Bridging the Great Divide

While there is certainly no up-side to COVID-19, our response to the pandemic has opened our eyes to just how many in this country lack access to quality broadband service. Forced to turn to distance-learning for their children and heavily encouraged to use telemedicine in place of physical doctor visits, many — particularly those in rural areas — have found themselves woefully lacking the bandwidth needed to make those things happen as intended.

The notion of some people having solid broadband capability and some not, is hardly new; it has vexed us long enough to have earned itself a name: “The Digital Divide.” But though most are just now being made aware of this issue, there is an entire generation of farmers who have been painfully aware of it almost since broadband’s inception in the mid 2000s. And, as automation and connectivity grow within the industry, the shortcoming becomes all the more glaring — and impactful. With understanding comes change, however, and efforts are being made by key members of industry, as well as those in a legislative position, to better understand the issue and work to rectify it.

Roots in Inequality

While the above cites the date when insufficient broadband was recognizable, the problem with sub-par internet access actually precedes that date by about a decade. In fact, in July 1995, the National Telecommunications and Information Administration released a report titled: *Falling Through the Net: A Survey of the “Have Nots” in Rural and Urban America*. While it did not coin the phrase “digital divide” (credit that to Lloyd Morrisett, experimental psychologist and one of the founders of “The Children’s Television Workshop/Sesame Street), the report found that the internet could be a driver to “facilitate economic uplift and empowerment,” but also noted that those lower on the socioeconomic ladder had the least access to it.

America’s farmlands, dealt a one-two punch of location and a lack of commitment on the part of telecommunications firms, suffered greatly, as companies built out their cable and fiber optic networks, largely overlooking small cities, towns — and farming communities. According to Mike Gomes, vice president of business development, agriculture, for Topcon Positioning Systems, while that lack of development has always put farmers at a disadvantage, changes in technology within the agriculture industry are compounding the severity of the issue.

“The average person has no idea how automated today’s farms are,” he said. “Automatic steering — guided by GPS — has been around for nearly two decades already. But that technology, which was impressive for its time, pales by comparison to where we’ve come. Today’s farming is headed toward the embrace of ‘precision agriculture,’ a practice that focuses on automating and controlling farm-related actions that were previously laborious and time consuming. Automated farming practice opportunities run the gamut from tilling to planting to fertilization to harvesting.”

For most farmers, he added, the embracing of automation was not an end but rather just a stop on the path to connectivity: the ability of machines and implements to “talk” to each other — and to us — by way of data. “Unfortunately, achieving that particular goal is dependent upon a robust broadband connection and, for many, a reckoning with the digital divide,” he said.

Failing Our Farmers

According to a report by the Federal Communications Commission (FCC), while 97% of Americans in urban areas have access to high-speed fixed service, in rural areas, that number falls to 65%. Digging down even deeper, yields an even direr situation for the American farmer. In a study conducted by the United Soybean Board, nearly 60% of U.S. farmers and ranchers feel they lack the level of internet connectivity needed to run their businesses. That means farms, which contribute nearly *$80 billion* to the national gross domestic product, run on internet connections that are marginal at best.

“In America we have the largest, safest and cheapest food supply in the world,” said Gomes. “The ability to make that happen is a by-product of compliance, which is centered around measuring and managing — both of which are data-driven efforts. So today’s farmers are increasingly using equipment that is both ‘smart’ and connected. Literally every facet of the farming process can not only be automated, but the data from each of those functions can be saved, manipulated and accessed in order to improve and streamline the farm operation.”

Successfully utilizing those solutions, however, is only possible with an ample broadband connection and, unfortunately, a huge percentage of farmers today are finding themselves on the wrong side of the digital divide.

Coalition of the Willing: 2021

Dire though the situation might seem for those in rural communities, there are signs that the problem is at last being acknowledged and a genuine effort to address the issue has begun. According to Gomes, a consortium of more than 140 organizations (including Topcon), across multiple industries and disciplines has convened as the American Connection Project Broadband Coalition (ACPBC) a group committed to bridging the digital divide in this country.

