNITIES FOR RESEARCH' is centered in white, bold, uppercase letters across the middle of the image.

We don't want to just focus on solving **Problems** in the connectivity landscape



Problem: *the river*
Solution: *a bridge*

We want **Innovators** to **identify Opportunities** to create and navigate new landscapes



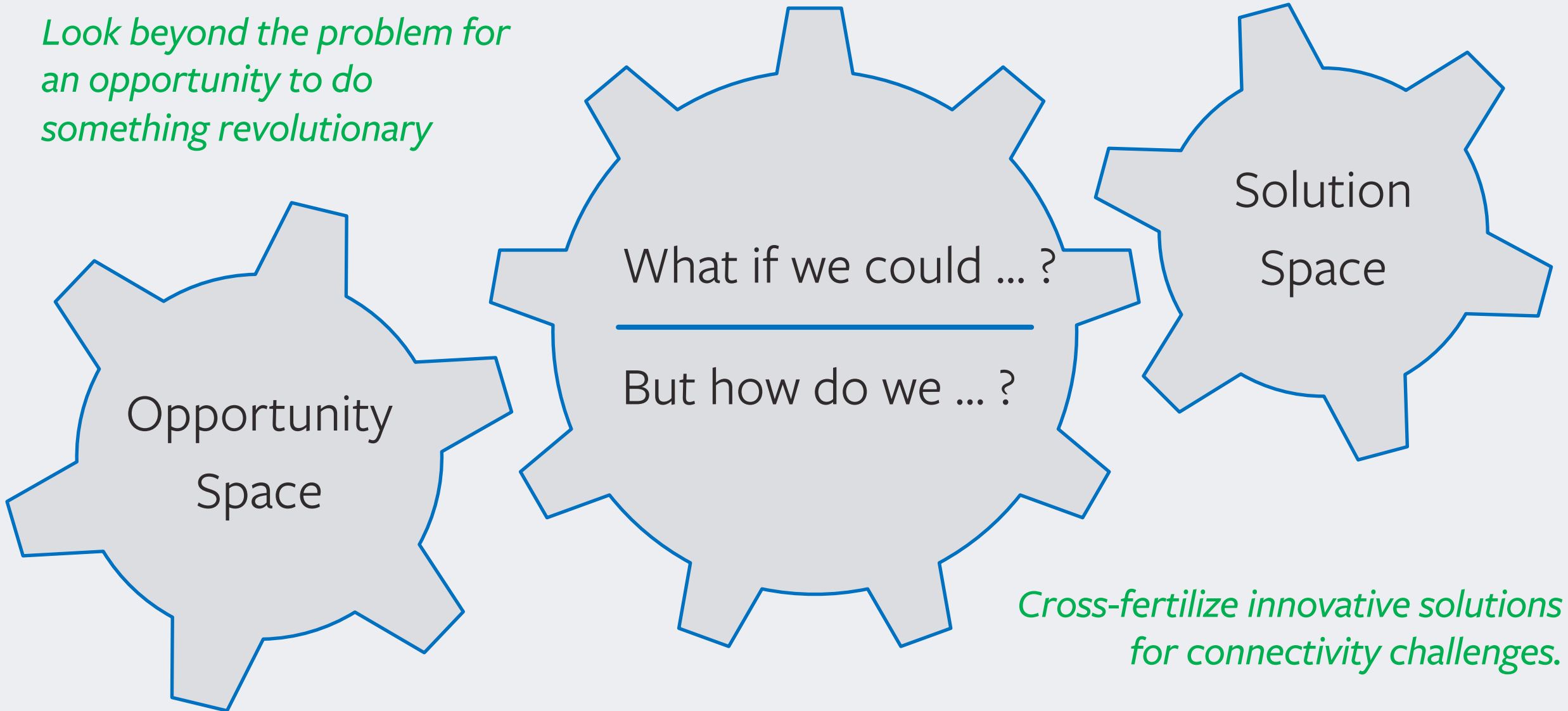
Problem: *the river*

Opportunity: *the river*

Solution: *a boat*

Don't just solve problems. Shift paradigms

*Look beyond the problem for
an opportunity to do
something revolutionary*



*Cross-fertilize innovative solutions
for connectivity challenges.*

OPPORTUNITY STATEMENTS

Connect new technologies to solve blockers
in connectivity solution spaces

Opportunity Space
Lower cost space access: launch; cubesats /smallsats;
Deep sub-micron VLSI: higher speed, lower power, space COTS
BioTech: GMO, Synthetic Biology
Spectrum: Sharing, RF above 100 GHz, optical
Web Scale: cloud services, AI/ML

