DIASCA Webinar

AgStack's open-source geospatial registry

08/02/2023: 16:00 – 17:30 pm CET

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AgStack
A Linux Foundation Project

CGIAR

DIASCA
Digital Integration of Agricultural Supply Chains Alliance

Agenda

1. Introduction
2. AgStack Geo-Asset Registry
3. Use Cases
4. Q & A & D

Presenters

Sumer Johal, Executive Director of AgStack / The Linux Foundation

Brian King, Leader of the CGIAR Platform for Big Data in Agriculture

Challenge: Incompatible individual solutions

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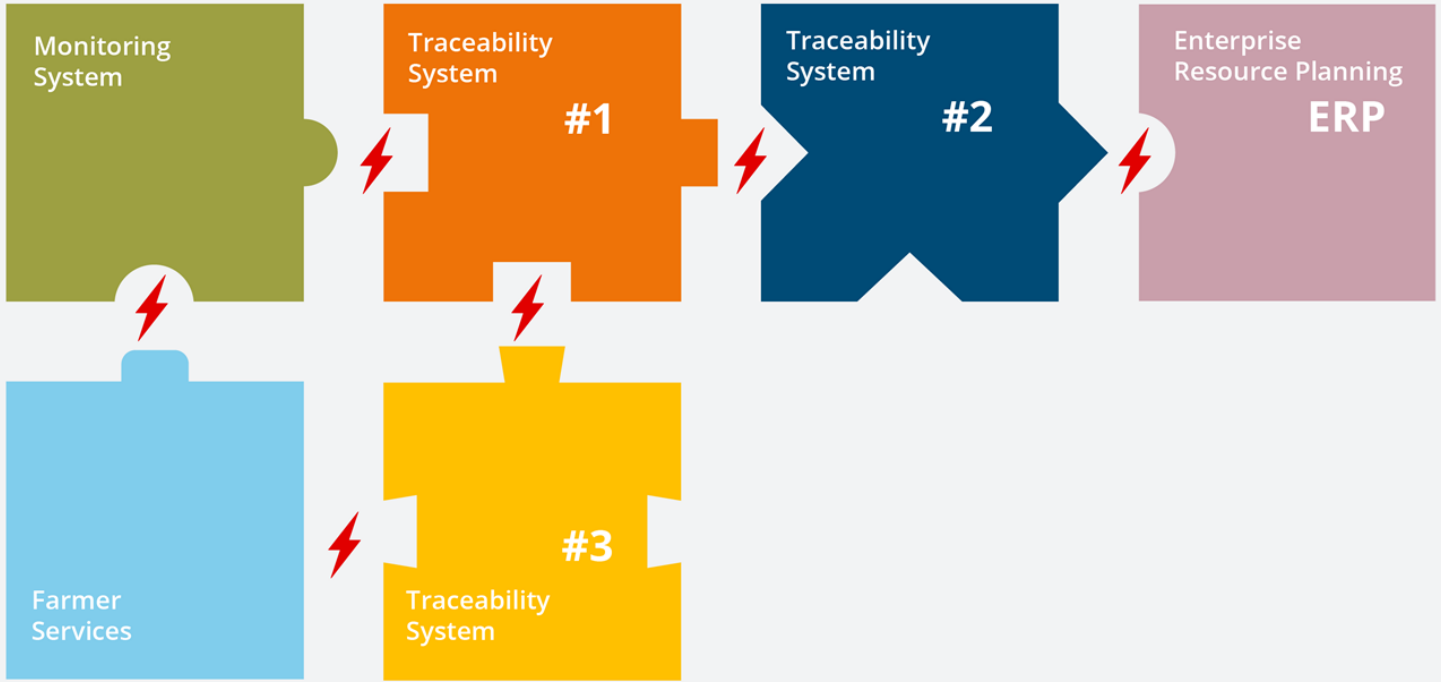

DIASCA: Objective

A broad agreement on globally accepted standards on

- **Traceability**,
- **Geospatial Data: forest monitoring** and
- **Entity-based Data: farm income**,

as fundamental building blocks for efficient data flow and compliance within agricultural supply chains, underpinned by concrete use cases and **field-level reference projects**.

Towards interoperability in global agricultural supply chains!

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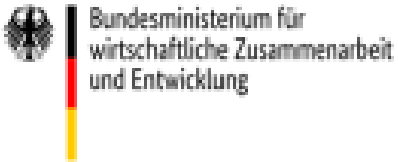

Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung

Implemented by:

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In cooperation with:

GS1 Germany

COSA Committee On Sustainability Assessment

DIN ISO

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Traceability and Identification

Geospatial data
Pertaining to a geography (field, region, country) based on geo-IDs
Example: Land use change

Traceability data
Product-related, dynamic event data or Critical Tracking Events (CTE)
Including Chain of custody, lots / batches & mergers
Referencing Geo- and Entity-IDs, aggregating their attributes

Entity-based data
Pertaining to a business entity (farm, buyer etc.) based on entity-IDS
Example: Farm income, productivity

For further information and participation, reach out to

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www.diasca.org

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asset-registry

Beta (as of Jan 26th, 2023)

Agenda

1. Intent & motivation [Sumer Johal, 10 min]
2. DEMO - Use-Case Driven [Aanish Amir, 10 minutes]
3. Updates / Documentation [Mikela Jackson, 30 minutes]
4. Q&A / Feedback [30 minutes]

