

Application of the Precision Ag Irrigation Language (PAIL)

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Over the past six years, a team of industry professionals and Extension researchers has worked in the context of AgGateway's PAIL project to draft a standard that supports data exchange among irrigation technologies. This draft is currently in the process to become an ASABE national standard.

The North Plains Groundwater Conservation District (NPGCD) in the Texas Panhandle has funded development of an integrated irrigation management system. The motivation for this system stems from the disparate sources of information needed for precise irrigation management. The Texas Panhandle region has critical water shortages because of declining aquifer levels. Producers in the region have a reputation as progressive adopters of new technology when those technologies provide real benefit to their operations. Irrigation management technologies maximize their benefit when used in concert with tools that focus on specific, well-defined elements of the water management process. Thusly, technology integration becomes an important part of a management system.

The system to be implemented is "integrated" in that it combines information from multiple sources into a single web application. The PAIL standard is the key enabling element of this integrated system: each of the data sources (weather stations, soil moisture sensors, and pivot control system) sends or receives information in the PAIL format.

The development of NPGCD's integrated system began in December of 2016 and is undergoing preliminary testing during the 2017 irrigation season. In this paper, we present an overview of the PAIL standard and basic examples of PAIL's core documents from each of the data sources used in the NPGCD project. Additionally, we present initial results from the development and application of the NPGCD's system and observations relating to how implementing the PAIL standard reduced cost and complexity for the system's software.

Keywords: PAIL, irrigation management, data exchange, standards, systems integration

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