



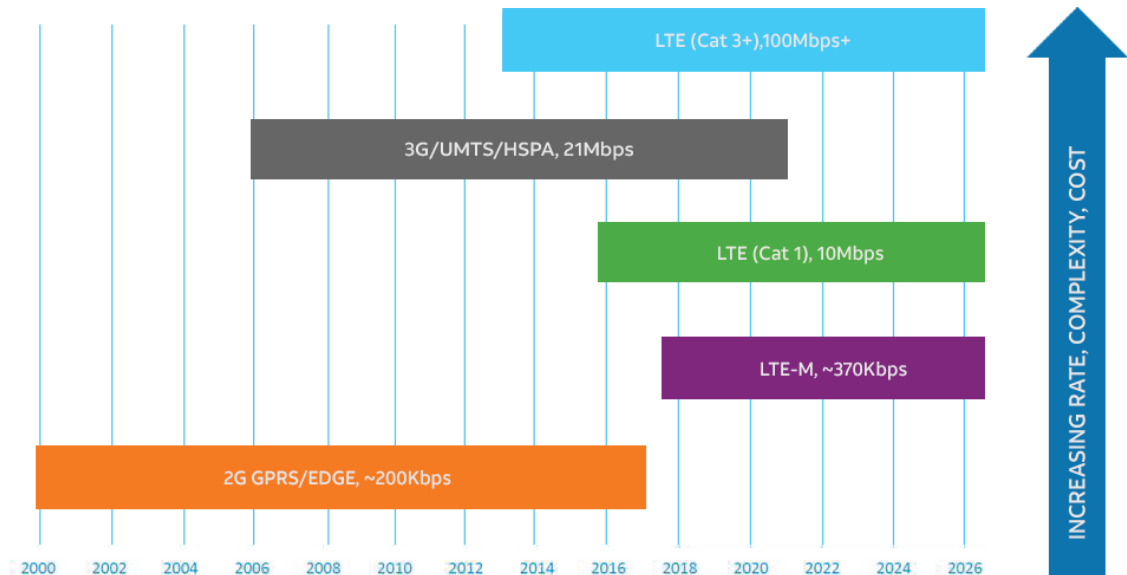
# The Technology Roadmap

All networks are not the same, so AT&T offers a multi-network approach to provide you with the dependability and flexibility you need to optimize your IoT solution. We are rapidly moving forward with LTE-M. This technology opens the door to a variety of new IoT solutions that would be difficult or impossible to implement with existing network technology.

## LTE-M also offers:

- Lower costs for modules that connect IoT devices to the network.
- Better connectivity for IoT devices located underground or deep inside buildings.
- Longer battery life; up to 10 years for some IoT devices.
- Enhanced connectivity, especially for smart utility meters, asset monitoring, vending machines, alarm systems, heavy equipment, mHealth and wearables.
- Carrier grade, multi-layered, best in class security.
- Lower connectivity cost.

## Wireless Technology Timeline vs. Downlink Rate





## Wireless Technology Comparison for LTE

Looking toward the future of LTE, the module cost will decrease as the benefits increase.

Features	LTE (Category 3+)	LTE (Category 1)	LTE-M (Category M1)
<b>Module Cost</b>	\$\$\$	\$\$	\$
<b>Module Availability</b>	Now	Now	Q2 2017
<b>Network Buildout</b>	Complete, in service	Complete, in service	Target Q2-2017
<b>Data Rates</b>	~100 Mbps	~10 Mbps	~370 kbps
<b>Battery life</b>	Days	Up to 10 yrs+ <sup>1</sup>	Up to 10 yrs+
<b>Mobility</b>	High	High	Mid <sup>2</sup>
<b>Coverage improvement</b>	None	None	Up to 15dB
<b>Voice support</b>	Yes (VoLTE)	Yes (VoLTE)	Future <sup>3</sup>
<b>Vertical market examples</b>	<ul style="list-style-type: none"> <li>• Smartphone/ Tablets</li> <li>• Automotive Infotainment</li> <li>• Video Surveillance</li> <li>• Routers</li> </ul>	<ul style="list-style-type: none"> <li>• Automotive SSD</li> <li>• mHealth</li> <li>• Wearables</li> <li>• mPERS</li> </ul>	<ul style="list-style-type: none"> <li>• Smart Cities (meters)</li> <li>• Alarm Monitoring</li> <li>• Asset monitoring UBI</li> <li>• Sub-Terrain</li> </ul>
<b>Standards Based</b>	Yes – 3GPP R8 Approved	Yes – 3GPP R8 Approved	Yes – 3GPP R13 Approved
<b>Deployment</b>	Complete - Nationwide	Complete - Nationwide	SW Upgrade - Nationwide
<b>Global</b>	Global Carrier	Global Carrier	Global Carrier support expected
<b>Security</b>	Carrier Grade	Carrier Grade	Carrier Grade

1 – LTE Cat 1 device needs to support 3GPP Rel12 with support for Power Saving Mode for battery life.

2 – Initial deployment is idle mode reselection only.

3 – VoLTE (Voice) support on Cat M1 under investigation on feasibility.