Statement of
Billy Tiller
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Good morning. My name is Billy Tiller, and I am a 4th generation family farmer in Lamb and Bailey Counties of Texas. For those of you who like geography like me, we are about a one hour drive northwest of Lubbock, Texas near a very little town called Bula, just south of a bigger little town called Sudan. It is a great area. We grow non-irrigated crops – mainly cotton, grain sorghum, and sunflowers. I have also run cattle, have presided over the operations at a local bank, and for the past 5 years now, I have been working around innovations in, and analyzing the implications of "Big Data in Agriculture" – the topic of your hearing today. Let me say that I am very honored to be with you.

I am here today as a Co-founder and the current Director of Business Development for Grower Information Services Cooperative (GiSC – www.GiSC.coop). GISC is a farmer-owned and farmer-led cooperative that is built around the idea that information – the data – generated from the farming operation has tremendous value, and farmers should be put in the best position possible to harvest this value. In a sentence, GISC seeks to accomplish grower data ownership by giving the grower better tools to index, store, protect, share and thereby use their data.

This idea that information and even raw data generated from the farm can be a valuable commodity is not necessarily new, but the pace of technology and innovation sweeping through the sector keeps this reality and world of possibilities ever changing. GISC's timing has been very fortunate. In the testimony that follows, I will explain why we came to the conclusion that growers need a cooperative to handle data, the services we are providing today, and the challenges we see for the future.

Brief History of GiSC

The concept of GiSC began in 2010, as discussion between myself and the other co-founder Monty Edwards. Monty was a very progressive and dynamic young crop insurance agent who also happened to be a 5th generation farmer and good friend. As we struggled with the immense paperwork involved in FSA and Crop Insurance, he and I began developing a way to move information more efficiently between my farm and certain farm service providers.   During this exercise we realized the problem in agriculture was not so much the need for more technology, but the need for integration of current and future technologies to provide me an "end-to-end" view of my farm's operations.

We concluded that "big data" would only benefit the family operation if we as farmers had a means to organize the data. We also concluded that farmers could only find value in the developing agricultural data market if they had a means to aggregate their data and this needed to be done with a trusted entity.   Therefore, in the early days of GiSC, we settled on two areas of focus:

1. Develop a secure data platform which could integrate and store data from the myriad of technologies adopted by the Ag community. This same platform would also need to allow growers to share data with others while providing them sole control over the parameters of data sharing.
2. Formally launch GiSC to be a friend of the farmer/rancher and begin to create a plan for data governance with the grower's interest in mind, including the premise that the grower owns all the data that originates on his operation or his operation's activities.

We all know the last 100 years of history have been marked by some major revolutions in agriculture. The mechanical revolution brought my father and his father innovations that changed the very fabric of civilization. This same ever-improving mechanization has brought me climate controlled cabs, more (mechanical) horsepower, and much improved safety mechanisms, all of which have improved life on the farm. My father always said, "Son, you are living in the golden age of farming."

We have since witnessed giant leaps in scientific and agronomic innovations: from hybrid seeds, to better fertilizers, herbicides, pesticides, and fungicides. In the last 20 years, we have seen the another wave of scientific revolution involving biotechnology. All of these innovations have made farming more productive and have made the farmer a better steward of the land, as we have reduced the use of water, fuel, herbicides and pesticides. These scientific innovations continue today as further advances in biotechnology are pushing the upper boundaries of yield and stretching perceived water limitations through advances in genetics.

I value all these experiences tremendously. I value them for the tremendous impact they have had for humanity. I also value them because they have shaped my thoughts about how to make sure that future innovations are in the best interest of agriculture producers.

As I testify here today, I believe another revolution in agriculture is occurring now – and that is the Information Revolution. It is built on precision agriculture, which involves the integration of computing power, satellites, and software that is increasingly being utilized to bring the American farmer into a "brave new world" of automation and operational analysis. It involves GPS guidance systems, recording operational activity in fields, and programmed applications customizable at the field and subfield levels. Indeed, we are accelerating toward a time when the producer will utilize all available sources of information, deciphered intelligently to operate more efficiently and decisively. This is the "big data" opportunity within agriculture.

So the Information Revolution is happening. This is very exciting. But there are some problems and hurdles to overcome.

We at GiSC think precision agriculture as we know it today has one fundamental drawback. It creates what is really an overwhelming amount of data that is difficult to assimilate, especially without tools to integrate and synchronize data created by various sources. So the data-poor environment of agriculture's past is now data-rich, but we lack any real effective way to handle all the information that is being funneled into the agricultural producers' management systems.

