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## Introduction

### **Overview**

In this section we will present a particular perspective in how to think about collecting and managing agricultural data. Field related input information is tied to specific areas of a Farm Field and with the technologies that are now available; the farmer has more decision-making capability at his disposal. The only limitations are the amount of data collected and whether the data are structured so that it becomes possible to move beyond data management. The SST Stratus and SST Summit programs are part of a bigger picture, which include the ability to collect, report, summarize, manage, record, and analyze data over more than just one farm field and over multiple years. This capability to understand relationships within and across farm fields is essential in making decisions impacting cost efficiency of any agricultural enterprise

### **Vocabulary (A complete list can be found in Appendix A)**

- SST Stratus: The data collection program used in the field to collect data on a Pocket PC hand-held device. This includes mapping capabilities, mobile record keeping, and equipping multiple users for data collection. Data are collected from a series of drop-down lists that are preloaded to allow for quick data collection in the Field. The program works in conjunction with either SST Summit or SST Summit Plus to synchronize these data.
- SST Summit: The desktop program for record keeping, reporting, and information sharing between individual programs, and for creating field boundaries with downloaded imagery.
- SST Summit Plus: The desktop program for record keeping, reporting, and information sharing between individual programs, and for creating field boundaries with downloaded imagery. In addition, SST Summit Plus contains the Planning module, which creates crop plans, scenarios, and work orders.



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# The Changing Face of Agriculture

## What is Different in Farming Today?

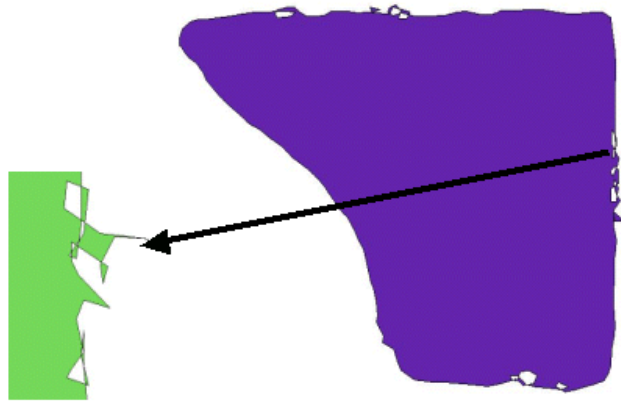
Most of you have already decided to take a different route; otherwise, you wouldn't be choosing these new technologies to use within your farming enterprise. Whatever the case may be, the issue is this, farming today is a tougher than ever before. What dad and grandpa did, although those methods made money for them may not be the optimal approach for today's agricultural needs for your operation. Three of the key words in agriculture today are optimization, automation, and standardization. This is where SST's approach is different that anyone else in the marketplace. We build tools to help in the decision making process so a farmer can optimize his resources while maintain the ability to look beyond one field and one season. Learning to use these technologies is not easy and takes some effort, but the payoff can be the difference between continuing farming or letting someone else who has the fortitude take over your operation. Our model has some general guidelines that greatly increase the chances of your farm enterprise's success, and we believe these techniques will save you time and money. Today's farmer has to become a better manager and these tools help increase his management capabilities.

### *Field Boundary Data Collection*

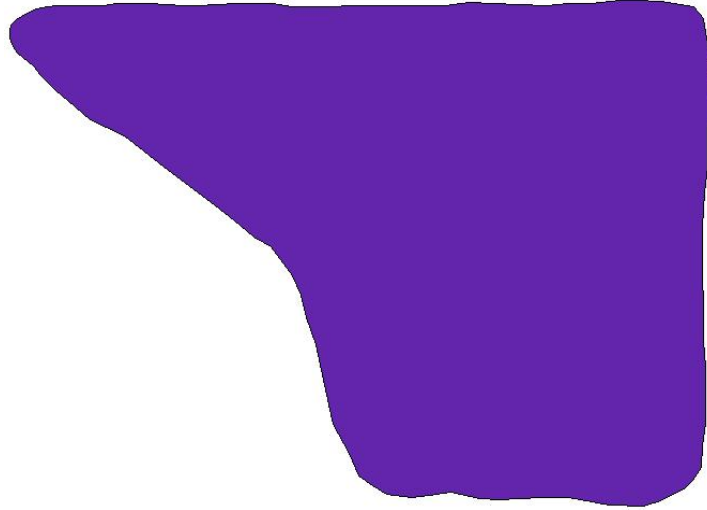
Generally, when speaking of collecting data for a Field boundary most people think of only the boundary. SST's approach goes beyond just the boundary, although, this must be collected without any errors. SST Stratus and

