GODAN
Global Open Data
for Agriculture & Nutrition

Access to Data for the Transformation of Agriculture: Opportunities & Implications

Ben Schaap

National Workshop on Big Data Analytics and Data Access to Transform the Ethiopian Agriculture, 1-2 February 2018, Addis Abeba

What is GODAN ?

Global Open Data for Agriculture & Nutrition

*We advocate, support and enable global efforts to make agriculture & nutrition data **Available, Accessible, Usable** for unrestricted use worldwide.*

GODAN is made up of a Secretariat, think tank and voluntary partner network who have agreed to a joint statement of purpose…

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600+ partners

9 Donors in GODAN steering group
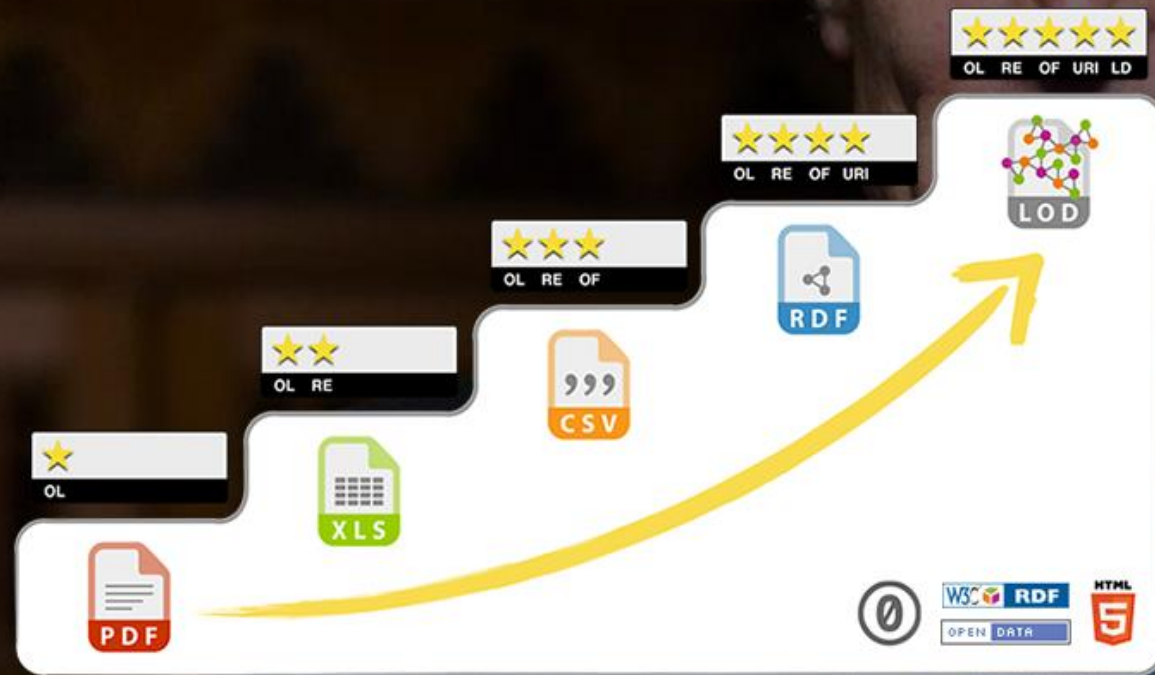
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5 ★ OPEN DATA

Tim Berners-Lee, the inventor of the Web and Linked Data initiator, suggested a 5-star deployment scheme for Open Data. Here, we give examples for each step of the stars and explain costs and benefits that come along with it.

Open Soil Data Exchange, the WHY!

Use cases for private and public sector on:

- Sustainable Land Management

- Food Security

- Land Degradation (Neutrality)

- Soil Organic Carbon (SOC)

International Initiatives:

- Global Soil Partnership

- Sustainable Development Goals

- Paris Agreement

- 4p1000

- Green Climate Fund

Hotspots for food insecurity: S-Asia and W-Africa

+7%
Europe &
Central Asia

+2%
Western
Europe

+1%
Canada &
the States

-15%
Middle East &
North Africa

-12%
East Asia &
Pacific

-6%
Latin America &
The Caribbean

-18%
South Asia

-15%
Sub-Saharan
Africa

-2.7%
Australia &
New Zealand

Percentage Change in Yields
from Present and 2050

-30%   +30%
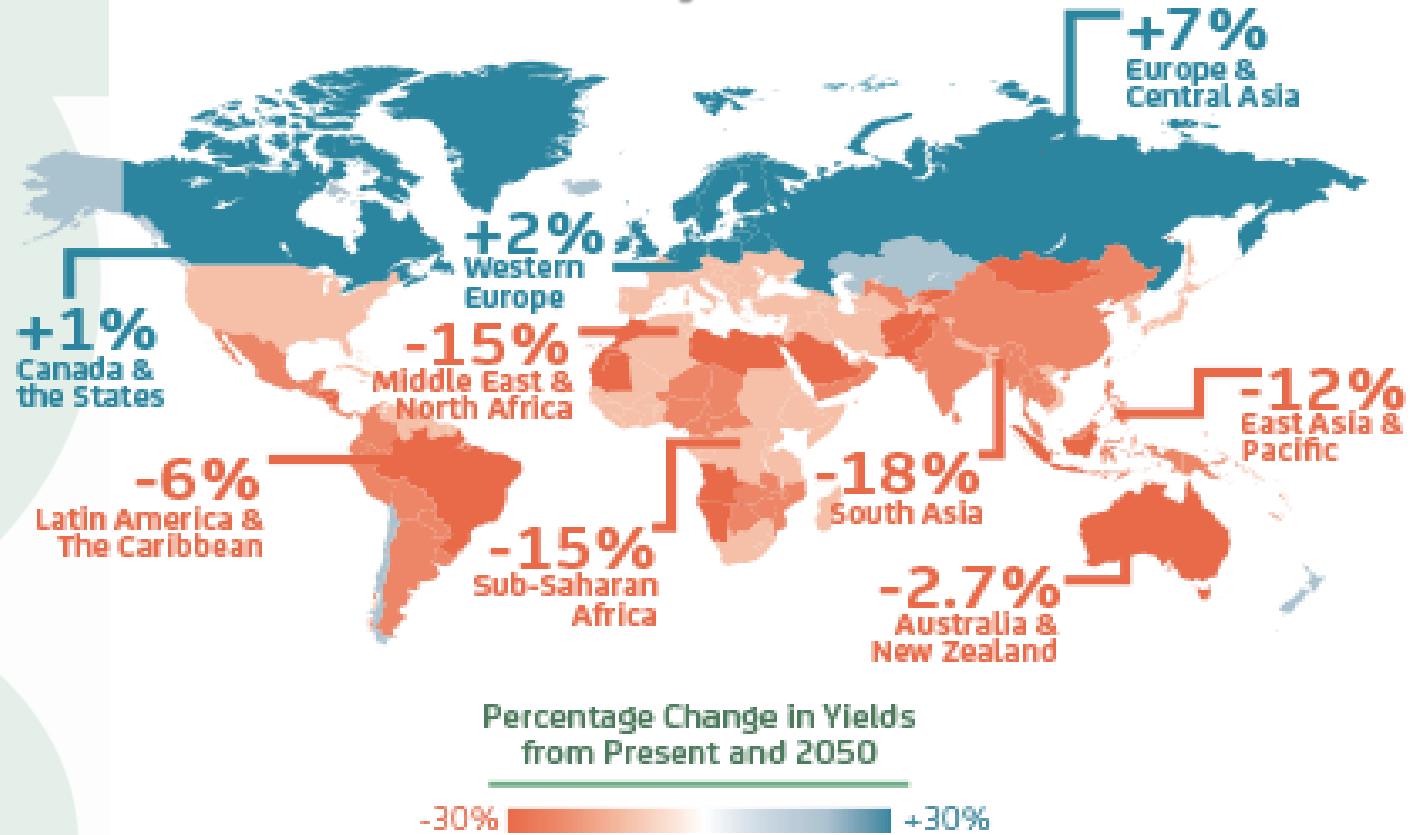
⇒ Among others, correlates with the distribution of degraded soils

Challenges for Open Soil Data Exchange

- Many 'dormant' data repositories (silos)

- Soil data is often specialized, user unfriendly

- Much field data lack quality assurance and validation

- Lack of technical capacity (data processing, Web-GIS)

- *Lack of commonly agreed and broadly applied soil data exchange standard*

GLOBAL SOIL PARTNERSHIP

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GODAN Working Group on Soil Data

Initiatives:

Partners:

IUSS WG - SIS

Your organisation?
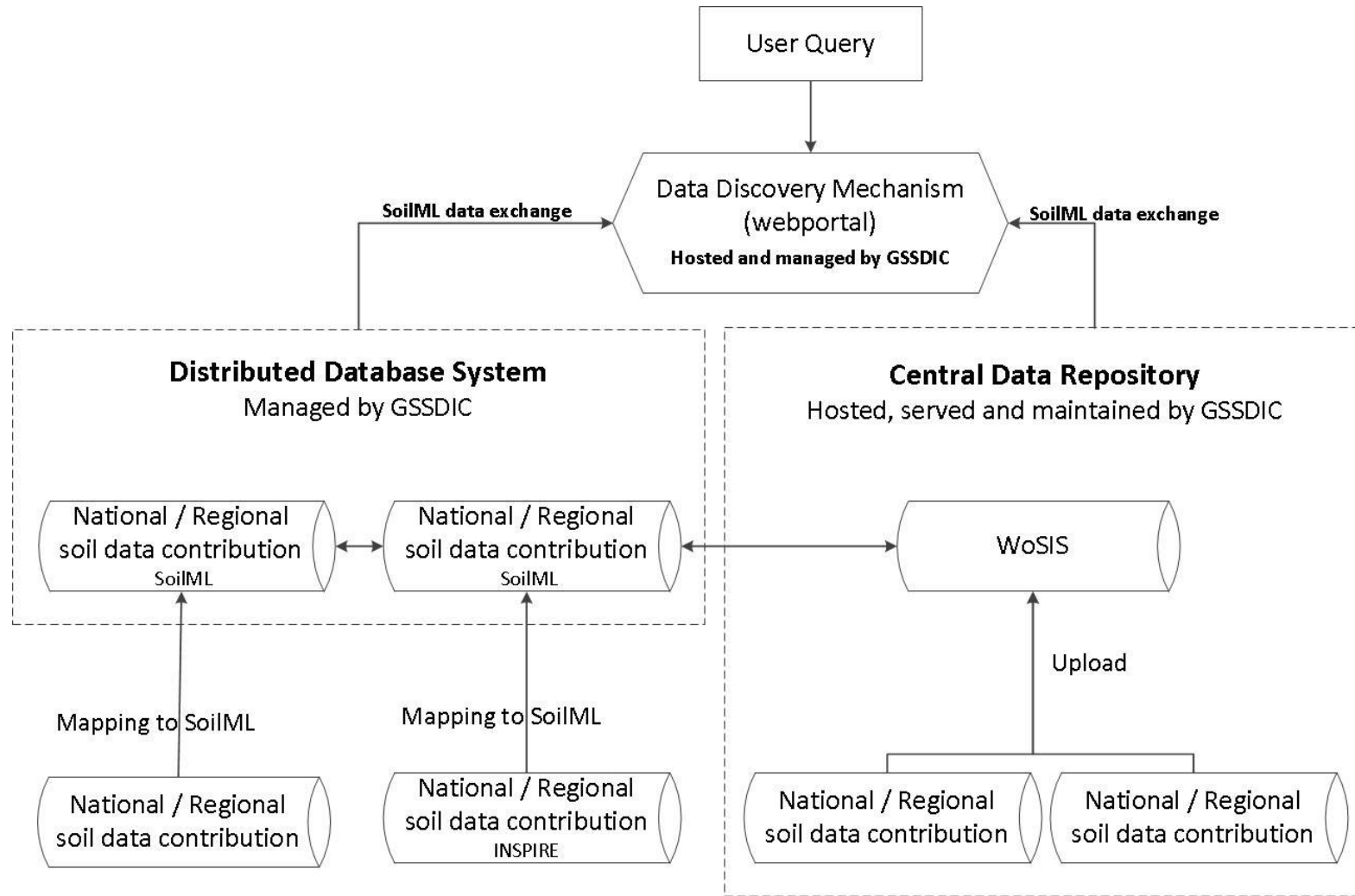
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