Too much information is almost impossible to manage, especially since the individual producer's data is an island. The farmer can get his hands on more information about his farming operation than at any other time in history, but that information is currently for his eyes only. The farmer is at a loss as to how to accomplish the task of sharing his information with another party.

The information age has brought not only information from internal sources that are at the producer's disposal, but also information from many outside sources. He receives data and information from the Farm Service

Agency, crop insurance agents, accountants, chemical vendors, spray pilots, fertilizer dealers, cotton gins, marketing pools, grain elevators, equipment dealers, crop consultants, real estate brokers, etc. The list goes on and on.

Now look at the grower's data dilemma: not only does the grower have his own island of incompatible and unassimilated data, but there are also third party data islands. The grower needs both to provide data and receive data from those parties. This is the core reason GiSC was formed – to be the solution that bridges these islands, integrating and assimilating the grower's disparate data and providing digital connections with those that provide services to his operation.

GiSC Today:

As noted, GiSC is a data cooperative owned by growers. It was founded on the notion that growers need an easy way to securely store and access their information, and to share that information with those who serve and support them. GiSC, in every sense, is "Built by Growers, For Growers"™.

The cooperative was birthed as an idea in 2010, but formally chartered in late 2012. Today we have 1,300 members in 37 states and are growing daily. The map below illustrates GiSC's footprint.

GiSC Footprint (map above)

Beyond 1,300 growers in membership, we estimate that we have had direct personal communications with over 10,000 growers. These conversations indicated that 99.9% of those growers think forming GiSC was a good idea. Some thought it was such a good idea, they joined immediately. Even more exciting, most that did not join immediately left us with the impression that they would join soon after we deployed our platform technology, AgXchange™. This platform for growers has just been deployed and is available to all growers who are members of GiSC.

The point is that GiSC is gaining real traction, and in 2015, we have begun to transition the operations from mostly volunteer work by the early founders, to employees that spend every day answering growers' questions concerning data, systems, and privacy. In the summer of 2015, GiSC announced the hiring or Mr. Jason Ward to be the first Executive Director of GiSC. Mr. Ward brings two decades of experience in marketing and agricultural cooperative management, and will lead the staff in service to the grower members as the AgXchange™ platform is deployed.

Upon joining GiSC, Mr. Ward summed up our current mission well, stating, "Information is the new, and emerging, cash crop for agriculture and I believe the grower should be at the forefront of that movement. The first step for every grower is to make sure he or she is taking an active role in owning and controlling his or her data."

This mission is being carried out through three primary objectives:

> 1) Establish the precedent that growers should own and control the information and data related to their production agriculture operations.

> 2) Offer growers a private and secure cloud-based platform called AgXchange™ (www.AgXchange.com), where they can store all of the information related to a their operation, and provide their trusted third parties a communication channel for exchanging data, digital documents, and information. AgXchange™, will have the functionality to organize a grower's information geographically by a map of a grower's farm or land units. Central to GiSC's mission, the grower will be in control – the grower will dictate who may send data to the grower's data repository or access the data in the repository and may limit the access granted to his or her repository.

> 3) Return value back to the grower members of GiSC. As the network of information and connections increases in AgXchange™, the value of that network increases. GiSC, will deliver patronage dividends back to its grower members from profits generated.

The Importance of Indexing Data and the CLU:

I operate a farm that produces reams of data from many sources. In fact, I am producing and processing more data than at any other time in my history, because it is so easy with devices such as my smartphone. Many only consider my Precision Ag data as the data that runs the farm, but it is much more encompassing. Here is view of my farm data in various silos outside of GISC:
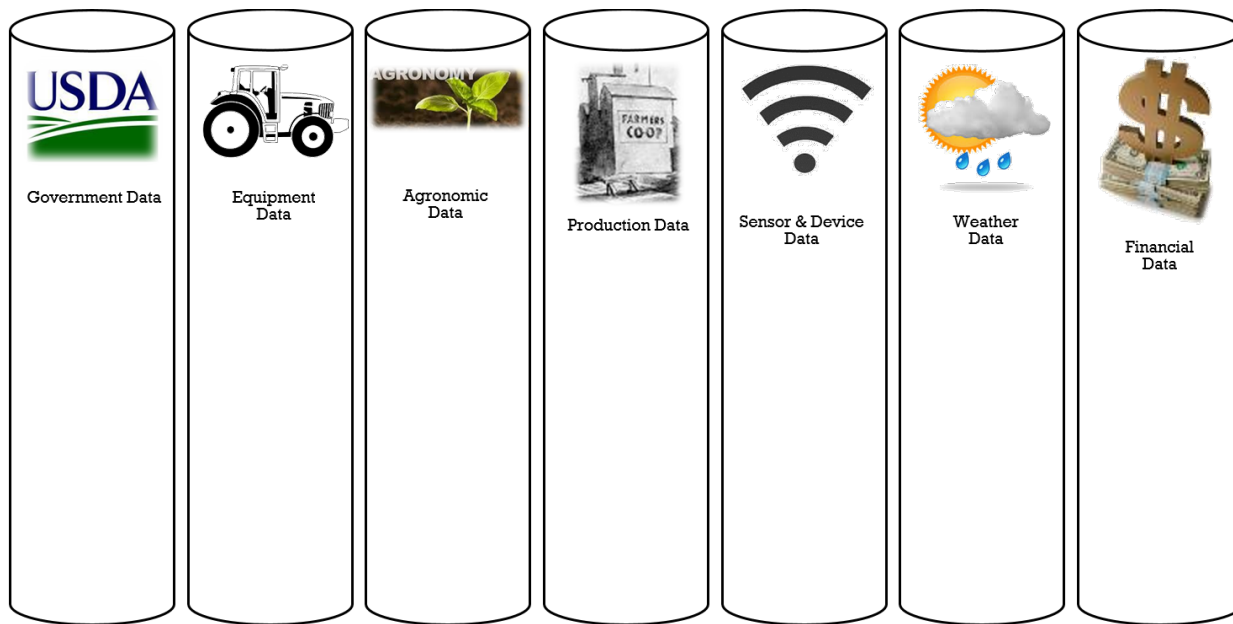
Types of Farm Data (image above)

Much of the information I have today is cloud-based precision agriculture data, but much of my data is still in paper form or a digital form of paper such as a pdf file. I must be able to utilize both.

How can we index this data in a way that helps GiSC provide a Big Data picture for agriculture? The sensible answer is this: tie it back to the land; use a map; geospatially reference as much data as possible. Farmers have always kept track of things by farms or land units. The land unit operates much like a factory, where all manufacturing is taking place during the growing season for a geographic location. Accordingly, we needed to reference any data we could back to the land unit. All of the components of AgXchange™ hinge on this most basic unit.

Many operational maps that growers use, including precision ag maps, were researched, as the organizational backbone for geospatial referenced data. The conclusion of this research was that one map was head and shoulders above the rest for operating as that backbone: the Farm Service Agency (FSA) Common Land Unit (CLU) map layer. All U.S. farms registered with FSA have been geospatially defined as a unit or units, known as Common Land Unit(s). I state this matter of fact, but this was a monumental undertaking. FSA employees from across the U.S., in a coordinated effort, drew the boundary lines for the CLUs. This was perhaps one of the greatest feats ever accomplished by FSA without much public knowledge. FSA manages and keeps this CLU updated for its use to administer farm programs and increasingly for RMA to index crop insurance to the same land unit.

As stated above, GiSC and its member farmers saw the CLU maps as the solution to index all data. However, the CLU maps and data are still not readily available even to the farmers it is meant to serve.

The 2008 Farm Bill restricted public access to the CLU layer when connected to any personally identifiable information. We at GiSC strongly agree with limiting public access to grower's farm data, and I personally appreciate the steps taken by Congress in this prior farm bill to protect me. The 2008 Farm Bill also provided a needed exception, allowing the grower to request his CLU data from FSA. This was good for the grower in

principle, but there is no simple method for growers to access their CLU data, much less an affordable and easy-to-use GIS system to view or use the CLU map layer.

GiSC has worked diligently with FSA since 2012 to understand what would be needed by FSA to share the CLU and other farmer information with a grower, and GiSC has developed a strong relationship with FSA and its staff during the process. FSA has thoughtfully worked to find ways to move this process forward, while also being very careful to protect producer privacy. Through a Memorandum of Understanding between GiSC and FSA, we are now receiving some producers' CLU information on behalf of the growers, with their consent. We expect this capability to continue to expand as we work through the legal and technical issues with FSA.

The farmer's CLU land layer, integrated into GiSC's platform, makes for a very user friendly system. This is the start of how GiSC can help farmers manage their many silos of data and index it in a way that can make the data useful. It provides a meaningful way to display the information for the grower and those with which he or she wishes to share data within our system. We expect that FSA will make even greater strides in 2016 for delivery of real time data to their customers, and this will, in turn, benefit GiSC's membership as GiSC is able to deliver more data and data analytics to its farmer members.

Finally, I would also be remiss if I did not thank this Committee for including some very important provision in the 2014 Farm Bill to provide resources for and generally promote the electronic exchange of data between farmers and the USDA.

