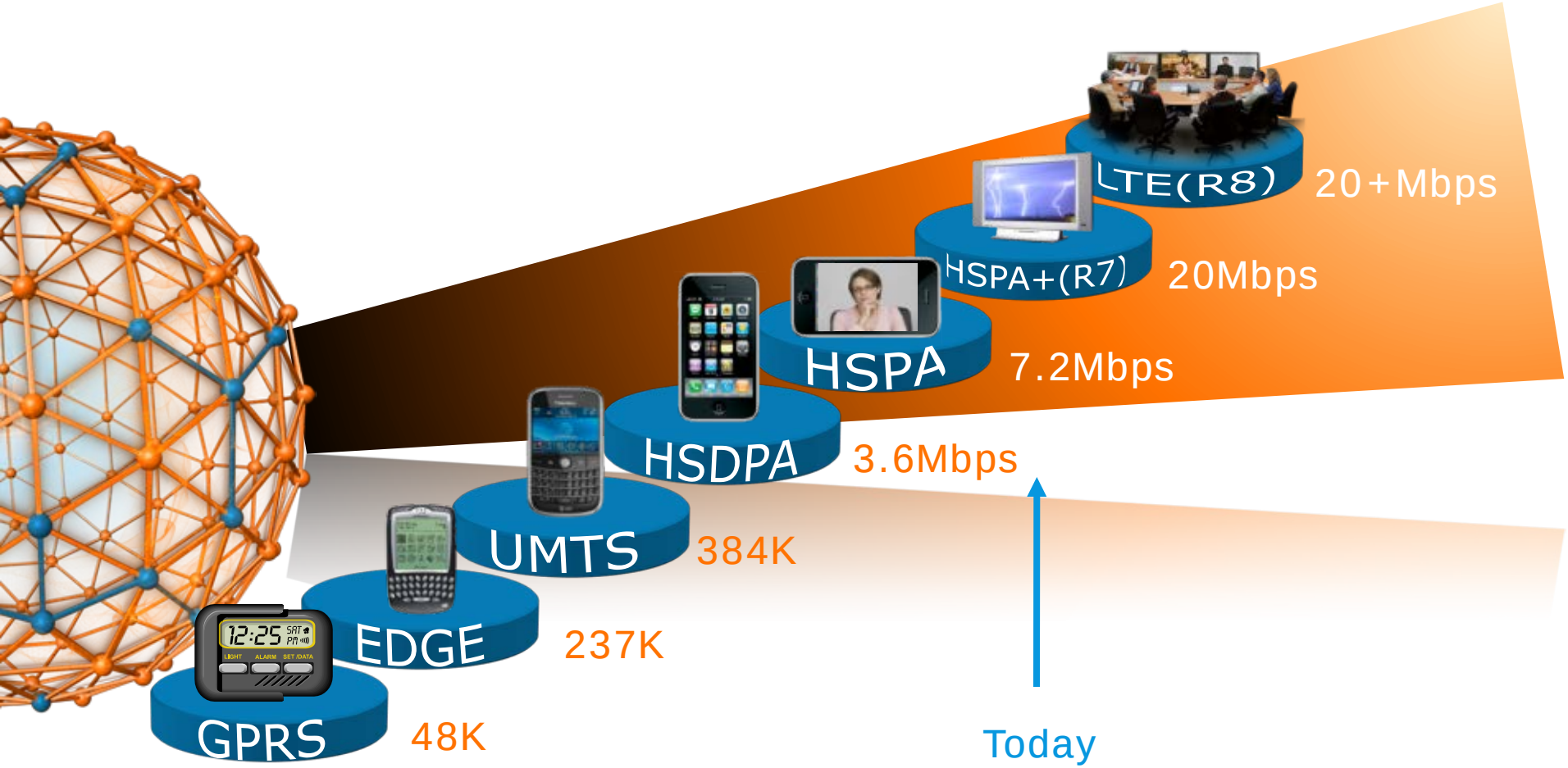
AT&T's Technology Evolution

© 2010 AT&T Intellectual Property. All rights reserved. AT&T and the AT&T logo are trademarks of AT&T Intellectual Property.

