



# AgGateway Portfolio Overview

Q3 2023 PMC Overview

# PMC Groups



Found within [Portfolio Management Center](#)



Advisory Groups

Strategic in nature, providing longer term guidance in a subject area



Working Groups

Shorter in duration, delivering defined digital resources



Member organizations affirmatively join a Working Groups via [Join Form](#)

Company participation must be confirmed by AgGateway primary contact per IP policy

# Agrisemantics Advisory Group

## Purpose and Areas of Oversight:

- Ensure that as data is shared among systems the meaning is also shared enabling better interoperability
- Glossary of Agricultural Terms
- Controlled Vocabularies & Units of Measure
- Common model to express geo-political context

## Related Working Groups and Digital Resources:

- WG04, WG11 Ag Lab Data (Modus)
- WG00 Agrisemantic Infrastructure PoC
- Controlled vocabularies for an ADAPT
- Shipped Item Instance Controlled Vocabularies
- Dataset Metadata Controlled Vocabularies



**Chair: Andres Ferreyra (Syngenta)**

**Staff Liaison: Jim Wilson**

## Member Organizations:

Agrimetrics
CDMS, Inc.
Enterprise Ag Strategies LLC
FarmBelt North, Inc.
Lexagri SAS
ListenField
Syngenta Crop Protection

# Data Linking Advisory Group

Field -> Combine



Combine -> Cart



Cart -> Semi



Semi -> Elevator



Truck -> Bin



## Purpose

- Provide scope, direction, and prioritization of data linking related topics in coordination with other organizations and AgGateway efforts
- Allows awareness and linkage of related agricultural data
- Helps farmers who work with more than one data repository
- Enables farmers to share their data to gain insights
- Assist in product recalls, traceability, and consumer confidence

## Related Working Groups and Digital Resources:

- Infield Product ID / Shipped Item Instance
- Dataset Metadata
- WG13 Closed Loop Spray
- WG14 Potato Provenance
- WG20 Traceability API

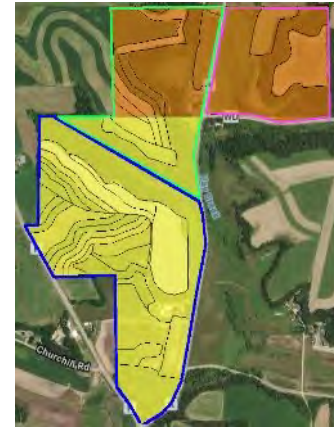
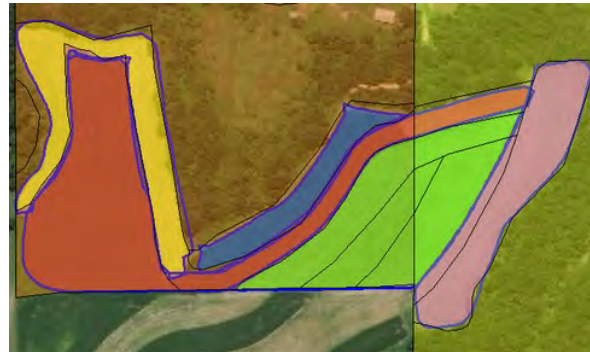
**Co-Chair: Joe Tevis (Vis4Ag)**  
**Co-Chair: Scott Nieman (Land O'Lakes)**

**Staff Liaison: Ben Craker**

## Member Organizations:

Agricultural Industry Electronics Foundation
Bushel
Combyne Ag
DTN
National Institute of Standards and Technology
Vis Consulting
Winfield United

# Field Boundaries Advisory Group



## Purpose

- An unambiguous, core definition of a field and field boundary that can serve as the basis for different business use cases, can reduce effort and confusion across the value chain
- Preserving the meaning of that core definition, while adding relative meaning for different use cases
- Enable farmers to share their field data without having to learn a multitude of terms and meanings
- Assist in traceability efforts

