*2.8 billion monthly users
*100+ billion messages/day
*1+ million comments, posts, status updates/minute
But...
GLOBAL ACCESS

57%

INDIVIDUALS CONNECTED TO THE INTERNET

4G CONNECTIONS

43% TO 59%

PERCENTAGE OF 4G CONNECTIONS WORLDWIDE BY 2025

Source: ITU, Internet Inclusivity Index 2019, Economist Intelligence Unit
Network Performance is At Risk

3.3 billion people in developing and emerging markets are at risk of degraded network performance by 2023.

### MARKET MATURITY

<table>
<thead>
<tr>
<th>Market</th>
<th>Projected 4G Speeds (mbps)</th>
<th>Global Population Impacted</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEVELOPING</td>
<td></td>
<td>1.2B</td>
</tr>
<tr>
<td>EMERGING</td>
<td></td>
<td>2.13B</td>
</tr>
<tr>
<td>MATURE</td>
<td></td>
<td>777m</td>
</tr>
</tbody>
</table>

Source: Facebook Connectivity Internal Research 2019
connectivity measurements exclude China
Facebook and Connectivity

• Our business depends upon good, and getting better, connectivity everywhere
• Core, Edge, Access
• Production Network
• Partnering to connect the un- and under-connected
• Technology agnostic—what works best
Connecting Facebook

Facebook Infrastructure

**Data Center**
15 Campuses
(Dynamic Content)

**Point of Presence (PoP)**
(Static Content)

**Internet Service Provider (ISP)**
(Static Content)

**User Device**
2.7b Monthly Active Users

Facebook Backbone
Growing Connectivity--FBC Infrastructure

EXPRESS Wi-Fi
Providing fast, reliable, Wi-Fi when and where people need it.

TERRAGRAPHS
Innovative, high-speed mmWave backhaul solutions for dense urban and suburban environments.

MAGMA
Open source mobile packet core designed to help operators extend the reach of their existing network.
Growing Connectivity—Open Transport Networks

Partnering to bring fiber connectivity to under connected communities worldwide.

Open Transport Networks work in Africa:

- **970+** km of new fiber installed
- **1.5m+** People connected
Telecom Infra Project (TIP)

Connectivity challenges in every environment

Ultra rural  Rural  Suburban  Dense urban
TIP Project Groups - Access

- OpenRAN
- vRAN Fronthaul
- 5G NR
- WiFi
- OpenCellular
- CrowdCell

Edge Computing
Edge Application Developer
Mobile Core
Internet

Access
Backhaul
Core
Internet

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TIP Project Groups - Backhaul

mmWave Networks

Access

Backhaul

Core

Internet

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TIP Project Groups - Core

- Access
- Backhaul
- Core
- Internet

AI & Machine Learning
End-to-End Network slicing

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