AgGateway Portfolio Overview

Q1 2024 PMC Overview

PMC Groups

Found within Portfolio Management Center

Portfolio Team — Strategic in nature, providing longer term guidance across the portfolio

**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
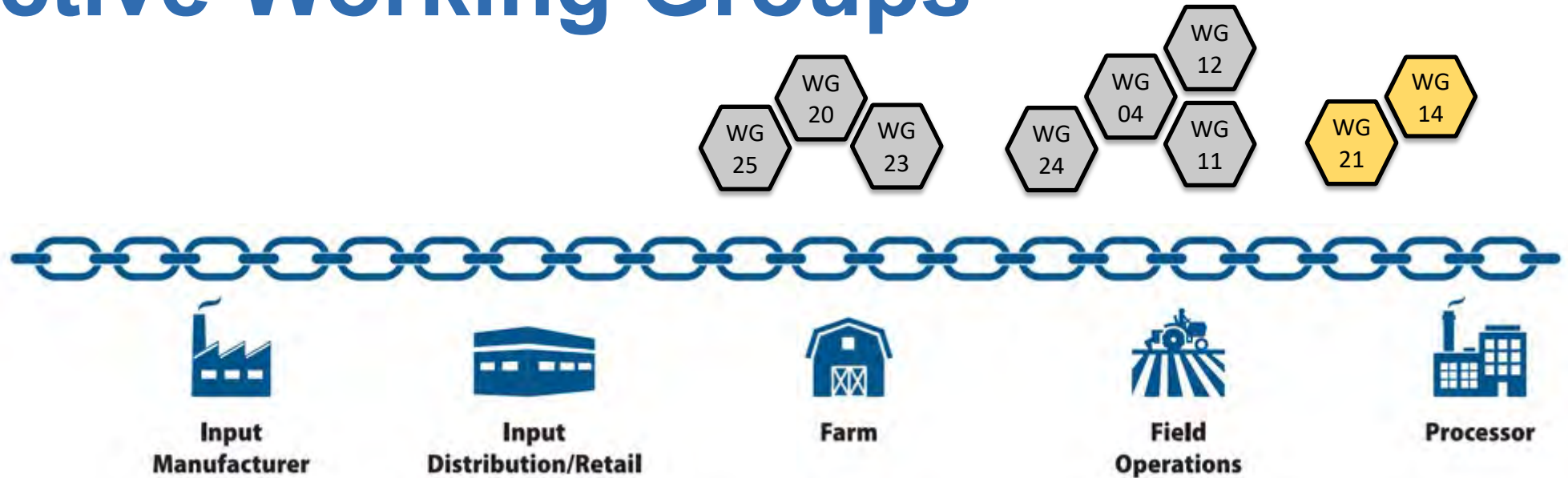
Current Working Groups

AgGateway Digital Resource Development Process

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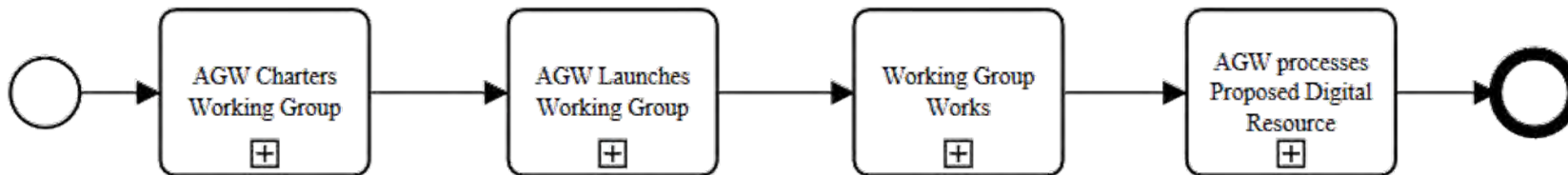
Active Working Groups

- WG04 Ag Lab Data (Modus)
- WG11 LATAM Soil Data
- WG12 PAIL
- WG14 Potato Provenance (on Hold)
- WG20 Traceability API

