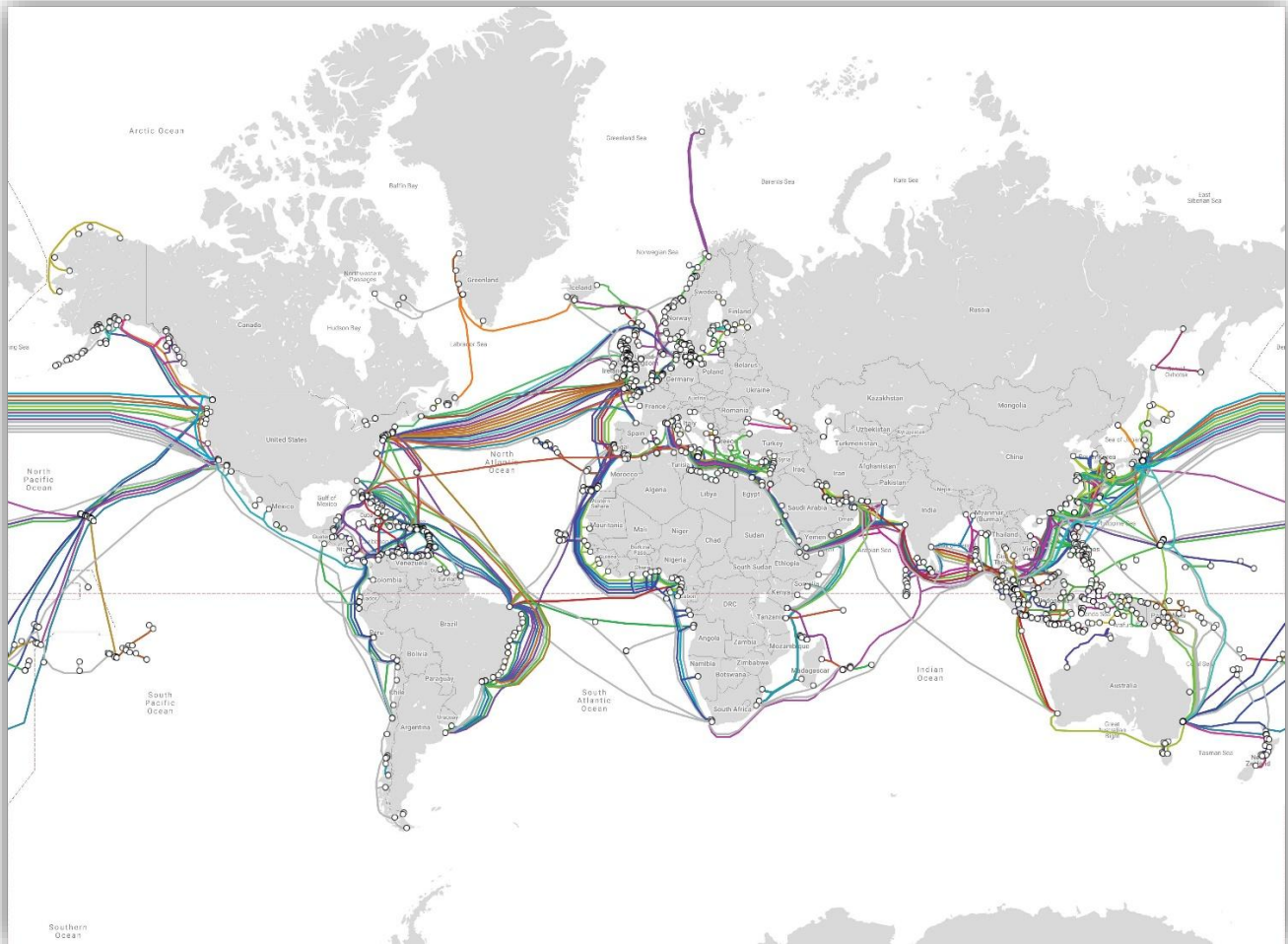
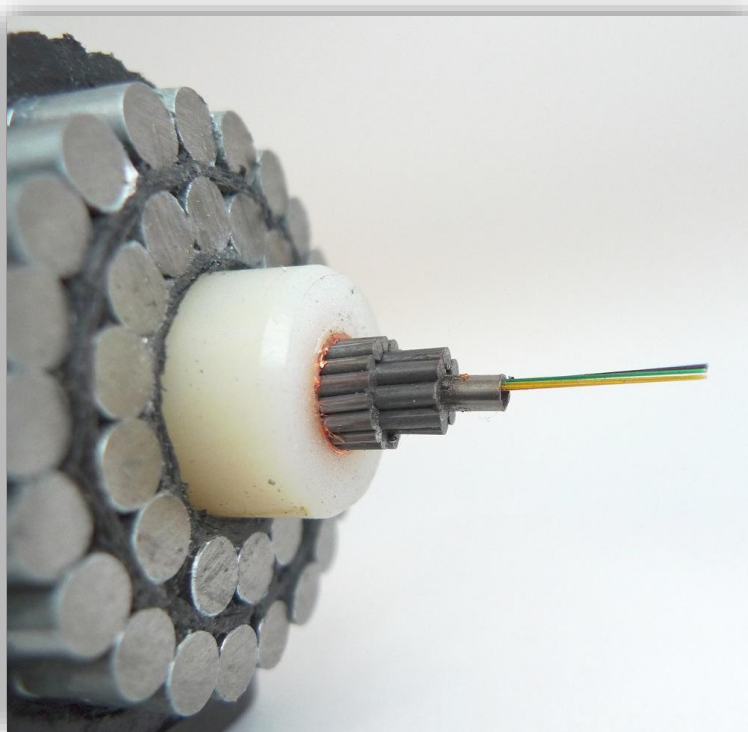