Resources

a. API Documentation: https://agstack.github.io/agstack-website/asset_registry_api
b. Jira Issue Board: https://team-16705118030816.atlassian.net/jira/software/projects/AG/boards/1
c. Design decisions: https://docs.google.com/document/d/1EfIbXn4JTCt0D72rcAXchzmv014HARshT73s3wrdvI4/edit
d. Google S2 API: https://s2geometry.io/
e. Technical Workstream Group: https://lists.agstack.org/g/technical-discuss
f. Slack Channel: http://agstackfoundation.slack.com/
g. https://agstack.github.io/agstack-website/
h. Current list of AgStack website issues: https://github.com/agstack/agstack-website/issues

Intent

1. **Public Registry** for creating a ubiquitous, geo-intelligent unique “public geoID” for a unique field boundary - at a globe scale - without requiring any other attribution
2. **Implementation of geospatial “Natural Capital Units” (NCUs)** - for a geoID at any level of resolution - by leveraging spatial indexing inherent in Google’s open-source S2 library. This enables geospatial logic inherent to the geoID (e.g., two geoIDs can overlap and overlaps are quantified)
3. **Unlocks distributed, interoperable access** to digital geospatial services, data, applications - across public, private, and research sectors - especially relevant to small-holder farmers.

Common Use Cases

1. Supply-Chain Traceability
2. Forest Management
3. Financial Products for Ag
4. Carbon Accounting
5. Water Management
6. Regulatory compliance
7. Advisory Services

Source; Digital Integration of Agricultural Supply Chains Alliance (DIASCA)

Main Usage

1. User Registration
2. [SET] Register field boundary into registry → get a “public geoID”
    a. [OPTIONAL] Authority as “domain” not in the
3. [GET] Retrieve field boundary from geoID
4. [GET] Search the registry for a geoID
    a. With a lat-lon “Point”
    b. With a Bounding Box
    c. With an AOI Polygon
    d. With another geoID

Core design language / concepts

1. S2 geo-spatial indices as “natural capital units” with variable resolution

1. Domain authority token for accessing tagged geoids by a certified authority

1. No user attribution whatsoever in the asset-registry (but user registration is required)

1. Framework for safeguards (black-listing service)

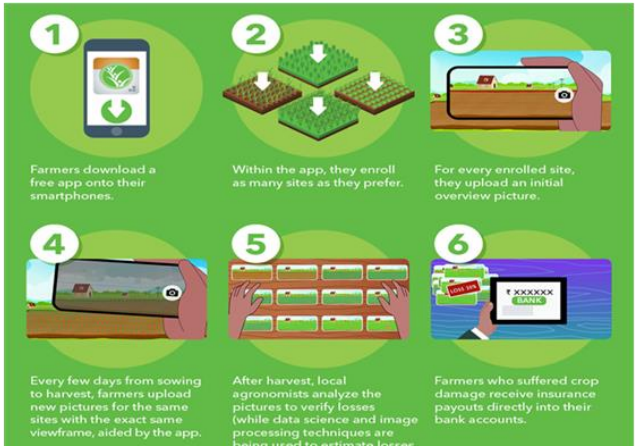
IMPORTANT: This is BETA, not GA (yet)

1. API Only (for now). Front-end UI/UX tool being developed
2. No known bugs.
   a. This does not mean that there are no bugs! We still have to do extensive testing and wish to invite the community to do so with us for your use cases
   b. We have created a public Jira Board for issue requests https://team-16705118030816.atlassian.net/jira/software/projects/AG/boards/1
3. Limited use cases tested. Need community engagement to evolve.
   a. There are LOTs of ways to use this that could be foundational. We cannot imagine them without you.
   b. Your use-cases are important for us to know and accommodate in our design evolution.
   c. Use the Jira Board to outline specific cases. We will try and crate code samples for the most common use cases using Jupyter notebooks
4. Top topic for our technical session (every 2 weeks thru June, 2023)

Envisioned Roadmap

1. Engagement to Launch (Through Apr, 2023)
    a. Testing Use Cases
        i. Forest Monitoring / Supply-Chain Traceability [EU Regulation]
        ii. Farmer Credit / Insurance [India/CGIAR]
        iii. Water Regulation [US/California]
    b. Need members to champion the use-cases to demonstrate, evolve and adopted
2. Convening / Launch
    a. N. America Launch (**Open Source Summit** - North America in Vancouver, CAN May 10-12, 2023)
    b. European Launch (**Open Source Summit** - Europe in Bilbao, Spain, Sep 19-21, 2023)
3. Next Stage of Evolution
    a. Weather services for geoids [weather-server]
    b. Messaging with built-in geoids [message-cast]
    c. Private-sector services for geoids
    d. Integration with other LF Projects (HyperLedger, LFEdge, Zephyr)

Use-Case: Picture Based Insurance (India, Kenya)



- **Computer-vision enhanced crop insurance and advisory.**

- **An RCT: improved risk management and more willingness to pay for insurance.**

See: Ceballos, Francisco and Kramer, Berber, From Index to Indemnity Insurance Using Digital Technology: Demand for Picture-Based Crop Insurance (December 16, 2019). IFPRI Discussion Paper 1890, 2019, Available at SSRN: https://ssrn.com/abstract=3505630

DEMO [Aanish]

Documentation [Mikela]

Q&A

INA Initiative für nachhaltige Agrarlieferketten

DIASCA Digital Integration of Agricultural Supply Chains Alliance

Thank you for your attention!

The Initiative for Sustainable Agricultural Supply Chains (INA) is run by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ).

www.nachhaltige-agrarlieferketten.org

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