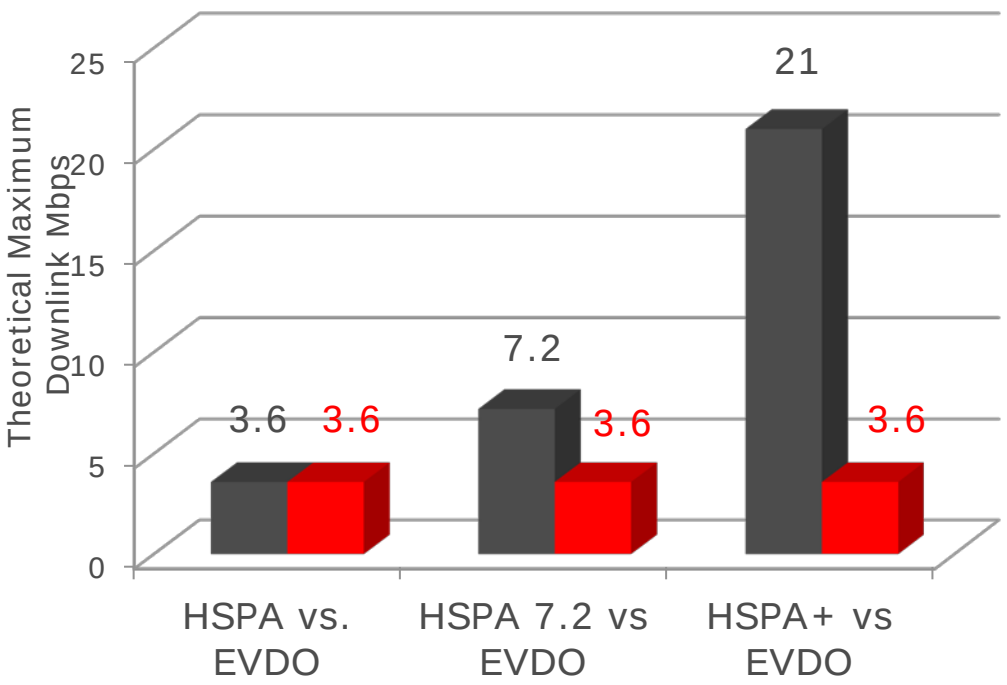
Rethink Possible

Create Powerful Connections



© 2010 AT&T Intellectual Property. All rights reserved. AT&T and the AT&T logo are trademarks of AT&T Intellectual Property.

