**OUR AIM:** Foster an open source culture in order to:

- Democratize innovation
- Reduce barriers to building upon previous efforts
- Build bigger markets
- Streamline talent discovery and attraction

**DRIVERS OF OUR TECH STACK**

<table>
<thead>
<tr>
<th>Complexities at Scale</th>
<th>(Graph-structured, OADA-delivered, Geohash-indexed, Time-indexed data)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Really Fast Event Queues</td>
<td>Apache Kafka</td>
</tr>
<tr>
<td>Message Delivery: at-most-once, at-least-once, exactly-once</td>
<td>Idempotency for Parallelization</td>
</tr>
<tr>
<td>Discoverable Indexing and Efficient Watching</td>
<td>OADA Graphs</td>
</tr>
<tr>
<td>Multi-Master Consensus</td>
<td>Convergent Replicated Data Types (CRDT’s)</td>
</tr>
<tr>
<td>Service discovery, deployment, monitoring, recovery, autoscaling</td>
<td>Docker and Kubernetes</td>
</tr>
<tr>
<td>Authentication and Authorization</td>
<td>OADA!</td>
</tr>
<tr>
<td>Many Conflicting Data Models</td>
<td>OADA + Open Source Transform Libraries</td>
</tr>
</tbody>
</table>

**SAMPLES OF ONGOING PROJECTS:**

- [www.openag.io](http://www.openag.io)
The Open Ag Data Alliance led to an interoperable API specification developed through an open software effort with secure data exchange protocols.
- [www.trellisframework.org](http://www.trellisframework.org)
The Trellis framework for food safety and other audits helps companies get more ROI from audit data by having an authenticated electronic audit exchange enabling mining and security.
- [www.openatk.com](http://www.openatk.com)
The open Ag Toolkit is a suite of apps for managing agriculture that work together using the OADA API.
- [www.isobluue.org](http://www.isobluue.org)
ISOBlue 2.0 is an open source telematics unit capable of streaming all CAN messages from agricultural or forestry machinery in real time.
- [www.waterapps.org](http://www.waterapps.org)
The watershed management apps put topographic tools in your pocket to enable informed decisions at the field scale while in the field.

**FIVE INITIAL REAL-TIME DATA EXCHANGE PROJECTS**

<table>
<thead>
<tr>
<th>Machinery/Ag/Tea</th>
<th>Food System Logistics</th>
<th>Food Mapping</th>
<th>Farm Data Marketplace</th>
<th>Remote Sales/MarketShare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farming/Ag Equipment Inventory</td>
<td>Food-Sharing Networks and Supply Chain</td>
<td>Food-Related Analytics</td>
<td>Farm Data Marketplace</td>
<td>Remote Sales/MarketShare</td>
</tr>
<tr>
<td>Data on Weather and Climate</td>
<td>Food-Related Analytics</td>
<td>Food-Related Analytics</td>
<td>Farm Data Marketplace</td>
<td>Remote Sales/MarketShare</td>
</tr>
<tr>
<td>Sustainability</td>
<td>Food-Related Analytics</td>
<td>Food-Related Analytics</td>
<td>Farm Data Marketplace</td>
<td>Remote Sales/MarketShare</td>
</tr>
<tr>
<td>Emissions</td>
<td>Food-Related Analytics</td>
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**CONTINUALLY ON OUR MIND**

- Agricultural production & processing
- Autonomy (starting with data)
- Graduate Education
- Signal processing
- IoT for agriculture
- Data engineering
- Remote sensing
- Data mining
- Meteorology

**OATS Supporters: Thank you!**

- ADM
- Ag Gateway
- Cenntricity
- Infosys
- Produce Marketing Association
- Primus Labs
- Wilson Produce
- **Purdue University**

**OUR SITE**

[https://oatscenter.org/](https://oatscenter.org/)

**KEY ISSUES:**

1. Full value of data is only achieved when it can be fused from multiple sources
2. Data/algorithms from public research are NOT easily shared today
3. Ag professionals generally lack software skills needed to thrive
4. Food-ag information technology lags the state-of-the-art applied other fields