

2.3 Governance by FAO

Since 2010, the SOLA project has been under governance the Land Tenure and Management Unit (NLRA) of the Food and Agriculture Organisation of the United Nations (FAO). Funding for the initial open source project, and the subsequent implementations was provided by various sources, e.g. the Finnish Government for initial project, and the UK Department for International Development (DfID), Millennium Challenge Corporation (MCC) for country implementations and customisations). FAO could decide on providing continued/renewed support and governance of the SOLA project, addressing the following remarks on governance, funding and resources.

Remarks on Information System Development (section 2.1)

- > SOLA developers are currently not employed/available.
- > **Funding** to provide for sustaining the support of SOLA has been indicated as essential. E.g. hiring minimum (part-time) development team to fix bugs, improvement of documentation, enhancement of functionality (routine software maintenance and support), promotional support, web sites (demo server / flossola), etc. Note that various sources reported insufficient funding of the SOLA project in the past years as partly explaining the "unfinished" state that the source code, user interface, manuals and documentation of SOLA are in.
- > FAO has demonstrated it is possible to develop open source **tools for land administration and field data collection** as perhaps a UN agency should be demonstrating; however FAO's core business and organisation are not focused at information system development in the context of open source communities.
- > Instead of managing turn-key information system development projects on the basis of SOLA, FAO may opt for providing (smaller) consultancy in specific phases of these projects, for example feasibility studies or requirements phases. Resources would have to be trained to provide these services in the context of SOLA.
- > There may be a reluctance / reduced interest by professional community to participate in open source community because of FAO's (tight) control of the opportunities in the past.
- > Reports have been made with regard to insufficient **promotion and communication on SOLA applications**, e.g. in land related conferences, workshops, white papers, publications, actively approaching professionals in the field, universities. etc.

Remarks on Field Tenure Data Collection (section 2.2)

- > SOLA infrastructure (demo server and flossola website) including hosting community server could be done by within FAO by Information Technology Division (CIO). Note that earlier attempts seem to have failed,

presumably/reportedly on account of flexibility of hosting environment to SOLA parameters and tools.

- > Currently the Demo Server³³ and the SOLA Website³⁴ (latest news 2016) are being operated and funded on a voluntary basis by former SOLA staff, through third party hosting providers (external to FAO), these **websites** will **expire** beginning of 2019.
- > **Funding** for sustaining the support of SOLA (i.e. hosting/development team) is essential; the issue of such funding is a recurring report received during this review.

Note that the CIO, FAOs Information Technology Division, has made a recommendation to take ownership over the SOLA software intellectual property, lifecycle, support and maintenance, which also includes the software quality improvement as suggested by the technical quality review (see section 1.1.1); Appendix J, slide 80-81 of the presentation provides a summary).

2.4 Governance by Professional Body

Another option would be to consider the handover of the SOLA project to an organisation that is more equipped and can rely on staff with the right skills and experiences with regard to technologies used in SOLA. This could be considered for SOLA R, SR, and SL (Information System Development, section 2.1) as well as for SOLA OT/CS applications (Field Collection of Land Tenure Data, section 2.2).

Before a handover of responsibility for governance of SOLA applications to a professional body (or a private company or open source community, see next sections) an investment is required to implement recommendations: fixing bugs, improvement of documentation for developers, installers for SOLA applications, critical issues, etc.

2.4.1 Global Land Tool Network (GLTN)

The Global Land Tool Network (GLTN, see section 1.2.10) is an alliance of international partners³⁵ with an interest in land and tenure security. GLTN develops land tools contributing to "*land reform, good land governance, inclusive land administration, sustainable land management, and functional land sector coordination*"; FAO, USAID (MAST³⁶), OSGeo, as well as Cadasta³⁷ are partners in the Global Land Tool Network.