HSPA+ Upgrades

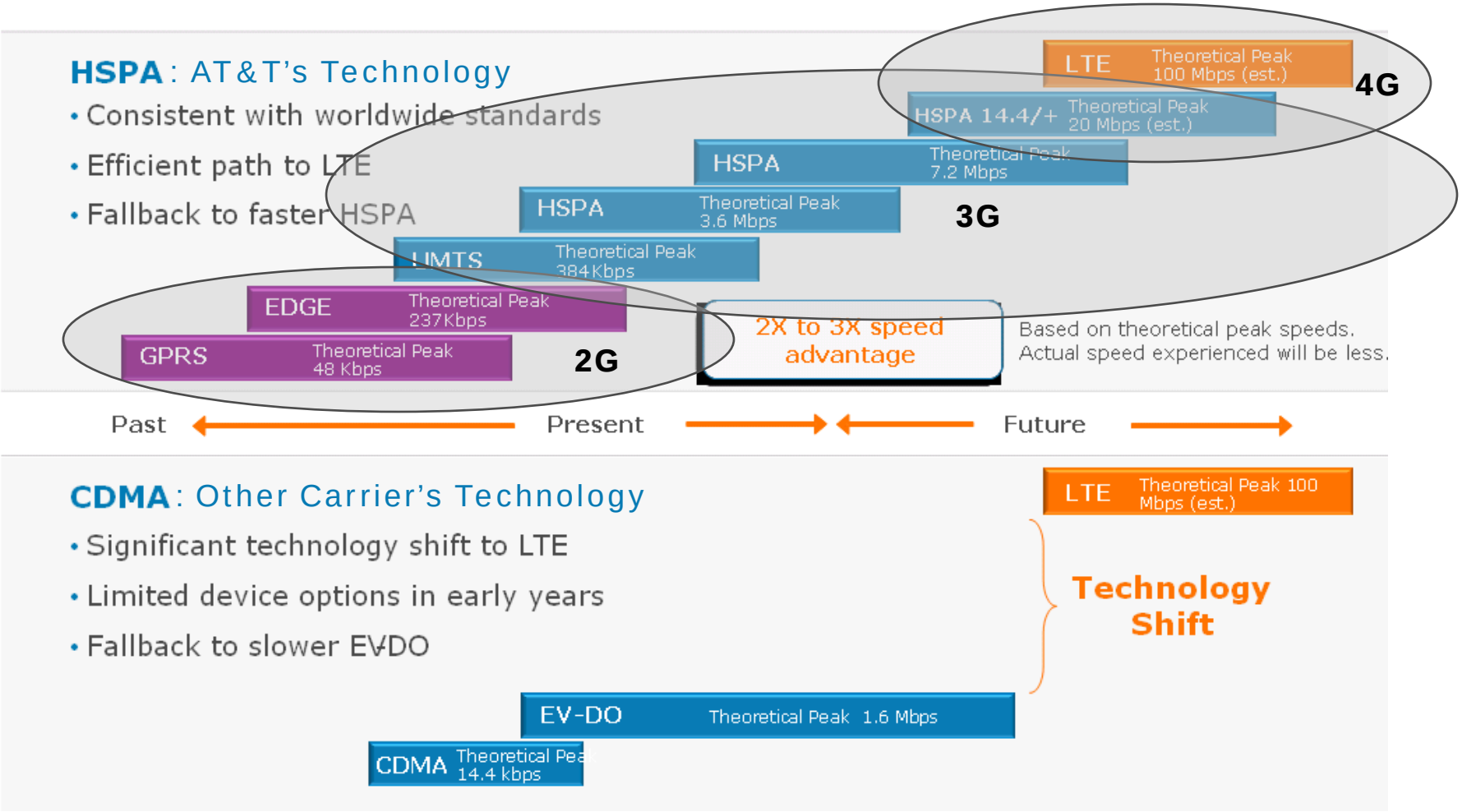


- Radio Access Network Upgraded: **21 Mbps Theoretical Peak**
- Limiting factors:
  - Device
  - RF Conditions (bars)
  - Backhaul (Ethernet helps)
  - Simultaneous users

Individual Users Rarely See the Peak Theoretical Rate

© 2010 AT&T Intellectual Property. All rights reserved. AT&T and the AT&T logo are trademarks of AT&T Intellectual Property.

Network Technology Progression



© 2010 AT&T Intellectual Property. All rights reserved. AT&T and the AT&T logo are trademarks of AT&T Intellectual Property.

Network Technology Progression

HSPA

- Consistent with worldwide standards
- Efficient path to LTE
- Fallback to faster HSPA

LTE — Theoretical Peak 100 Mbps (est.)

HSPA 14.4/+ — Theoretical Peak 20 Mbps (est.)

HSPA — Theoretical Peak 7.2 Mbps

HSPA — Theoretical Peak 3.6 Mbps

UMTS — Theoretical Peak 384Kbps

EDGE — Theoretical Peak 237Kbps

GPRS — Theoretical Peak 48 Kbps

2X to 3X speed advantage

Based on theoretical peak speeds. Actual speed experienced will be less.

Past ← Present → ← Future →

CDMA

- Significant technology shift to LTE
- Limited device options in early years
- Fallback to slower EVDO

LTE — Theoretical Peak 100 Mbps (est.)

Technology Shift

EV-DO — Theoretical Peak 1.6 Mbps

CDMA — Theoretical Peak 14.4 kbps

© 2010 AT&T Intellectual Property. All rights reserved. AT&T and the AT&T logo are trademarks of AT&T Intellectual Property.

Data Throughput Performance

3G NETWORK TESTS

Speed and Reliability Results by City

Download speeds, upload speeds, and reliability scores for each service provider in each of our 13 testing cities, divided by region.

CITY	AT&T			SPRINT			T-MOBILE			VERIZON		
	Download speed	Upload speed	Reliability	Download speed	Upload speed	Reliability	Download speed	Upload speed	Reliability	Download speed	Upload speed	Reliability
Baltimore	**2036**	**1071**	95%	857	407	100%	703	285	90%	818	402	75%
Boston	**1756**	**888**	95%	942	448	95%	728	301	95%	888	396	90%
Chicago	**1568**	**831**	95%	747	384	95%	1047	270	90%	886	425	95%
Denver	879	**669**	90%	599	376	95%	**928**	293	95%	885	478	90%
New Orleans	**1665**	**801**	95%	785	418	95%	570	181	70%	1227	610	100%
New York	**1523**	**779**	95%	790	403	95%	1220	580	95%	1124	463	100%
Orlando	**1206**	**841**	95%	619	350	85%	860	284	95%	1147	477	100%
Phoenix	1190	**697**	100%	797	303	90%	**1201**	288	100%	585	407	95%
Portland	**1276**	**550**	100%	945	398	100%	1090	309	100%	796	398	95%
San Diego	**1228**	**700**	85%	962	449	100%	616	264	95%	671	314	75%
San Francisco	**1193**	**715**	85%	814	405	95%	650	239	85%	729	401	95%
San Jose	**1034**	**655**	90%	714	374	85%	745	444	90%	891	475	100%
Seattle	**1771**	**851**	100%	757	426	95%	929	303	100%	758	400	90%

NOVARUM CHART NOTES: Fastest results are in bold. Speeds are expressed in kilobits per second (kbps). Reliability is expressed as the percentage of our 1-minute performance tests in which the service was available, uninterrupted, and faster than dial-up speed.

PC World 2/22/10

© 2010 AT&T Intellectual Property. All rights reserved. AT&T and the AT&T logo are trademarks of AT&T Intellectual Property.