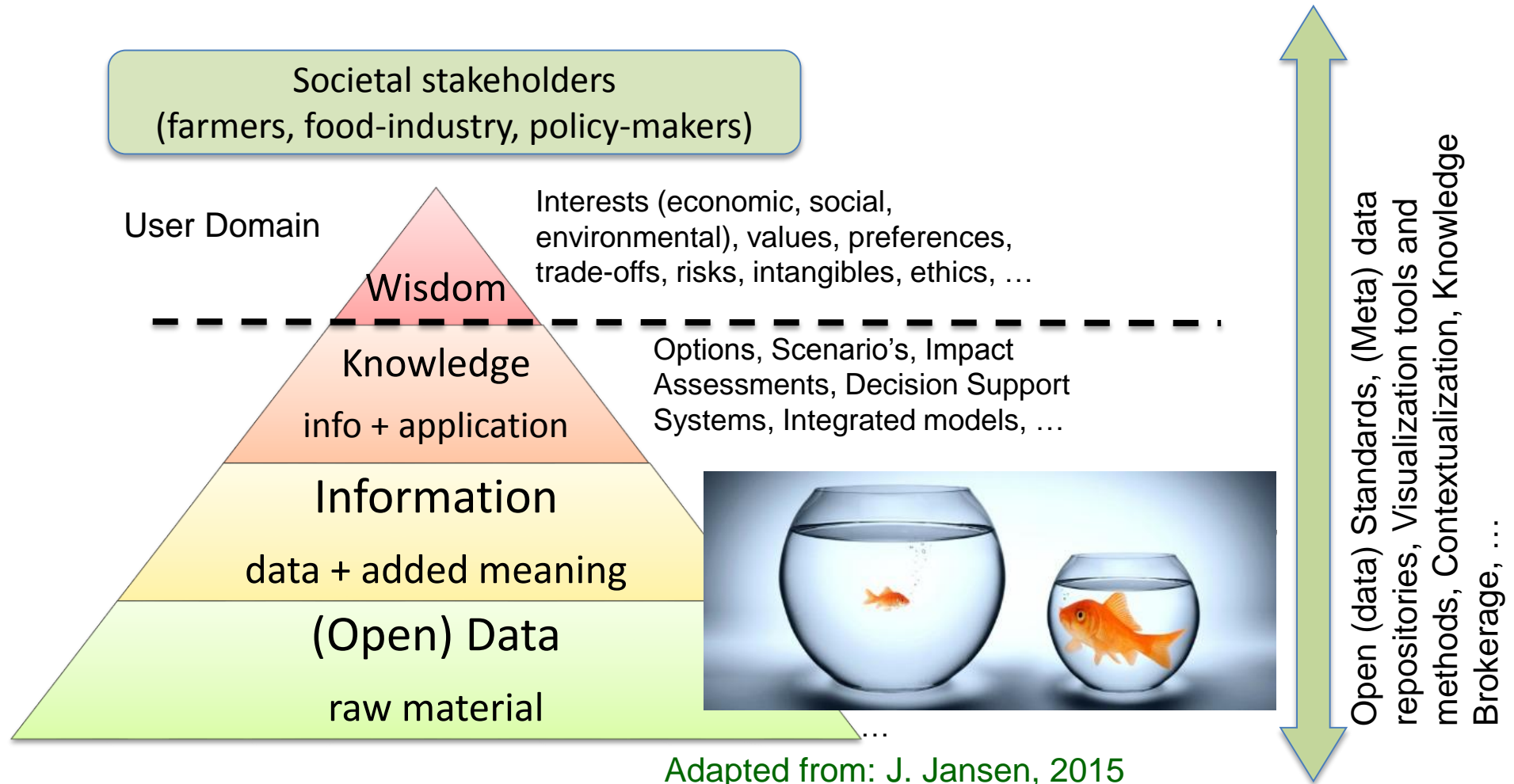**Join the new GODAN Soil Data Working group !**