May Community Center Computer Class

Your Email Travels Under The Sea!

It's one of those technologies that most people use every day without ever seeing. Here are some of the more surprising facts.





1. Nearly all international Internet traffic travels through cables—not satellites

Many people assume the Internet bounces through space. In reality:

- About **95–99% of intercontinental data** travels through fiber-optic cables on the ocean floor.
- Satellites are mainly used for remote locations, ships, aircraft, and backup communications.

When you send an email from Texas to Europe, it almost certainly travels through a cable on the seabed.

2. There are hundreds of undersea cables

Today there are **600+ active submarine cable systems** connecting continents.

Combined, they stretch well over **1.5 million kilometers (900,000+ miles)**—enough to wrap around Earth dozens of times.

3. They use light—not electricity

Inside each cable are extremely thin strands of glass called optical fibers.

Tiny lasers send pulses of light through the fibers at incredible speeds.

Those flashes of light represent all of the world's:

- emails
- video calls

- YouTube videos
 - online games
 - banking transactions
 - AI requests
-

4. The fiber itself is thinner than a pencil lead

The actual glass fiber carrying your data is only about the width of a human hair.

The rest of the cable consists of:

- waterproof layers
- steel protection
- copper power conductors
- heavy armor near shore

Despite carrying enormous amounts of data, the fiber is tiny.

5. Repeaters keep the signal alive

Every **50–100 km (30–60 miles)** sits a powered repeater.

These devices amplify the light so it can continue thousands of miles without fading.

A cable crossing the Atlantic may contain **dozens** of repeaters.

6. Sharks probably aren't the biggest threat

Years ago, sharks occasionally bit cables, apparently attracted by electromagnetic fields.

Modern cables are much better protected.

Today's biggest hazards are:

- fishing trawlers
- ship anchors
- earthquakes
- underwater landslides

Human activity causes more cable damage than marine life.

7. Specialized ships lay the cables

Cable-laying ships slowly pay out the cable from enormous spools.

In deep water, the cable simply settles onto the ocean floor.

Near shore, it is often buried beneath the seabed to protect it from anchors and fishing gear.

A transoceanic cable installation can take **weeks or months**.

8. Repairs are surprisingly old-fashioned

When a cable breaks:

1. A repair ship sails to the area.
2. It drags grappling hooks along the seafloor.
3. The cable is hauled up from depths that can exceed **4,000 meters (13,000 feet)**.

4. Technicians splice in a replacement section.

5. The repaired cable is lowered back down.

Even today, this process is remarkably hands-on.

9. Big tech companies now own many cables

Companies including:

- Google
- Microsoft
- Meta
- Amazon

have invested billions of dollars in submarine cables.

Owning capacity gives them:

- lower costs
 - higher reliability
 - better performance for cloud services and AI
-

10. One cable carries astonishing amounts of data

A modern cable can carry **hundreds of terabits per second**.

That's enough to support:

- millions of simultaneous video calls
 - millions of 4K video streams
 - countless web pages, cloud backups, and AI requests—all at the same time.
-

11. Some places are critical Internet crossroads

Countries like:

- Singapore
- Japan
- Egypt
- the United States
- the United Kingdom

serve as major connection points where many international cables converge.

This makes them strategically important for global communications.

12. There isn't one "Internet cable"

The Internet is a giant web of overlapping routes.

If one cable is cut, traffic is usually rerouted through other cables.

Most users never notice because the network automatically finds another path.