- WG21 European Reporting ADAPT Mapping (on Hold)
- WG23 Weather Data API
- WG24 Field Boundary: GNSS Accuracy
- WG25 Dairy Feed Data Standards Assessment

WG04, WG11 Ag Lab Data (Modus 2.0)

WG04 Chair: Open
WG11 Chair: Ronaldo Pereira de Oliveira (Embrapa)
Staff Liaison: Ben Craker

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 complete, working on v2 schema. Subsequent WG's will address Manure, Water, etc. methods

Planned Completion: v2 soil list & v2 schema late Q1 2024

Current Estimate: v2 schema Feb 2023

Member Organizations:

A&L Great Lakes Laboratories, Inc.	AsBraAP
Aaron Ault	Centro de Inovação no Agrononegócio (CIAG)
AGCO Corporation	
Agriculture Laboratory Testing Association	Embrapa Informatica
American Society of Agronomy	Nutrien
Embrapa Informatica	Proagrica
Jason Ellsworth	Venturus
Land O'Lakes	
Nancy Bohl Bormann	
National Institute of Standards and Technology	
OpenTEAM	
Purdue University OATS Center	
Simplot Grower Solutions	
Software Solutions Integrated, LLC	
Soil and Plant Analysis Council	
Soil Science Society of America	
SoilView LLC	
Syngenta Crop Protection, LLC	
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 Committee Draft status in ISO/TC 23/SC 19, currently reviewing and incorporating committee comments by Feb 2024

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

Member Organizations:
- **Leaders of ISO working group focused on 7673 standard**

Charles Hillyer
ListenField
Purdue University OATS Center
Syngenta Crop Protection, LLC

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: Finalizing v1 MVP API specification

Planned Completion: MYM June 2023

Current Estimate: March 2024

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 Technology
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

Planned Completion: On hold until ADAPT Standard v1 release

Current Estimate: Plan to restart group after ADAPT release and team has more available bandwidth, likely in Q2 2024

Chair: Conny Graumans (AgGateway)

Staff Liaison: Ben Craker

Member Organizations:

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

WG23 Weather and Forecast Data API

Business Value:

Within the agricultural industry there is a need to share weather data and other earth observation information. This data is available and consumed by a multitude of companies using proprietary, one-off API connections around the world. This process consumes substantial development resources on both sides to develop and maintain company specific integrations. Agreeing to a standardized set of API's for sharing this information within the agricultural industry will make connections easier to maintain lowering the costs required to connect to new data sources. This will free companies to focus more on developing their services and product offerings instead of on getting bogged down with data integration.

Deliverables:

- Document use cases, process diagrams and list of data elements and definitions
- Ensure alignment with PAIL (ISO 7673)
- Focus on query path pattern required by use case (e.g. point, box, polygon, zip code)
- Both for historical lookup and future prediction
- API Specification including GET, POST, PATCH calls needed for each use case

Status: Initial use cases reviewed, identifying existing resources (weather variables and definitions) to leverage for API definition

Planned Completion: April 2024

Current Estimate: On schedule

Chair: Open

Staff Liaison: Ben Craker

Member Organizations:

AGCO Corporation
Charles Hillyer
Co-Alliance Cooperative Inc
Corteva Agriscience LLC
DKE Data
EMILI Canada
Purdue University OATS Center
Syngenta Crop Protection, LLC
Topcon Agriculture

WG24 Field Boundary: GNSS Accuracy

Business Value:

Within the context of crop production around the world the concept of the field and its boundary are the fundamental building blocks for all field operations. The boundary is used to define the limits of where inputs should be geospatially applied by modern agricultural equipment. The field boundary is also used to partition data in farm management information systems (FMIS) whether for clipping imagery to the confines of the field or allocating as-applied and yield data to remove erroneous points. This necessity to share consistent and accurate boundaries between systems is increasing in importance in recent years as a systems approach to interoperability with broader adoption of technologies such as section control, individual row on/off, machine coordination and a potential diversity of autonomous vehicles.