GET INVOLVED

➢ **Develop EarthSoil data infrastructure, indicators, capacities**
➢ **Joint venture with Research Data Alliance (RDA)/Interest Group on Agriculture Data (IGAD) and FAO's Global Soil Partnership**
➢ **GODAN web site: http://www.godan.info/working-groups/soil-data**

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WOSIS: Distributed system and central repository

From (open) data to impacts

Societal stakeholders
(farmers, food-industry, policy-makers)

User Domain

Interests (economic, social, environmental), values, preferences, trade-offs, risks, intangibles, ethics, …

Wisdom

Knowledge

info + application

Options, Scenario's, Impact Assessments, Decision Support Systems, Integrated models, …

Information

data + added meaning

(Open) Data

raw material

…

Open (data) Standards, (Meta) data repositories, Visualization tools and methods, Contextualization, Knowledge Brokerage, …

Adapted from: J. Jansen, 2015

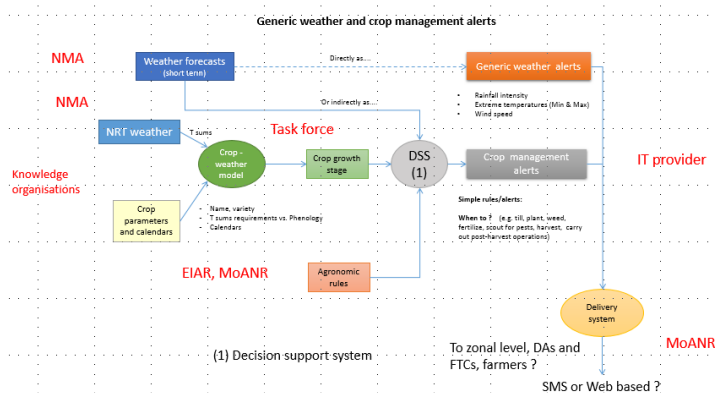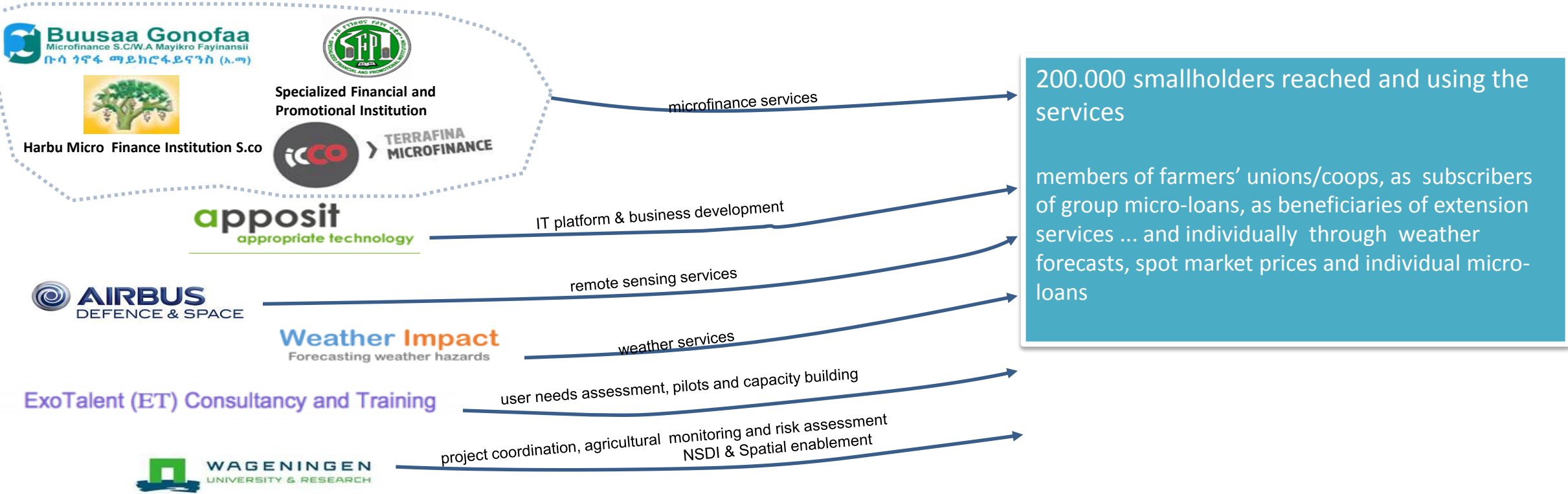**goDAN**

CommonSense Project

- **Apps for Unions and Cooperatives.** Dedicated web based and mobile apps covering members management, seasonal weather monitoring, weather and crops yield forecasts, output marketing, financial transactions

- **Apps for Farmers.** IVR/SMS services developed through mobile apps, providing weather forecasts and related farm advisory as well as info on spot market prices (the latter for sesame only)

- **Apps for MFIs.** Dedicated mobile/web based/standalone apps to enter and visualize data in the field, support loan risk assessment, and operational as well as strategic management

- **Apps for extension services**. An agro-meteo farm advisory tool box + SMS/mail/Web (smartphone, etc.) delivery mechanism for Extension services of the Ministry of Agriculture (a demonstator)

Partnership and collaborations

- CS is a Consortium made of 9 partners: 3 Dutch, 6 Ethiopian/African

Buusaa Gonofaa Microfinance S.C/W.A Mayikro Fayinansii
ቡሳ ጎኖፋ ማይክሮፋይናንስ (ኡ.ማ)