## Related Working Groups and Digital Resources:

- **WG17 Field Boundaries Use Cases and Definitions**
- **WG13 Closed Loop Spray**
- **WG14 Potato Provenance**
- **WGxx GNSS Accuracy**

**Chair: TBD**

**Staff Liaison: Jeremy Wilson**

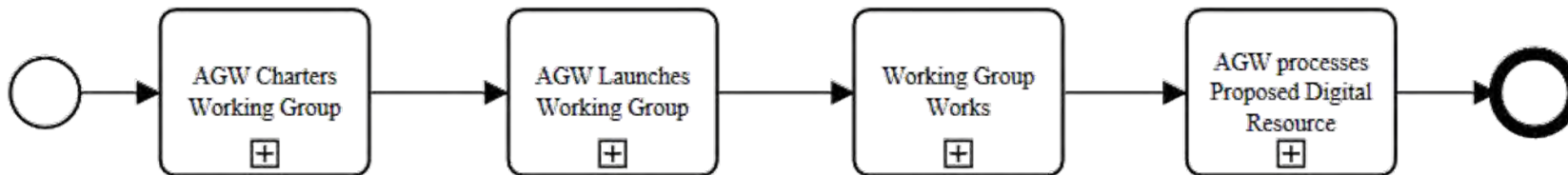
## Member Organizations:

Bayer Crop Science LP
Ceres Solutions
Enterprise Ag Strategies, LLC
Growmark, Inc.
Nutrien
Proagrica
Raven Industries
Software Solutions Integrated, LLC
Traction
Winfield United

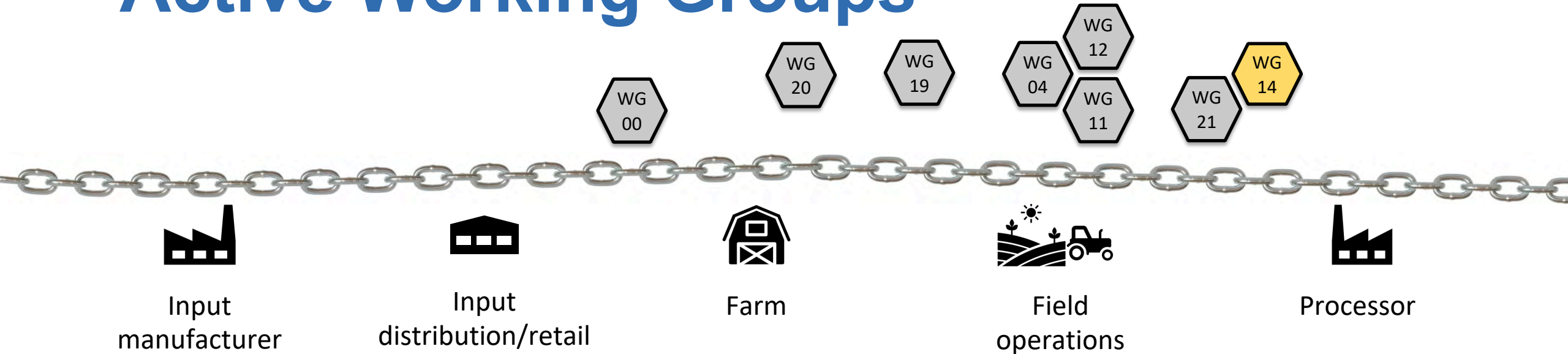
# Current Working Groups

## AgGateway Digital Resource Development Process

AgGateway Produces a New Digital Resource (top-level process)



# Active Working Groups



- WG00 Agrisemantic Infrastructure PoC
- WG04 Ag Lab Data (Modus)
- WG11 LATAM Soil Data
- WG12 PAIL

- WG14 Potato Provenance (on hold)
- WG19 ADAPT Serialization
- WG20 Traceability API
- WG21 European Reporting ADAPT Mapping

# WG00 Agrisemantics

## Business Value:

Develop and implement infrastructure to provide the industry with controlled vocabularies or variable-type registries seeking to enable the communication and preservation of the meaning of digital agriculture data as it is exchanged between different actors in agriculture.