³³ <https://demo.opententure.org>

³⁴ <http://www.flossola.org>

³⁵ <https://gltn.net/gltn-partners-3/>

³⁶ <https://gltn.net/2018/11/15/securing-land-tenure-with-smartphones>

³⁷ <https://gltn.net/2017/05/04/gltn-welcomes-the-cadasta-foundation-as-its-78th-partner/>

The GLTN partners, representing represent global and regional institutions, organizations or networks, commit to join the network for non-commercial purposes and engage in **scale-able land tool development**. The STDM^{38,39} is one of the flagship land tools; GLTN land tools are pro-poor and gender responsive; the following features should be provided by the land tools that GLTN hosts:

- > **Affordable**. To the poor and institution managing the tool.
- > **Equitable and gender-responsive**. Address needs fair and equal.
- > **Pro-poor**. Aim to reduce poverty.
- > **Sustainable**. Implementable without large-scale external inputs.
- > **Systematic, large scale**. Usable at district or even national level.
- > **Governance**. Address local decision-making and conflict resolution on land.
- > **Subsidiarity**. Sensitive to local situations, needs and capability.

Remarks

- > SOLA R, SR, SL may not qualify as sustainable since their implementation, currently, is rarely happening without considerable, **large-scale external inputs**.
- > SOLA OT, maybe considered as land tools that satisfies the features above, however STDM is being expanded with ODK based tools which would provide similar functions. There may be **no interest** within GLTN to host SOLA OT/CS alongside with STDM.
- > Finding a suitable professional body may be challenging, since **interest** in SOLA has **diminished**, and the development knowledge is in other areas (e.g. Python vs Java programming language).

2.5 Governance by Consultant

A private company may be interested to create a set of services around SOLA, on the one hand around SOLA Registry (section 2.1), on the other hand around field data collection (section 2.2).

Remarks

- > Previously, SOLA projects and pilots included the responsibility of identifying, hiring and training personnel, such as software developers, system administrators, trainers. Private (local) companies in the business of providing information system development, with sufficient resources might be **better able to manage and oversee** these development projects and hired experts.
- > As the case study report "Community Engagement Strategy (CES) for the Sola Open Source Software" also mentions, it may be difficult to find a java development consultant **who wants to take the risks** involved with investing in SOLA, with a very small open source community.

³⁸<https://gltn.net/2018/09/25/improving-tenure-security-on-customary-lands-in-zambia/>

³⁹<https://gltn.net/job/part-time-consultants-python-developers-for-the-social-tenure-domain-model/>

2.6 Governance by Open Source Community

The responsibility for the SOLA project and its applications could also be handed over to an open source community, for example as one of the projects in OSGeo. This could be considered for SOLA R, SR, and SL, or for SOLA OT/CS applications as well. See section 1.4.6 on recommendations for SOLA open source project and key factors for successful open source communities.

2.6.1 Open Source Geospatial Foundation (OSGeo)

Should FAO wish to leave/transfer the SOLA project, it would preferable to hand it over to (other) developers and users who care about and will continue it. FAO could consider SOLA to become part of an open source community such as OSGeo which would increase promotion and visibility of the SOLA applications. The Open Source Geospatial Foundation (OSGeo⁴⁰) is a "*not-for-profit organization whose mission is to foster global adoption of open geospatial technology*" which brings open source users, developers, and other open source web mapping community participants together in providing links to events, documentation, websites, and other information. OSGeo manages so called **OSGeo Projects** in different technical fields, stable and widely used:

- Content Management Systems (e.g. GeoNode).
- Metadata Catalogs (related Spatial Data Infrastructure).
- Desktop Applications (e.g. QGIS).
- Spatial Database (PostgreSQL's extension PostGIS).
- Geospatial Libraries (e.g. Geotools and GDAL(OGR)).
- Web Mapping (e.g. GeoServer and Open Layers).

The **OSGeo Projects** have been subject to extensive mentorship and preparation by OSGeo during an incubation phase. In addition, OSGeo hosts **OSGeo Community projects** such as proj4 (transform geospatial data between coordinate reference systems) and pgRouting (network/routing analysis of road datasets).

SOLA may be eligible to join the Open Source Geospatial Foundation as a **community project** (i.e. in the process of building the user and developer community and establishing a governance structure) if the project has a geospatial nature, an open source license, and is participatory, i.e. accepts contributions (Figure 15).

Open source projects can also enter an incubation process, mentored by a incubations committee⁴¹, to become an **OSGeo Project**, requiring much more, for example: source code check, transparent communication and decision making process, and active and healthy community with user and developer collaboration, user and developer documentation (Figure 16 and the Project Graduation Checklist⁴² [June 2014]).