Specialized Financial and Promotional Institution

Harbu Micro Finance Institution S.co

iCCO / **TERRAFINA MICROFINANCE**

microfinance services →

apposit appropriate technology

IT platform & business development →

AIRBUS DEFENCE & SPACE

remote sensing services →

Weather Impact Forecasting weather hazards

weather services →

ExoTalent (ET) Consultancy and Training

user needs assessment, pilots and capacity building →

project coordination, agricultural monitoring and risk assessment
NSDI & Spatial enablement →

WAGENINGEN UNIVERSITY & RESEARCH

> 200.000 smallholders reached and using the services
>
> members of farmers' unions/coops, as subscribers of group micro-loans, as beneficiaries of extension services ... and individually through weather forecasts, spot market prices and individual micro-loans

MoU and collaborations:

MoA

BENEFIT-Partnership to promote food production, income and trade
WAGENINGEN UNIVERSITY & RESEARCH
SBN

Ethiopian ATA Agricultural Transformation Agency
የኢትዮጵያ ግብርና ትራንስፎርሜሽን ኤጀንሲ

Cascape Capacity building for scaling up of evidence based best practices in agricultural production in Ethiopia

- CS also works with the Ethiopian Government and other stakeholders:

NMA ብሔራዊ ሜቲዎሮሎጂ ኤጀንሲ NATIONAL METEOROLOGY AGENCY

Publication 'Ownership of Open Data: Governance Options for Agriculture and Nutrition':

The Data Spectrum

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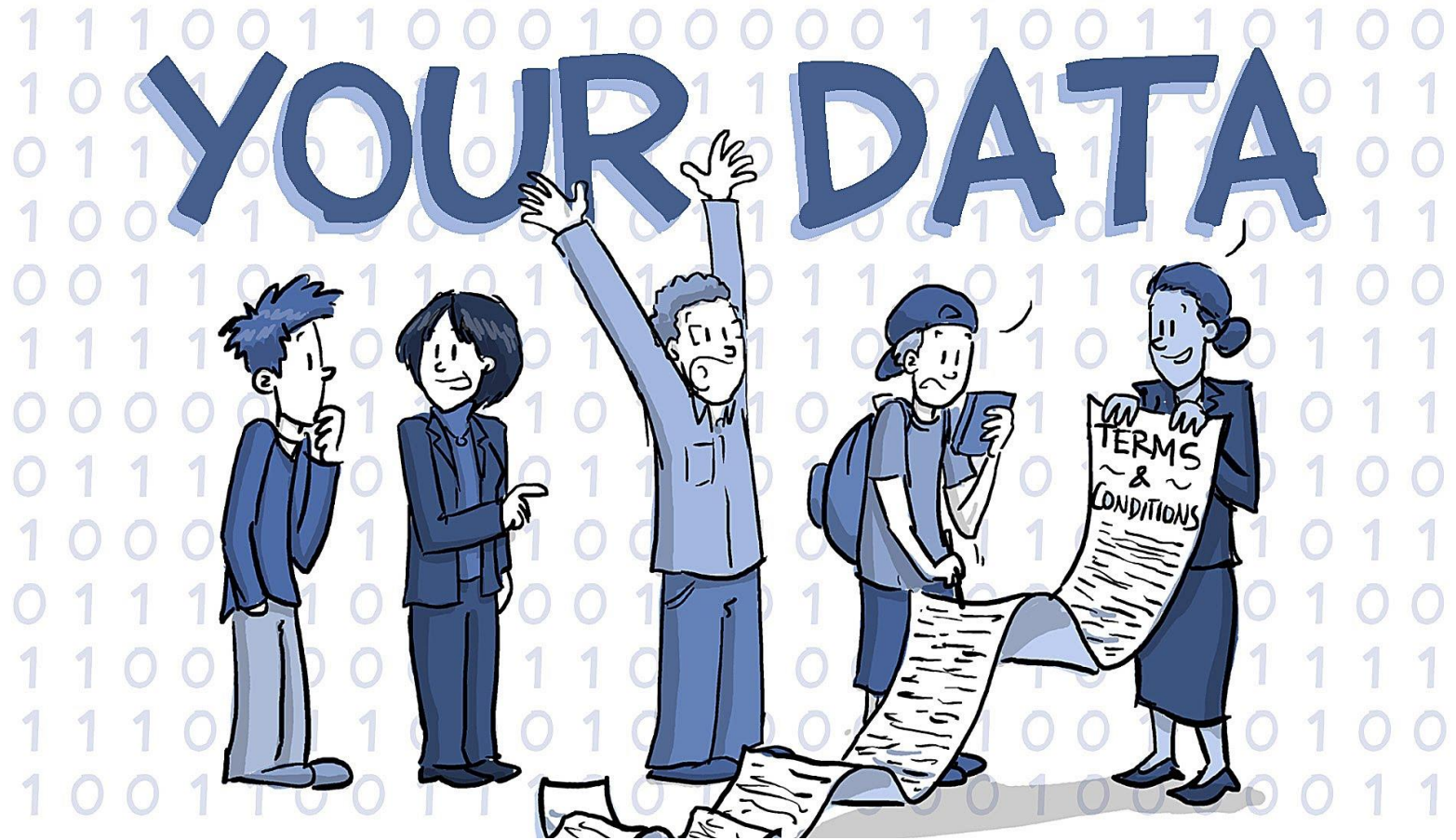
Small / Medium / Big data

