A significant outcome of AgGateway’s SPADE Project is a set of Core Documents, which standardize how to organize critical information being exchanged in managing field operations. Modern farming requires increasingly detailed records of operations such as planting, spraying, fertilization and harvest. The need for detail is increasing 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., ISO 22006), 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 the representation of data requirements 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"

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**Figure 1: AgGateway’s Core Documents and the relationships among them.**
Growers exchange documents with multiple partners (Examples in figure 2).

**Example 1:** The grower sends the advisor a 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 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 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 AgGateway Core Documents for Field Operations were defined with that flexibility in mind which carries through to the ADAPT Framework. These differences in management approaches necessitated the ability to capture the relationships among Core Documents within ADAPT, enabling comprehensive traceability and the documentation of decisions.

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

- 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](http://www.adaptframework.org).
- The SPADE Core Documents are living documents that continue to be refined; the SPADE, PAIL and ADAPT teams will be adding to them as new field operations and additional 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 SPADE/PAIL deliverables better for the entire industry. Likewise, technical contributions are welcome! Contact Jim Wilson (SPADE Project Mgr.) and discuss how to join the effort!