## Deliverables:

- Proof of concept semantic type registry for the ag industry
- Crop list objects and data able to map to other crop lists within the PoC Infrastructure
- Recommended policies and procedures to manage semantic resources administered by AgGateway

**Status:** Refining crop model, recommending policy & procedures

**Planned Completion:** Crop List utilizing PoC infrastructure at MYM June 2023

**Current Estimate:** Policy & Procedure recommendation expected at Aug 10 S&G meeting, Crop model slower than planned, finalized with PoC infrastructure for annual meeting

**WG04 Co-Chair: Andres Ferreyra (Syngenta)**  
**WG04 Co-Chair: Samantha Murray (Proagrica)**  
**Staff Liaison: Ben Craker**

## Member Organizations:

Agrimetrics
CDMS, Inc.
Combyne Ag
Enterprise Ag Strategies, LLC
FarmBelt North, Inc.
John Deere
Lexagri SAS
ListenField
LNRS Data Services Inc
Proagrica
Purdue University OATS Center
Syngenta Crop Protection, LLC
Vis Consulting Inc.



# WG04, WG11 Ag Lab Data (Modus 2.0)

## Business Value:

Automated test data management to improve labs' efficiency and enable increased sample throughput.

**Scope:** Soil initially, Water, Plant Tissue, Manure to follow

## Deliverables:

- Updated Modus Tables
- Observation codes
- JSON and XML Schema

**Status:** v2 soil list finalized, started reviewing manure list, working on v2 schema. Will move to water and botanical lists next.

**Planned Completion:** v2 soil list & v2 schema Q3 2023

**Current Estimate:** v2 schema Sept 2023

**WG04 Chair:** Open

**WG11 Chair:** Ronaldo Pereira de Oliveira (Embrapa)

**Staff Liaison:** Ben Craker

## Member Organizations:

AsBraAP

Centro de Inovação no Agronegócio (CIA)

Embrapa Informatica

Proagrica

Venturus

A&L Great Lakes Laboratorie

Aaron Ault

AGCO Corporation

Agriculture Laboratory Testing

Embrapa Informatica

Jason Ellsworth

Land O'Lakes

Nancy Bohl Bormann

National Institute of Standard

OpenTEAM

Simplot Grower Solutions

Soil and Plant Analysis Coun

Soil Science Society of Ameri

Syngenta Crop Protection, LL

TELUS Agriculture

Varda AG

Winfield United

# WG12 PAIL

## Business Value:

Improve agricultural irrigation by developing a common set of data standards and formats to convert data for use in irrigation data analysis and precision prescription programs. Effort broken down into three Parts:

1. [Core Concepts](#)
2. [Observations & Measurements](#)
3. [Irrigation System Operations](#)

**Status:** Parts 1, 2, and 3 promoted to Committee Draft status in ISO/TC 23/SC 19, currently reviewing and incorporating committee comments

**Chair: Charles Hillyer (Fresno St.)**  
**Staff Liaison: Ben Craker**

## Member Organizations:

Charles Hillyer
ListenField
Syngenta Crop Protection, LLC

# WG19 ADAPT Serialization

## Business Value:

With the widespread adoption of the ADAPT Framework and the ongoing ADAPT Standard work many stakeholders have expressed a need for a common method for serializing data. Once the standardized schema for the data model is complete a need will still exist to better facilitate the exchange of data between parties. This working group will develop a common approach to serializing data conformant to the ADAPT Standard.