Personal / Commercial / Government data

Internal access	Named access	Group-based access	Public access	Anyone
Employment contract + policies	Explicitly assigned by contract	Via authentication	Licence that limits use	Open licence
Sales reports	Driving licences	Medical research	Twitter feed	Bus timetable

Closed **Shared** **Open**

theodi.org/data-spectrum

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Realizing a Global Data Ecosystem for Agriculture and Food

"This paper looks at the challenges and principles that must be addressed in in **building a global data ecosystem** for agriculture. These begin with building incentives and trust – amongst both data providers and consumers – in sharing, opening and using data. Key to achieving this will be developing a broad awareness of, and making efforts to improve**, data quality, provenance, timeliness and accessibility**. We set out the key global standards and data publishing principles that can be followed in supporting this, including the **'Five stars of open data' and the 'FAIR principles**' and offer several recommendations for stakeholders in the industry to follow."

Building Trust in Data Sharing

For data consumers, trust in data sharing depends on numerous factors:

• **Knowing the source**. Trust in data begins with knowledge of its source.
• **Trusting the source**. If you know that data comes from a trusted source, then you can rely on it, and on the conclusions you draw from it.
• **Timeliness of the data**. Even when from a trusted source, data is not useful if it is outdated.
• **Data quality**. Trusted data must accurately and precisely reflect what it measures.
• **Sustainability**. A trusted dataset must have some guarantee of availability.
• **Discoverability**. Like documents, data is only useful if it is straightforward to find.
• **Documentation and support**. Consumers should be able to access support for data if needed.
• **Interaction**. Consumers should be able to provide feedback if there is a problem with data.

FAIR Principles

The FAIR Guiding Principles for scientific data management and stewardship

Mark D. Wilkinson, Michel Dumontier, IJsbrand Jan Aalbersberg, Gabrielle Appleton, Myles Axton, Arie Baak, Niklas Blomberg, Jan-Willem Boiten, Luiz Bonino da Silva Santos, Philip E Bourne, Jildau Bouwman, Anthony J Brookes, Tim Clark, Mercè Crosas, Ingrid Dillo, Olivier Dumon, Scott Edmunds, Chris T Evelo, Richard Finkers, Alejandra Gonzalez-Beltran, Alasdair J G Gray, Paul Groth, Carole Goble, Jeffrey S. Grethe, Jaap Heringa, Peter A.C. 't Hoen, Rob Hooft, Tobias Kuhn, Ruben Kok, Joost Kok, Scott J. Lusher, Maryann E. Martone, Albert Mons, Abel L. Packer, Bengt Persson, Philippe Rocca-Serra, Marco Roos, Rene van Schaik, Susanna-Assunta Sansone, Erik Schultes, Thierry Sengstag, Ted Slater, George Strawn, Morris A. Swertz, Mark Thompson, Johan van der Lei, Erik van Mulligen, Jan Velterop, Andra Waagmeester, Peter Wittenburg, Katherine Wolstencroft, Jun Zhao, and Barend Mons

open data is about MORE THAN DISCLOSURE it must be "Fair"