Deliverables:

- Implementation guideline for GNSS receiver manufacturers, in-cab display manufacturers, and other systems used to define boundaries regarding what data needs to be available and logged about a field boundary
- Required and optional metadata elements and definitions to ensure recipient of a boundary can accurately use and understand the boundary
- Controlled vocabularies required to convey information about boundary collection method, GNSS accuracy, and other related aspects of the boundary
- Recommendations to ADAPT Standard for changes and additions to ensure boundaries are accurately transferred from system to system via the ADAPT mode
- IPotential recommendations to other organization(s) if enhancements are required in related/enabling standards e.g. NMEA
- Potential revision to Field Boundary: Definitions and Use Case boundary classifications/types

Status: Initial list of questions prepared and being reviewed by industry GNSS experts

Planned Completion: April 2024

Current Estimate: On Schedule

Chair: Zach Leiser (Growmark)

Staff Liaison: Ben Craker

Member Organizations:

AGCO Corporation
Agdatahub
AgGateway
Agro EDI Europe
CNH Industrial
EverAg
Growmark, Inc.
John Deere
Nutrien
Proagrica
Seirrowon Labs Inc
Software Solutions Integrated, LLC
SoilSerdem
Syngenta Crop Protection, LLC

WG25 Dairy Feeding Data Standards Assessment

Business Value:

Animal agriculture is experiencing a shift driven by consumer demands to understand the green house gas (GHG) impacts of livestock production as well as the commercialization and adoption of new technologies. These forces and others are driving a need for systems and processes to be connected digitally. The cost of one-off connections between systems is expensive and inefficient, standardized interfaces can be employed to help data move more easily reducing maintenance costs and increasing the efficiencies throughout the value chain. There are many aspects to consider and a variety of use cases regarding data movement, having a clear understanding of who needs what data, and when is an important first step. This information can also be used to determine what existing standards are applicable or implemented and what gaps remain, in addition to what areas are "secret sauce" and will remain proprietary. This working group will deliver these core building blocks that will be used to identify and prioritize subsequent efforts and collaborations.

Deliverables:

- High level process diagram
    - Feed Provenance → Procurement → Ration development → mixing → feeding → eating/consumption
- Documented use cases
    - Data coming to balancing software, ingredients, lab test values
    - Ration information sent from balancing software to mixer
    - Documenting the mixing process (Work Order, Work Record)
    - Quantifying refusals to input into balancing systems
    - Capturing production information to input into balancing system(s)
- Key data elements
- Identify any needed controlled vocabularies and if sources exists

Status: Call to participation issued, following up with potential new members

Planned Completion: July 2024

Current Estimate: Planned to kick off in March 2024

Chair: Dr. Kristan Reed

Staff Liaison: Ben Craker

Member Organizations:

Cornell University
EMILI Canada
Ever.Ag
FarmBelt North, Inc.
Mtech Digital Solution Oy
National Institute of Standards and Technology
Protekta
Seirrowon Labs Inc
Topcon Agriculture
Vita Plus Corporation