## Deliverables:

- Standardized method for serializing data conforming to the ADAPT Standard
- Experiment/proof of concept to determine best serialization method based on requirements
- Tools to enable easy human readability of data if a more binary (i.e. protobuf) centric approach is taken
- Controlled vocabularies managed by Agrisemantics group within AgGateway where possible

**Status:** Documenting requirements for JSON schema to ensure tool generates needed format. Reviewing GEO Parquet as likely solution for high density data

**Planned Completion:** MYM June 2023

**Current Estimate:** Behind Schedule, slow progress due to limited development resource time available to benchmark proposed solutions

**Co-Chair: Chris Ruttencutter (Corteva)**

**Co-Chair: Stuart Rhea (Syngenta)**

**Co-Chair: Zac Oler (Corteva)**

**Staff Liaison: Ben Craker**

## Member Organizations:

CNH Industrial
Corteva Agriscience LLC
DKE Data
FarmBelt North, Inc.
Google LLC DBA Mineral
John Deere
M2M Craft Co Ltd
Syngenta Crop Protection, LLC
Traction

# WG20 Traceability API

## Business Value:

Throughout the industry there are a variety of perceptions and needs of data through the value chain. The team will review and model two key elements and their relationship, the Traceable Resource Unit (TRU), and Critical Tracking Event (CTE). This will define the interface between partners for traceability to support general traceability initiatives like sustainability of FSMA (Food Safety Modernization Act) building off previous work in projects like CART (Commodity Automation for Rail and Truck) and Scale Ticket.

## Deliverables:

- Analysis of prior work and proof of concept(s)
- Creation of core components in Score that represent the superset of data elements needed across multiple scenarios
- Profile these components in Score needed to support these industry use cases
- Create the RESTful behavior including resource path definitions and verbs needed and path/query parameters

**Status:** Reviewing container states and implications for API

**Planned Completion:** MYM June 2023

**Current Estimate:** Slightly behind schedule, should complete Sept 2023 prior to annual meeting

**Co-Chair: Scott Nieman (Land O'Lakes)**

**Co-Chair: Joe Tevis (Vis 4 Ag)**

**Staff Liaison: Ben Craker**

## Member Organizations:

AGCO Corporation
CNH Industrial
Combyne Ag
John Deere
Mtech Digital Solutions Oy
National Institute of Standards and Techno
StrataBuilt
Vis Consulting Inc.
Winfield United

# WG21 European Reporting Data ADAPT Mapping

## Business Value:

A variety of e-messages are used to transfer data and report farming practices for regulatory purposes across Europe. New regulations are on the horizon that would require additional reporting by farmers making the need to exchange this data much more common and important. This working group will build on the work done by the Closed Loop Spray group by mapping the identified models commonly used in the Europe against the ADAPT Standard data model to ensure it supports the use cases identified by the working group.

## Deliverables:

- Recommendation for changes, additions to ADAPT committee based on gap check of specific datasets as listed above, to enhance the ADAPT Standard model to support data reporting use cases.
- Mappings between in scope datasets and ADAPT.
- A first example of an ADAPT standard based JSON message to report the use of crop protection products at farm level.
- Examples of serialized data in the different models to aid in understanding by implementers
- Recommendation on need for plugins to convert to various formats for subsequent WG

**Status:** Conducted initial review of EDI-Crop, moving to next model

**Planned Completion:** Limited resources and time slowing progress, competes with ADAPT Standard effort for resource

**Current Estimate:** Should have a report out for Annual meeting but will not have full mapping to any of the standards in scope, likely will require a follow up effort

**Chair: Conny Graumans  
(AgGateway)**

**Staff Liaison: Ben Craker**

**Member Organizations:**

AGCO Corporation
Agdatahub
Agro EDI Europe
FarmBelt North, Inc.
Proagrica
SMAG

Work being done outside of current Working Groups

# Other Activities

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# ADAPT

## AgGateway

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[AgGatewayADAPTFramework](#) by: [AgGateway](#) [strhea](#) [knelson-farmbeltnorth](#)

↓ 207,722 total downloads ⌚ last updated 2 months ago 📦 Latest version: 3.0.2

🔗 [aggateway](#) [adapt](#) [agriculture](#)

