Cultivating Semantics for Data in Agriculture and Nutrition

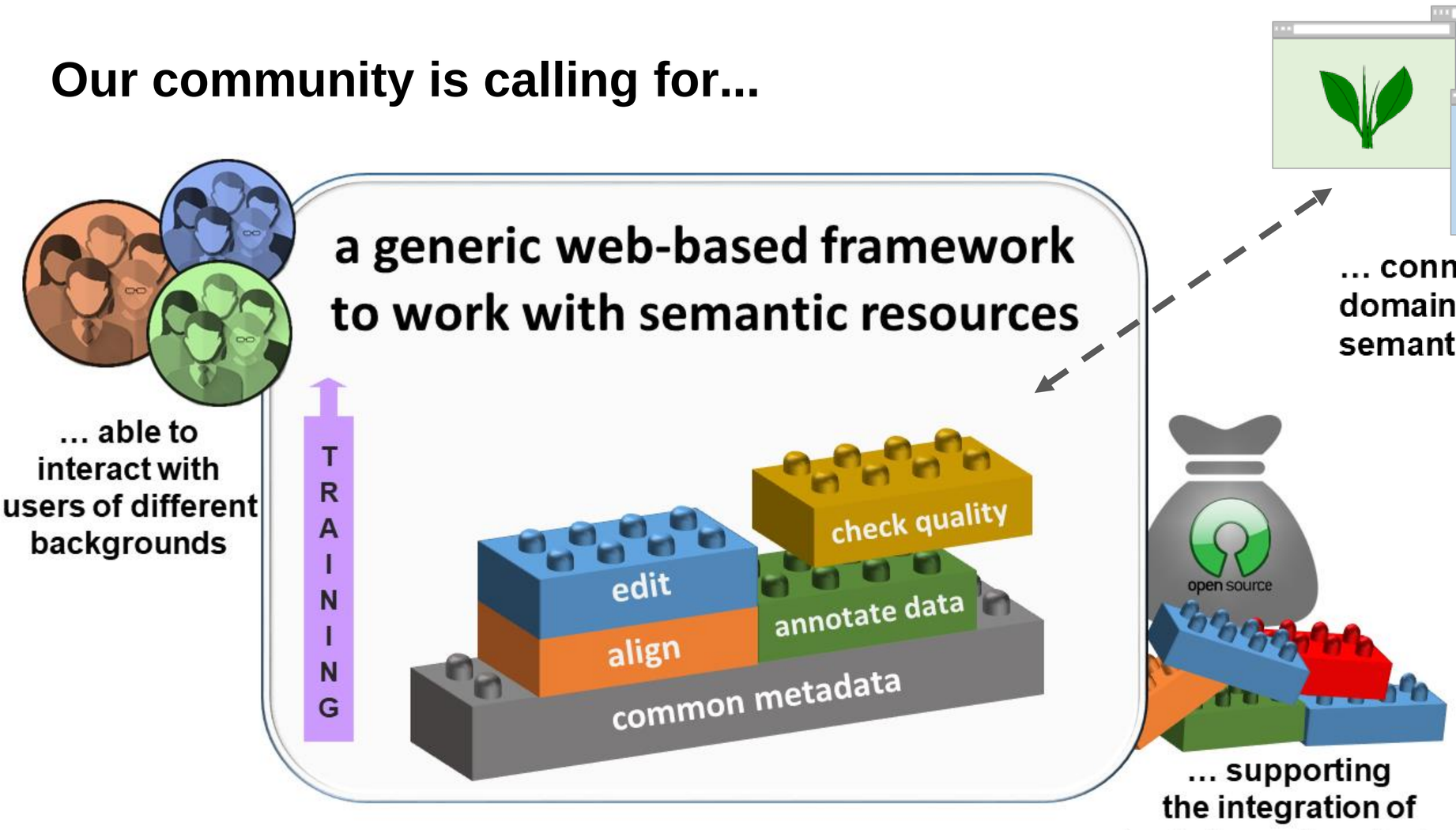
Recommendations from the Agrisemantics Working Group

Agriculture is a widely interdisciplinary field - from farm to fork and from cell to territory. In a given study or analysis, the data needed may come from different sources and communities, and at different scales of observation. Our stand is that **semantics is key to interoperability**, i.e. programmatically reuse data produced in other applications.

Semantic technologies (linked open data, shared vocabularies, ontologies…) have been adopted by many actors in the agricultural sector. However, much is still to be done in order to make these technologies widespread.

We produced recommendations on how to make semantic technologies more accessible and used in our field.

Our community is calling for...



Typical structures to express data semantics include controlled vocabularies, classifications, taxonomies, and ontologies

What can you do if you are…

Policy makers & funders **Promote and support**	• Enable a **generic, extensible, web-based framework** to work with semantic resources • Foster initiatives that **increase the discoverability** of semantic resources and services • Promote the integration of **semantics into mainstream tools** and services • Sustain the **creation and long-term maintenance of vocabularies** of strategic importance • Develop **courses and training** on semantics
Software developers **Integrate, make it simple**	• **Choose standard technologies**, open licences, and shared I/O formats • Build tools that **support known best practices**, e.g. FAIR principles • Implement **automatic generation of metadata** • Create **user-friendly tools** that use understandable terminology • **Guide users** in choosing modelling approaches and file formats
Semantics professionals **Share, document, reuse**	• Publish SRs in **repositories that handle version control** • Provide **persistent identifiers** for your resources • **Reuse existing resources** (e.g., concepts, vocabularies, metadata scheme) when possible • Promote standards for **resource alignment** • Develop metrics to **assess resource usage**
Data producers & managers **Semantize and document**	• **Stay abreast of developments** in semantic technologies • Make explicit (FAIR) **which SR(s) are used within your dataset** • Develop **semantically enabled data types** for common features, e.g. measure units, parameters for experimental or observational data, soil properties, etc. • **Provide documentation** when aligning datasets (for the processes and the result)

The Agrisemantics WG: The group gathers together researchers and practitioners at the intersection between semantic technologies and agriculture, sharing the goal of enhancing agricultural data interoperability by means of semantics. The group started its activity by producing a landscape report (1) of how semantic resources are used in the area, then moved on to collect specific use cases (2) around problems and bottlenecks that people dealing with semantics for agricultural data encounter in their work. The final output of the group is a set of recommendations on what should be available in order to make semantic technologies more useful and used in applications.

Read more on https://www.rd-alliance.org/groups/agrisemantics-wg.html