- Findable
- Accessible
- Interoperable
- Reusable

http://www.nature.com/sdata/   nature publishing group npg

Findable → Publish meta data with identifiers in online searchable source

Accessible → Open protocol to get access to (meta) data

Interoperable → (meta) data uses open standards and vocabularies
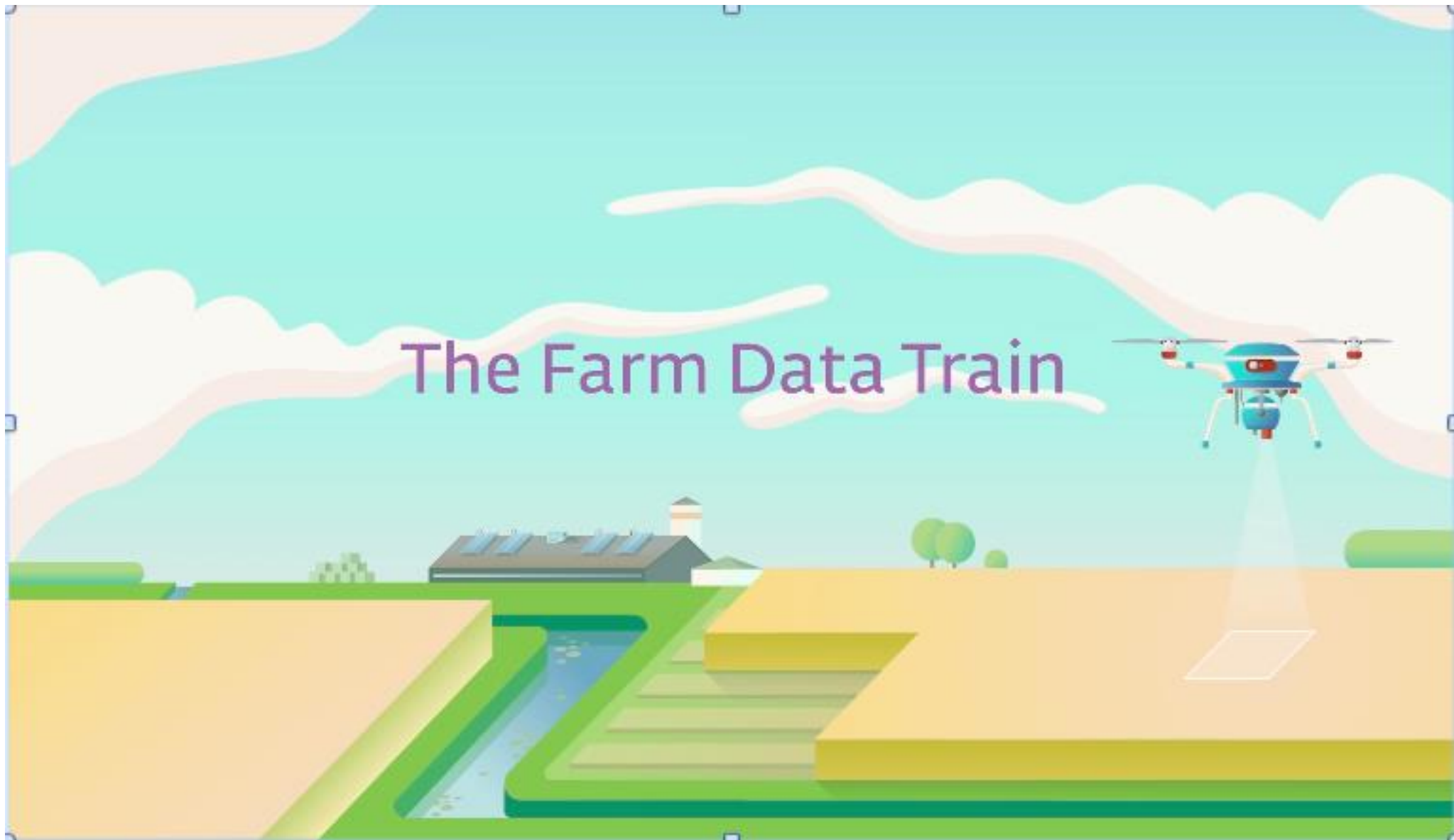
Reusable → Clear licensing

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Watch the [Farm Data Train](#)

AgDev Data Sharing Communities

Deliver a series of:
- practical approaches,
- guidelines, and
- tools

for BMGF, its grantees and partners, which can be adopted across programmes to meet data access and sharing needs. Case studies are One Acre Fund & AfSIS, delivery 2018.

Discussion

Soil data is key to manage agricultural systems:

- What would be good interventions using soil data to make the Agricultural Transformation in Ethiopia a reality?

- Who would be the actors that need to be involved in the interventions?

- What would be the capacity building needs of those actors (in relation to soil data)?

SNAFU

https://youtu.be/N2zK3sAtr-4