Work being done outside of current Working Groups

Other Activities

ADAPT

AgGateway

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
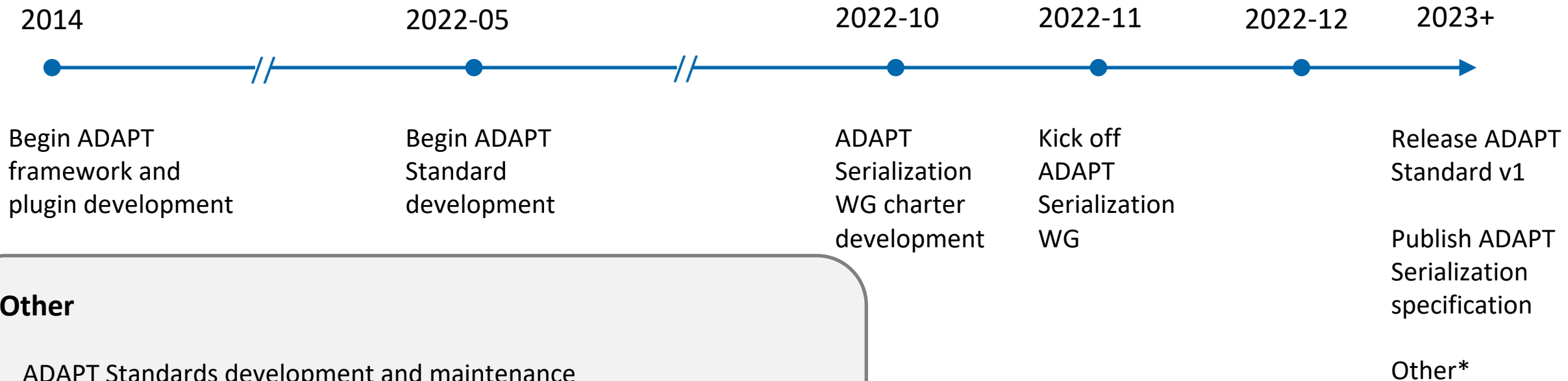**Staff Liaison: Jim Wilson**

3
Packages

468,735
Total downloads of packages

As of: 19 FEB 2024

ADAPT past, present, and future

2014	2022-05	2022-10	2022-11	2022-12	2023+
Begin ADAPT framework and plugin development	Begin ADAPT Standard development	ADAPT Serialization WG charter development	Kick off ADAPT Serialization WG		Release ADAPT Standard v1 Publish ADAPT Serialization specification Other*

*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	https://AdaptFramework.org
ADAPT Standard Homepage	https://AdaptStandard.org
ADAPT Framework Repo	https://github.com/ADAPT/ADAPT
ADAPT ISO Plugin Repo	https://github.com/ADAPT/ISOv4Plugin
ADM (ADAPT Data Model) Plugin Repo	https://github.com/ADAPT/ADMPlugin
ADAPT Visualizer Repo	https://github.com/ADAPT/ADAPT-Visualizer
ADAPT Standard Issue Board	https://github.com/ADAPT/Standard/projects/1
ADAPT NuGet Packages	https://www.nuget.org/profiles/AgGateway

Completed Work

Completed digital resources delivered by previous Working Groups

Recently Completed Working Groups
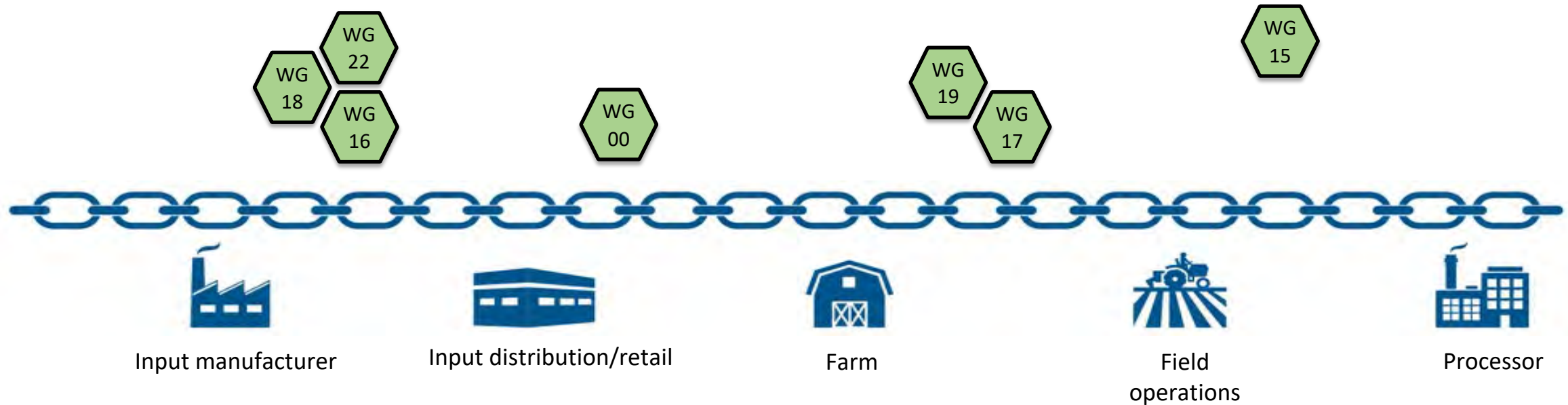
- WG00 Agrisemantics PoC
- WG15 Scale Ticket
- WG16 Crop Protection Product Guidelines
- WG17 Field Boundaries: Terms & Definitions