The Importance of Aggregating and the AgXchange^{TM} Platform:

The map-based CLU layer alone does not provide a farmer with avenues to interact; therefore, a system needs to be in in place to utilize it. Providing such a system was the inspiration for AgXchange^{TM}, and continues to be one of the fundamental value propositions of the AgXchange™ platform.

AgXchange Platform View (image above)

As stated earlier, we at GiSC determined there was a need in the industry for a grower-controlled platform that would be open to all service and technology providers to participate. This would provide a neutral technology

tool, allowing growers to easily collect data from all of the proprietary systems and disparate clouds, organize and translate it into something meaningful. The CLU layer is the organizing point that makes geo-referencing possible, but it is the AgXchange™ that empowers growers to be better decision makers, and enables service and technology providers to give us better products and services.

GiSC is attempting to move the industry in the direction of enabling growers to have an end-to-end view of their operations just like an Enterprise Resource Planning (ERP) platform in other industries. But what has been lacking is a technology neutral middleman that can solve the industry's data acquisition and integration problem. GiSC and its partners aim to fill that gap and be the aggregator of agricultural data, whether it is from John Deere equipment, Case IH equipment, or any other precision data technology provider.

Last Word to Farmers in this New World of Big Data:

Farmers need a data aggregator and data integrator to help them reap all the benefits of big data and its implications to agriculture. We cannot just sit on the sidelines and wonder how it will all turn out, trusting that the tremendous for-profit agriculture technology providers will use our information only for our good rather than returns to their own share-holders. We need to be proactive by joining forces with groups such as GiSC, to give farmers a voice.

Growers must have access to data they own and they must devise applications and paths to bring the data back to their barn. We must remain vigilant as growers with the agreements that are currently being utilized by some vendors that take the rights to our data and our future data if we use the software or hardware of that particular vendor. We also need to realize that some of these agreements give these companies the right to a worldwide license to use our data in any way they please and in most cases for free.

To this point, it is important that all farmers know the important work that has been done – thanks in large part to the leadership of the American Farm Bureau, to bring all parties – grower groups and technology providers –

to the table to hammer out a set of principles that should govern contracts in this area. This was and is an important piece of work for growers everywhere.

Subsequent to the agreement on Principles for Data Privacy, GiSC is currently involved in an initiative alongside commodity groups and Agricultural Technology Providers (ATPs) to develop an easy to understand metric that informs producers what they are agreeing to when they sign or click to accept data terms and use conditions from ATPs. We feel it is imperative that producers know upfront who has access to and can share their data so they can make informed decisions about the products and services they deploy on their operation.

Finally, I would just say to all growers everywhere that you will be impacted by the Information Revolution, whether you choose to participate or not. Information is powerful, and we do not want to be at the mercy of others, nor should we be information-poor as growers. The farmer must remain the premier fount of knowledge and information about his farm.

Last Word to the U.S. House Committee on Agriculture:

As the Committee continues to weigh innovations and implications of big data in agriculture, GiSC would encourage you to keep some important principles in mind.

First, please be aware of the critical importance of the provisions of the 2008 Farm Bill which protect producer privacy around any geo-spatial data. While we support efforts to make it easier for a producer to attain his or her CLU and related farm-level data, we do not believe there is a legitimate public purpose to be gained in sharing such information with others who might ask. We appreciate that you understand that there is a right to privacy in our farm locations and our CLUs.

Second, we believe it is important to keep USDA in the middle of maintaining the standards for agricultural data and the most up-to-date statistics available to maintain transparency and sanctity in the markets. Objective and standardized measures and sets of data create a level playing field and thus benefit all participants in the marketplace. GiSC believes in this principle, and it is why we are indexing our data around the CLU.

Third, while USDA's role in the quality and standards for data is important, we believe the marketplace should be the source of new innovations in the world of big data. There are worlds of opportunity, and there needs to be profit drivers that continue to fuel the research and development needed that will continue this information revolution. Maintaining strong independent family farms is also key to keeping balance in this marketplace. To this end, we hope that you will continue listen to the commodity and grower organizations that have the grower's interest at heart.

Finally, I would ask that you continue to look for ways to automate the process of data delivery from USDA to the growers. GiSC is a willing partner in the task, and we will continue to work hand in glove with USDA to try and understand how to keep the grower in the driver's seat of this new digital world of big data.

Thank you for the opportunity to tell you about the work of GiSC and our efforts on behalf of the American farmer. Thank you for all the hard work you do on behalf agriculture and for the best interest of this great nation.