⁴⁰ <https://www.osgeo.org>

⁴¹ <https://www.osgeo.org/about/committees/incubation/incubation-process/>

⁴² https://www.osgeo.org/wp-content/uploads/graduation_checklist.pdf

Figure 15: OSGeo Community

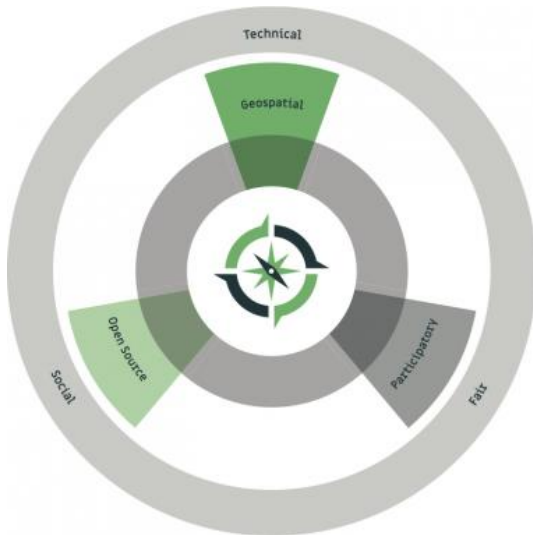
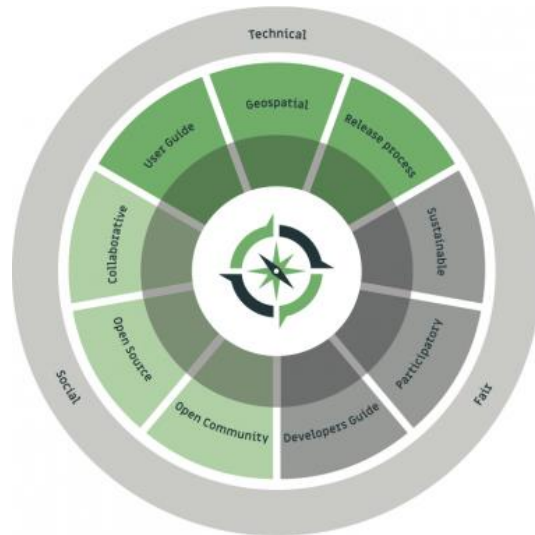


Figure 16: OSGeo Project



Source: OSGeo

OSGeo indicates to be sensitive to projects which are **open-source in license but do not have any developers**. These may be published as open source, but are in effect “*dumped on the internet*”, lacking any form of governance enabling contributions. Lacking an active and healthy community is also addressed in the CES in its recommendation B on considerations for joining the OSGeo foundation:

The difficulty for SOLA will be attracting enough support to complete the restructure necessary to comply with OSGeo requirements. As an interim step, it may be necessary for SOLA to join OSGeo as a community project This would require significantly less effort than incubating SOLA to become a full OSGeo project but the issue of who would guide SOLA through this process remains unanswered.

To avoid barriers for contributing, OSGeo does not impose membership fees on its participants, members, or charter members⁴³, but works with supporters who donate money to the Foundation. OSGeo reserves the right to have levels of support and/or yearly subscriptions in the future.

Remarks

- Transferring the project to OSGeo will also require identifying, selecting and setting up and (partly) subsidising a team that wants to continue and maintain SOLA applications. **Funding** will be required to establish the SOLA project as an OSGeo community or even OSGeo project: to perform the incubation process, the activities of the project owner to manage

⁴³<https://www.osgeo.org/about/membership-rules/>

community promotion; and improve SOLA applications and documentation, as well as maintenance.

- > Handing over the SOLA project to OSGEO would also mean **allowing the open source community to set the priorities** within the SOLA project, which should be seen and accepted as a consequence of a **healthy open source community**. The CES states that the community decides on how OT, CS and the other SOLA solutions develop. *"Potentially the community will not see any value in State Land, Registry, or Systematic Registration and will choose not to support those solutions. If so, that should just be viewed as the community in action"*.
- > Support is provided through community participation, but also by service providers who build a (profitable) service model around open source.
- > Strengthening the community side of the SOLA project through establishing more SOLA implementations is not expected to be enough. Many different roles within an open source community need to be supported; the goal should be to engage anyone that has a **genuine interest in land and open source land information systems**.
- > OSGeo has a focus on (and preference for) *technical* aspects of geospatial open source projects, consider the more land tenure domain related objectives of the Global Land Tool Network (GLTN).