- WG18 Crop Nutrition 3rd Party Product Management
- WG19 ADAPT Serialization
- WG22 Booking & Prepay Reporting

Where to find Completed WG Digital

WG/Resource	Location
WG01 In-Field Product ID Seeding Pilot(ShippedItemInstance)	Private GitHub Repo (AgGateway members only) https://github.com/AgGateway/In-FieldProductID
WG03 Product Catalog	Private GitHub Repo (AgGateway members only) https://github.com/AgGateway/ProductCatalog
WG04 Ag Lab Data (Modus) WG11 LATAM Soil Testing Data	Public GitHub repo https://ModusStandard.org, https://github.com/AgGateway/Modus
WG05 Mix Ticket	Public GitHub Repo https://github.com/AgGateway/Dispensing
WG06 Farm Inputs: Reference Data	AgGateway Confluence (Wiki) https://aggateway.atlassian.net/l/cp/zPjh3HqN
WG07 Farm Inputs: Work Order, Work Record	AgGateway Confluence (Wiki) https://aggateway.atlassian.net/l/cp/oGiWwmD5
WG08 In-Field Product ID ADAPT Plugin	Public GitHub Repo https://github.com/ADAPT/ShippedItemInstancePlugin
WG09 Linked Data (DatasetMetadata)	Private GitHub Repo (AgGateway members only) https://github.com/AgGateway/DatasetMetadata

Use this form to request access to private(Members only) GitHub repo.

Where to find Completed WG Digital

WG/Resource	Location
WG13 Closed Loop Spray	AgGateway Confluence (Wiki) Final review & posting in process
WG15 Scale Ticket	Private GitHub Repo (AgGateway members only) https://github.com/AgGateway/ScaleTicket
WG16 Crop Protection Product Guidelines	Wiki pages, publication in process
WG17 Field Boundaries: Terms and Definitions	Being added to AgGlossary, ADAPT Standard https://github.com/ADAPT/Standard/issues/97
WG18 Crop Nutrition 3rd Party Product Management	XSLM file, publication in process
WG19 ADAPT Serialization	Being implemented within the ADAPT Standard https://ADAPTStandard.org, https://github.com/ADAPT/Standard
WG22 Booking & Prepay Reporting	Ag eStadnards to be updated https://www.aggateway.org/GetConnected/Messaging.aspx

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

Working groups starting up soon

- Contract
  - Building off Scale Ticket effort to align on digital contracts
  - Potential to harmonize with Crop Nutrition, Crop Protection Contract Message
- Data Stewardship
  - Review and potentially update AgGateway Data Privacy White Paper
- Agrisemantics: Budgeting & infrastructure
  - Evaluations of costs/benefits of various semantic resource management tool implementations
- Entity Guidelines
  - Guidelines for managing entity identifiers in AGIIS, removing duplicates

Other Potential Future WG's

- Agrisemantics: Common controlled vocabularies
  - Find/create common controlled vocabularies identified common between multiple WG's

- Data Quality
  - Investigate a standard regarding data quality metrics so a data recipient can make an informed decision about what data they have received is suitable to be used for

- 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**