Core Documents for Field Operations

SPADE: Standardized Precision Ag Data Exchange A project identifying data needs throughout the supply chain to drive implementation of industry standards.

PAIL: Precision Ag Irrigation Leadership A project working to standardize data for irrigation, weather and related sensors.

ADAPT: Ag Data Application Programing Toolkit A framework enabling transfer of precision ag data.

What's inside a Core Document?

What: The products or services being applied, or the data being reported.

Where: Grower / farms / fields / cropzones / GPS locations.

Who: People involved and their roles: operator, agronomist, trucker, etc.

When: When should/did the operation happen?

How: Product rates, equipment settings, etc.

With What: What equipment is involved?

Context items: FSA, EPA, DOT numbers, harvested commodity codes and other geography-specific data that growers track for insurance and other purposes.

Core Documents: *The Foundation for Efficient Communication in Precision Agriculture*

An important outcome of AgGateway's SPADE and PAIL projects is a set of Core Documents, which standardize the organization of information exchange in the management of field operations such as planting, spraying, fertilization and harvest. Modern farming requires increasingly detailed records of field operations, due to regulatory pressure, supply-chain interest in traceability and sustainability, and the grower's interest in managing fields on a more granular level for improved profitability.

Growers and their partners use multiple "documents" to exchange field operations information as part of their business processes. While some work had been previously done to standardize farm processes *(e.g., ISO22006)*, there was still a need to precisely define documents and many of the terms used within them.

The Core Documents

The Core Documents have been defined with flexibility in mind, in view of the many ways in which different growers manage record-keeping. The documents also include data requirements and their representation within the new ADAPT object model.

Crop plan: "This is how we are going to grow this crop this season"

Observations and measurements: "This is happening out in the field"

Recommendation: "This is what I recommend we do about it"

Work order: "This is what we are going to do"

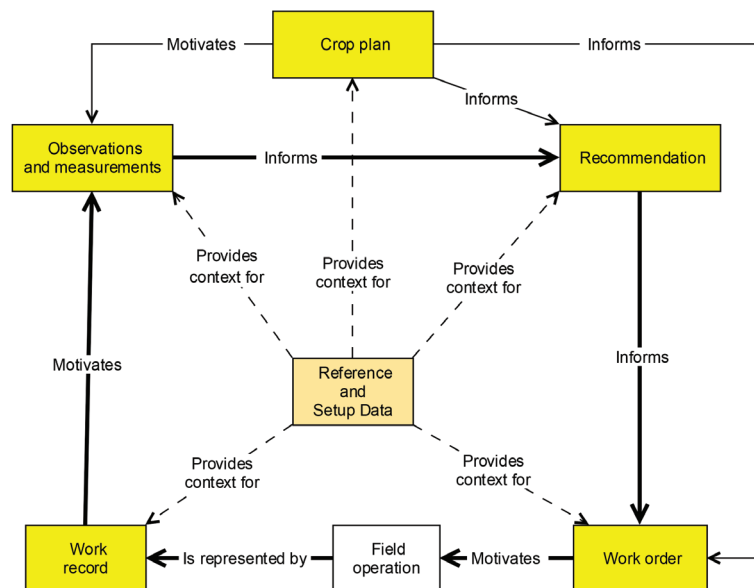**Work record:** "This is what we actually did"

Figure 1: The core documents and the relationships between them.

Reference / Setup Data

The Core Documents are given context by Reference Data (i.e., a framework of data that can be shared across the industry, such as common product identifiers). The exchange of documents is further enabled by Setup Data (which can be regarded as another core document) that provides information needed to establish data exchange between growers and their partners: a grower-farm-field tree, field boundaries, products used by the grower, machine settings, and so forth.

Questions?

Contact Jim Wilson
 (+1) 816.516.8847
jim.wilson@aggateway.org

For more information on:

– SPADE:

https://aggateway.atlassian.net/wiki/x/vgFwAw

– PAIL:

https://aggateway.atlassian.net/wiki/x/1gATB

– ADAPT: www.adaptframework.org

www.AgGateway.org
Member.Services@AgGateway.org
Phone: (+1) 866.251.8618
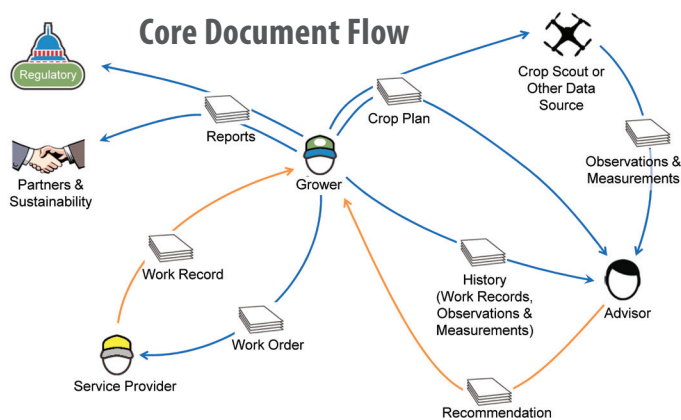Twitter: @AgGateway

How the documents flow

Figure 2: Examples of document flow between the grower and other actors.

Growers exchange documents with multiple partners *(Examples in figure 2)*.

Example 1: The grower sends the advisor a crop plan for the season and the management history of the fields; a crop scout sends the advisor a set of field observations. All that data informs *(fig. 1)* the creation of a recommendation by the advisor (to spray a chemical, for example) which is sent back to the grower.

Example 2: The grower makes a decision informed by the above recommendation along with the crop plan, knowledge of market conditions, etc. If the grower decides to spray, he or she will create a work order and send it to a service provider.

Every grower runs their business differently; some have formal workflows in place that use all of the core documents (often with different names), while others may use only one or two, and very informally. The Core Documents were defined with that flexibility in mind. Another important feature, which was built into ADAPT, is the ability to capture the relationships among core documents, enabling comprehensive traceability and the documentation of decisions.

Make SPADE, PAIL and ADAPT Work for You and Get Involved!

- The Core Documents continue to be refined: the SPADE, PAIL and ADAPT teams will make adjustments and additions as new field operations and processes come into scope. If you're an expert in the business or agronomy aspects of what we're working on, your user stories would help enrich the project deliverables and make them better for the entire industry. Likewise, technical contributions are welcome! Contact Jim Wilson (Standards Director) and discuss how to join the effort!

- Study the documents for ADAPT's open-source object model and format conversion toolkit to see how it could help you. Start at **www.adaptframework.org.**

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