AgGateway ADAPT framework



[AgGatewayADMPlugin](#) by: [AgGateway](#) [strhea](#) [knelson-farmbeltnorth](#)

↓ 81,574 total downloads ⌚ last updated 5 months ago 📦 Latest version: 3.0.1

🔗 [aggateway](#) [adapt](#) [adm](#) [agriculture](#)

AgGateway ADM Plugin for the ADAPT framework



[AgGatewayISOPlugin](#) by: [AgGateway](#) [strhea](#) [knelson-farmbeltnorth](#)

↓ 59,228 total downloads ⌚ last updated 2 months ago 📦 Latest version: 5.1.0

🔗 [agriculture](#) [aggateway](#) [adapt](#) [isoxml](#) [isoxmlv4](#) [11783](#) [11783-10](#)

AgGateway ISO v4 Plugin for the ADAPT framework

**Technical Co-Chair: Stuart Rhea**  
**Technical Co-Chair: Kelly Nelson**  
**Business Chair: Dan Danford**  
**Staff Liaison: Jim Wilson**

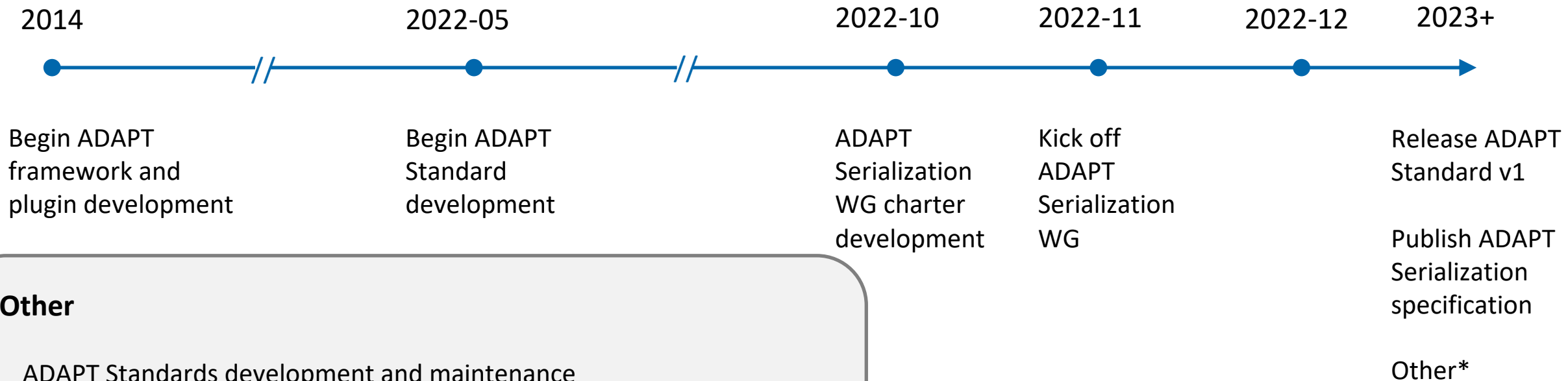
3

Packages

376,150

Total downloads of  
packages

# ADAPT past, present, and future



## \*Other

- ADAPT Standards development and maintenance
- ADAPT Framework and plugin development and maintenance
- Explore seamless interoperability among ADAPT Data Model, ADAPT Plugins, and ADAPT Standard
- Consider process for ADAPT Standard → ISO Standard



# AgGateway's approach to developing the ADAPT Standard

- Completely open activity. AgGateway membership is not required.
- Using a GitHub project for issue management.
- Using a cutting-edge tool for model development: Score
  - Developed by AgGateway member NIST and AgGateway partner OAGi
  - Enables creating ISO 15000-5-compliant information models
  - Enables creating ISO 15000-5-compliant message profiles in defined business contexts
  - Enables model expression in multiple syntaxes (currently OAS v3, JSON Schema, and XML Schema; future XMI, RDF, OWL as required)
  - Browser-based and multi-user
  - Supports versioning, model element state management

