The Race is on Worldwide for Smart Cities

February 27, 2019

By Llewellyn King

The starter pistol has been fired and the race is on for smart cities across the United States and around the world. This race will not be limited to among municipalities, but will rapidly become an arena for international and corporate competition.

Smart cities represent a digital takeover of cities, readying them for the interconnected future and managing their old infrastructure better.

The prizes are a competitive edge, efficiency, livability and, possibly, lovability.

Smart cities are maybe the first big revolution to hit urban centers since waterborne sewage and traffic lights. Under the smart cities umbrella comes a host of technologies meshed together rather than competing, each moving the project forward. Sensors will be ubiquitous and critical, keeping autonomous vehicles safe, dimming and brightening street lighting, managing water systems and giving advance warning of weather vulnerabilities. WiFi will be everywhere.

Competition within the Private Sector

Competition for smart cities abounds, but it is among big technology companies hoping to control swathes of the new market space. Uber has its eyes on autonomous vehicles and their role, including where they will loiter, how they will respond to calls for ride sharing, and where they will recharge. So does Google which is well advanced in the development of the control systems of autonomous vehicles. Tesla and the legacy automobile makers and the delivery companies, including Amazon, want their share of the market. Drones are part of the play for deliveries.

This puts the big techs in some competition with the electric utilities, which will power such cities in the future. Google is interested in green generation as well as smart vehicles. Samsung is actively working on a role in the smart city space.

With nearly 20,000 cities in the world, it is no surprise that enterprising companies see a

golden future. The component makers, like Bedford, Mass.-based CIMCON Lighting, and all the providers of blockchain services are hoping to be part of the smart city future.

Blockchain, according to Tony Giroti of the Energy Blockchain Consortium, will keep the records of the smart cities where interactive devices will be making thousands of transactions around the clock and careful, verifiable records will be needed.

The next generation of telephones, 5G, will link the smart cities' devices to each other. The telecommunications giants of the world are keen to be in the mix: AT&T, Verizon and Nextel, as well as hardware suppliers like LG, Samsung and Cisco. But, according to Morgan O'Brien, CEO of pdvWireless and a co-founder of Nextel, 5G is not necessary to begin the smart cities journey. Much can be done with the present system, loosely called 4G.

David Tessitore, a telephone and radio expert in Providence, R.I., says 5G really only comes into its own when practically everything is connected to everything: the real Internet of Things (for example, he says, when your car needs to be told by the car in front that it is braking).

"You do not need a lot of bandwidth for everything, like the relationship of a chandelier to its controlling switch. 5G can parcel out spectrum in that way," Mr. Tessitore says.

The electric utility companies start with an advantage, according to Paula Gold-Williams, chief executive officer of San Antonio-based CPS Energy, as they have pioneered interactivity with smart grids. But there may be competition in the new electric space from new entrants.

"Utilities have to be wary," says Clinton Vince, head of the U.S. energy practice for Dentons, the international law firm. Dentons has formed an internal "think tank" to work on smart cities.

Mr. Vince believes utilities must learn to use their lines in creative ways with customers and generators.

"It won't be a case of just sending electricity from the generation stations to the customers. Now that wire will have to be able to accommodate two-way flows, maybe multiple flows in time," he said. He foresees distributed generation making this necessary.

Health care gets its share of attention in the planning for smart cities. "The smart city has to be a healthy city," said Ms. Gold-Williams. Hence there will be an emphasis on non-fossil generation, especially solar and wind, but also nuclear where it is available. Battery storage will be highly prized to guarantee security of supply and protection against voltage irregularity.

Policy Issues and the Race among Nations

This puts emphasis on grid reliability, cybersecurity and weather tolerance. The Green New Deal wave now sweeping the United States, following the Democratic capture of the House of Representatives, puts political pressure on cities and other local government entities to demand an increase in the amount of green electricity employed. But details are

vague. The big and immediate need from government is standards, according to many experts.

Political pressure will also require assurances that the new sensor-strewn landscape does not impinge on privacy. The two big worries are cybersecurity and privacy.

A practical concern is standards. All the cities going for integrated systems, at least in one country and ideally globally, will need government-set standards. Otherwise there will be a hodge-podge of conflicting standards, similar but more extensive than the profusion of railroad gauges which greeted the dawning of the age of rail in the 19th century. The U.S. National Institute of Standards and Technology (NIST) is looking to assure that interconnected cities are all on the same wavelength. Standards also are needed for drones, autonomous vehicles, and the successful integration of old infrastructure with its new electronic controllers. Many parts of government will have a say in these developments.

One aspect of smart cities will be the use of drones in them for all sorts of things, but most importantly package delivery. That is already happening in places as disparate as Rwanda and Australia.

Blood is delivered by drones, via little parachutes, to hospitals in the African country, says Ben Marcus, chairman and co-founder of AirMap, a Santa Monica, Calif.-based company that is working with aviation departments worldwide to establish a regulatory regime for drones which will be deployed in large numbers. In Canberra, Australia's capital, packages are coming by drone and hang from a string for retrieval, he says.

Last year, Eden Strategy Institute, a Singapore-based global adviser to corporations and governments, published an extensive analysis of where the world's cities stand in smartness-the top 10, in descending order: London, Singapore, Seoul, New York, Helsinki, Montreal, Boston, Melbourne, Barcelona, and Shanghai.

Some analysts have put Seoul in first place because of the degree of integration of systems which already exists and have weighted their findings because of transportation there and the introduction of OLEV (Online Electric Vehicle) buses.

These rankings may well change as China ramps up its efforts in artificial intelligence, a state policy. China has put the development of artificial intelligence as a national priority. Future listings of smart cities will see more Chinese cities. Shanghai, at present 10 on Eden's listing, is likely to move up and be joined by other Chinese cities.

The race has just begun, and it will be up to cities, firms, and national governments throughout the world to respond or be left behind.

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