“We felt compelled to become a part of this group not just because a good segment of our business serves agricultural customers, but more so because this is who we are as a company,” he said. “We have a philosophy simply called ‘The Topcon Way,’ which says we are committed to enriching human life by solving societal challenges within

healthcare, agriculture and infrastructure. The match here couldn’t be better. By helping reduce the digital divide, we can improve lives — and more — through our precision ag-based solutions. Whether that means reducing one’s carbon footprint by making fewer trips in the field; only applying what is needed, where it is needed; whatever, the issue of sustainability is addressed in a huge way.”

The brainchild of farmer-owned cooperative Land O’Lakes, Inc., the ACPBC advocates for public and private sector investment to bring high-speed internet infrastructure to rural areas. When discussing the benefits of doing so, making precision agriculture accessible to a greater number of farmers is just the tip of the iceberg. Distance learning and telemedicine are of equal importance. However, in light of that $80 billion number mentioned above, improving connectability for the American farmer is undeniably an important one for the farmer and the economy as a whole.

Trace Elements

Add to the list of benefits derived from a robust broadband presence, the issue of traceability. Though it has been on farmers’ radar for some time, traceability looms larger and larger today as processors, suppliers and consumers alike demand to know the genesis of their food supply. Issues like food recalls, organic verification, even establishing preventative measures after an incident, can be addressed through a solid traceability protocol. For the farmer, it can begin . . . at the beginning, according to Gomes.

“Traceability in agriculture can mean being able to keep track of when a seed is planted, where it was planted it, being able to prove a GMO seed from a non-GMO one, and far more” he said. “It can also mean being able to show that the crop was farmed in a very reasonable way, using the right materials. We are already doing that for customers using our CropSpec technology. CropSpec is a solution that uses a reflectance -based- sensor to identify greenness in the plant. That color correlates to the level of chlorophyl or the inverse as crop stress, which, in turn, shows how much nitrogen (fertilizer) or other material needs to be applied, depending upon the crop and maturity level. Because we also create a map of what’s been applied and where, compliance and verification become much easier.”

Up to the Challenge

At the heart of all this, however, is data, which, once again, demands bandwidth. And while the deck right now seems stacked against rural America, efforts like the ACPBC are working to change that, according to Gomes.

“Today, adequate broadband is defined as 25 mps download, 3 mps upload — roughly an 8:1 ratio,” he said. “While that might be great for watching Netflix, it’s certainly not ideal for someone who needs to Zoom for business, have a telemedicine session, or do crop price marketing from the field. For that, they need symmetry of service — near equal upload and download speeds. It’s important to remember that we’ve solved problems bigger than this before: the electrification problem after the first World War; the communication problem post-WW II; the Interstate highway system in the ‘50s, for example. The Coalition is trying to put a magnifying glass on this issue and its impact on education, medicine, agriculture, etc. It happens to be led by Land O’ Lakes because they have such a huge footprint in rural America but the number of hospitals, schools, and companies like Topcon who are actively involved, is growing at an amazing rate.

Politically Correct

In this time of rampant political polarization, one might be surprised to hear that the need for improved rural broadband and connectivity has enjoyed bipartisan support. Members of Congress are recognizing this not as a “Red” or “Blue” problem but rather as an American problem.

“That really shouldn’t be surprising,” said Gomes. “Improving broadband connectivity can help make us much stronger economically, so it enjoys support across the political spectrum. “When people are presented with anecdotal evidence that farmers are paying their local co-op to manage their data, or others are forced to drive into town to access wi-fi from a local fast-food chain or Tractor Supply retail location, it hits home how serious the issue is. Knowing what Topcon has done in construction to streamline the workflow and create opportunities, it’s exciting to see the possibilities that exist in precision ag. With the right infrastructure in place, the changes will be dramatic and impactful. I’m grateful we’re playing a key part in helping make it happen.”

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