SST Summit do not allow for spatial errors to be entered into the model. Overlapping geography causes several problems, which include duplicating acres and including acres that do not necessarily receive inputs. This results in inaccurate input reports. When a Field boundary is collected in SST Summit or SST Stratus, the user is constrained from making any overlaps, underlaps, or bowties in the creation of the boundary. This alleviates problems from being perpetuated throughout the system, especially when analyzing data over time. SST's model includes methods for validation in real-time (as it is being collected on the field itself). Many data collection systems in agriculture do not include methods for data validation for the field boundary and anyone who has tried to compare a field over more than one year will understand this issue all too well. The SST Summit/SST Stratus system simply eliminates these problems.

The following field boundary was collected with software that did not have these capabilities. As you can see, the field boundary contains bowties. Someone will have to spend a great deal of time cleaning up field boundaries that have been collected in this manner, which is very inefficient. If you are working on a scale of hundreds of thousands of acres then this will become an obstacle very quickly.



However, the following boundary was collected using SST Summit/SST Stratus. Since SST Summit/SST Stratus will not create bowties and other boundary errors a great deal of time is saved.



Think of the Field boundary as the building block for everything else to be placed upon. If the blocks are solid and stable they will last a long time, but if they are questionable from the start, then future problems will occur. If data are not collected or structured correctly from the start, then a user is severely limited when trying to analyze data later. Remember the acronym GIGO, which stands for garbage in, garbage out. The same is true in this case.

### *Efficient Data Entry (Data Standardization)*

One of the most aggravating issues in collecting field level data has to do with data entry. Data entry requires that someone create a naming convention and stays consistent with this over time, otherwise, you cannot compare Hybrid DK-325 in the year 2003 to Hybrid DK 325 in 2004. These data are not named the same.

We may be able to discriminate between these two visually, but this vastly limits the power of a computer system. This may seem trivial, but be assured this is

probably one of the biggest impediments to farmers and service providers in building a useful database of field management data. SST Summit/SST Stratus eliminates this problem.

The ability to maintain the same names is critical for utilizing the power of a database. When data is being collected, you are populating a database and the consistency of that data entry is essential for any value to be realized.

A farmer can select from picklists, which are preloaded in SST Summit/Stratus, when they are recording information about field level inputs. These data have a structure, and they can be renamed to fit your own farm operation terminology. But the base naming convention stays the same, thus allowing the farmer to garner more information than they imagined.

When a person is in the field collecting the data the last thing they want to do is to type in each attribute they want to record. In SST Summit/SST Stratus, you simply pick from a list to enter the information needed. This allows for a more efficient data collection process, and as time goes on, every piece of data collected is synchronized, so that multiple years can be queried, summarized, and analyzed.

### *Data Exchange (Data Management)*

Next to data collection, the biggest issue today is how to get data from a field computer to a workstation where the majority of the work will be done. Other issues include synchronizing data between grower and consultant, grower and input supplier, or grower and agronomist. This issue turns many farmers and service providers away from this technology simply because of the

inefficiencies involved. By using the SST Summit/SST Stratus approach a person alleviates this issue altogether.

SST Summit has functionality that Synchronizes data between multiple locations at the click of a button. Once all the relationships are setup and the decisions are made as to how the data will be treated, this process is simple. This is a seamless approach to data exchange between multiple sites running SST Summit. The real power with this data transfer capability is that everyone within this system can transfer and update at the click of a mouse button.

### *Business Reporting*

As a farmer, farm manager, consultant, agronomist, or service provider, you need to summarize your reports across multiple Clients, Farms, or Fields. This functionality is available in SST Summit. You may want to compare what was done between two different farms or specific fields within those two farms, which is simple and easy to create in SST Summit. In fact, SST Summits ability to customize reports is one of its strong points. At the end of a cropping year you could compare how one farm did to another, look at inputs and all costs and determine where to better optimize these inputs for future years.

This workbook was developed and written from an applications perspective to demonstrate how to use these technologies within real-world applications. As you continue through this workbook you will notice a definition or explanation, a short functionality demonstration, and then an application exercise pertaining to the specific tool or tools. We hope this will

help our users to find success as early as possible and speed up the process of learning how to use these tools and programs. If there are any questions, comments, or suggestions please call or email our Training and Education Team and we will respond as promptly as possible.

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