# ADAPT Resources

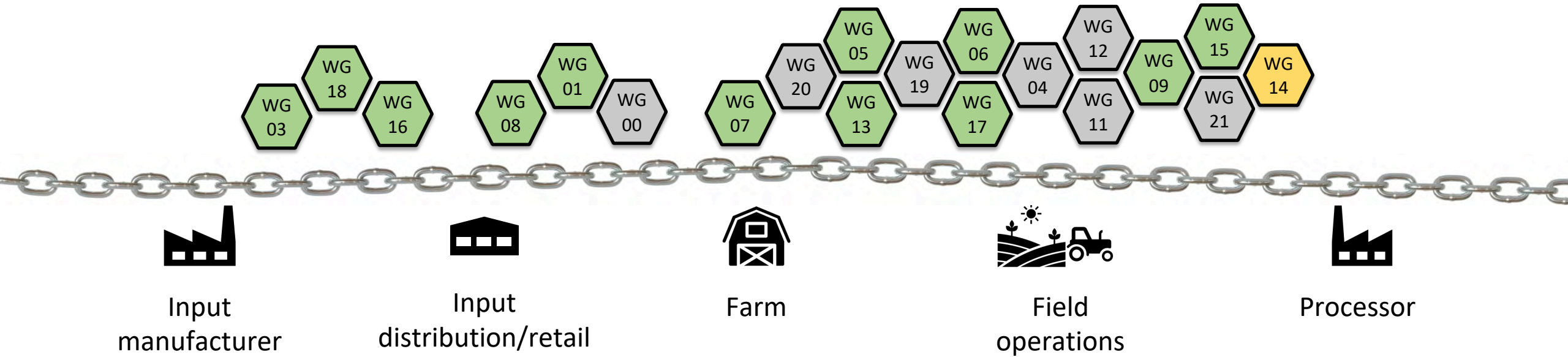
Resource	Location
ADAPT Homepage	<a href="https://AdaptFramework.org">https://AdaptFramework.org</a>
ADAPT Framework Repo	<a href="https://github.com/ADAPT/ADAPT">https://github.com/ADAPT/ADAPT</a>
ADAPT ISO Plugin Repo	<a href="https://github.com/ADAPT/ISOv4Plugin">https://github.com/ADAPT/ISOv4Plugin</a>
ADM (ADAPT Data Model) Plugin Repo	<a href="https://github.com/ADAPT/ADMPlugin">https://github.com/ADAPT/ADMPlugin</a>
ADAPT Visualizer Repo	<a href="https://github.com/ADAPT/ADAPT-Visualizer">https://github.com/ADAPT/ADAPT-Visualizer</a>
ADAPT Standard Issue Board	<a href="https://github.com/ADAPT/Standard/projects/1">https://github.com/ADAPT/Standard/projects/1</a>
ADAPT NuGet Packages	<a href="https://www.nuget.org/profiles/AgGateway">https://www.nuget.org/profiles/AgGateway</a>

# Completed Work

Completed digital resources delivered by previous Working Groups

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# Active & Completed Working Groups



- WG01 In-Field Product ID Seeding Pilot
- WG03 Product Catalog
- WG05 Mix Ticket (dispensing Work Order/Record)
- WG06 Farm Inputs: Reference Data
- WG07 Farm Inputs: Work Order, Work Record
- WG08 In-Field Product ID ADAPT Plugin

- WG09 Linked Data (DatasetMetadata)
- WG13 Closed Loop Spray
- WG15 Scale Ticket
- WG16 Crop Protection Product Guidelines
- WG17 Field Boundaries: Terms & Definitions
- WG18 Crop Nutrition 3<sup>rd</sup> Party Product Management