What if we could...	But how do we...
Blend WiFi, cellular, and satcom coverage solutions	Do seamless authentication, switching, and business services?
Reduce satellite latency and extend coverage to high latitudes	Make low-cost antennas that track LEO/MEO satellites?
Have high speed connectivity without on-grid power	Provide high quality of service at low cost?
Offer more service provider choices	Enable new business models and lower entry-to-market barriers

Solution Space
Satellite
Wireless backhaul
Edge networks
Fiber
Software / apps
Regulatory / policy

OPPORTUNITY FOR RESEARCH:

RURAL ACCESS

Advances in computational modeling, population density, and infrastructure offers new insights for spectrum reuse and eliminating towers

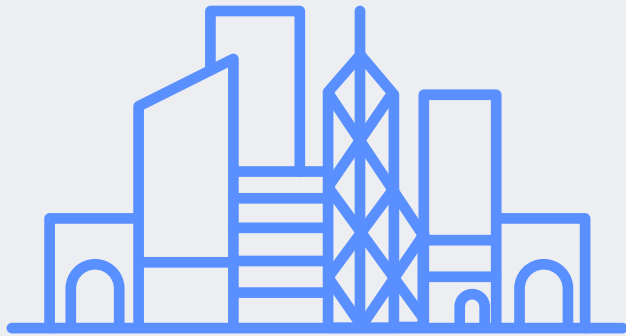


New technologies needed for off-grid power solutions and alternate tower concepts. Lower costs of fiber deployment. Improve access to 4G handsets and increase time spent on-line.

Dramatically lower the cost and risk for operators, and lower the cost and increase quality-of-service and availability for rural access

OPPORTUNITY FOR RESEARCH:

URBAN HIGH-DENSITY



New spectrum allocations, spectrum sharing, beam-forming, detailed population density studies, ML/AI planning tools

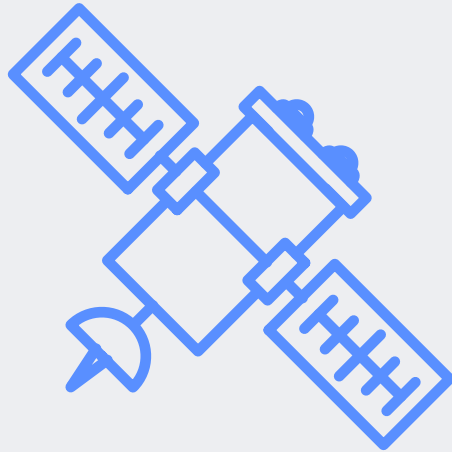
Densify networks, enable co-operative equipment, expand and re-purpose wired networks, increase per subscriber capacities 100X.

Support next-gen VR/AR tech, seamless transitions between WiFi and cellular access

OPPORTUNITY FOR RESEARCH:

SATELLITE COMMUNICATIONS

Satellites offer ubiquitous global coverage with growing economies of scale and decreasing costs



Rural demand is growing while gap between urban/connectivity continues to grow. Satellite connectivity has potential to leapfrog slow microwave and fiber backhaul roll-outs

50-100x increase in satellite capacity and availability could lower operating costs and lead to new service models

JOIN OUR MISSION

**Let's bring more people online
to a faster internet**

- *Don't just solve isolated problems*
- *Look for opportunities to shift paradigms and Eliminate Blockers to Enable the Global Community*
- *Accelerate change through Open Collaboration*



THE FUTURE IS CONNECTED