# Where to find Completed WG Digital

WG/Resource	Location
WG01 In-Field Product ID Seeding Pilot(ShippedItemInstance)	Private GitHub Repo (AgGateway members only) <a href="https://github.com/AgGateway/In-FieldProductID">https://github.com/AgGateway/In-FieldProductID</a>
WG03 Product Catalog	Private GitHub Repo (AgGateway members only) <a href="https://github.com/AgGateway/ProductCatalog">https://github.com/AgGateway/ProductCatalog</a>
WG05 Mix Ticket	Public GitHub Repo <a href="https://github.com/AgGateway/Dispensing">https://github.com/AgGateway/Dispensing</a>
WG06 Farm Inputs: Reference Data	AgGateway Confluence (Wiki) <a href="https://aggateway.atlassian.net//cp/zPjh3HqN">https://aggateway.atlassian.net//cp/zPjh3HqN</a>
WG07 Farm Inputs: Work Order, Work Record	AgGateway Confluence (Wiki) <a href="https://aggateway.atlassian.net//cp/oGiWwmD5">https://aggateway.atlassian.net//cp/oGiWwmD5</a>
WG08 In-Field Product ID ADAPT Plugin	Public GitHub Repo <a href="https://github.com/ADAPT/ShippedItemInstancePlugin">https://github.com/ADAPT/ShippedItemInstancePlugin</a>
WG09 Linked Data (DatasetMetadata)	Private GitHub Repo (AgGateway members only) <a href="https://github.com/AgGateway/DatasetMetadata">https://github.com/AgGateway/DatasetMetadata</a>
WG13 Closed Loop Spray	AgGateway Confluence (Wiki) Final review & posting in process

Use this [form to request access](#) to private repo.

# Where to find Completed WG Digital

WG/Resource	Location
WG15 Scale Ticket	Private GitHub Repo (AgGateway members only) <a href="https://github.com/AgGateway/ScaleTicket">https://github.com/AgGateway/ScaleTicket</a>
WG16 Crop Protection Product Guidelines	Wiki pages, publication in process
WG17 Field Boundaries: Terms and Definitions	Being added to AgGlossary, ADAPT Standard <a href="https://github.com/ADAPT/Standard/issues/97">https://github.com/ADAPT/Standard/issues/97</a>
WG18 Crop Nutrition 3 <sup>rd</sup> Party Product Management	XSLM file, publication in process

Use this [form to request access](#) to private repo.

# Future Working Groups

Planned and potential future working group identified by member's pain points or follow on work from current/past Working Groups

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# Working groups starting up this quarter

- Weather and forecast data standardized API
  - Standardized interface for sharing weather and forecast data
- Settlement sheet
  - Building off Scale Ticket effort to define a standardized digital settlement sheet
- Booking and pre-pay reporting message
  - Define message to report total bookings and pre-pay at retail location(s)
- Field Boundaries: GNSS Accuracy
  - Define standard accuracy metrics to help a recipient determine how a field boundary may be used



# Other Potential Future WG's

- Agrisemantics: Common controlled vocabularies
  - Find/create common controlled vocabularies identified common between multiple WG's
- Agrisemantics: Budgeting & infrastructure
  - Evaluations of costs/benefits of various semantic resource management tool implementations
- Data permissioning and stewardship
  - Update the data privacy whitepaper with the latest views pertaining to data access permissioning and stewardship
- ASN (Advanced Ship Notice): Farmer to elevator/processor
  - Standardized message for an advanced ship notice from a farm to elevator/processor
- Scale head to ERP interface
  - Standardized interface between scale heads and ERP systems
- ShippedItemInstance gap check for crop protection, crop nutrition
  - Review ShippedItemInstance for support of crop nutrition and/or crop protection products
- DatasetMetadata controlled vocabularies
  - Identify or create controlled vocabularies needed by DatasetMetadata
- Other ideas? Contact [ben.craker@aggateway.org](mailto:ben.craker@aggateway.org)