Principle: Use Open Standards, Open Data, Open Source and Open Innovation

Overview

Too often, scarce public and international development resources are spent investing in new software code, tools, data collection, content and innovations for sector-specific solutions that are locked away behind licensing fees, with data only used by and available to specific initiatives. An open approach to digital development can help to increase collaboration in the digital development community and avoid duplicating work that has already been done. Programs can maximize their resources — and ultimately their impact — through open standards, open data, open source technologies and open innovation. By taking advantage of existing investments when you are able, you can apply finite digital development resources toward creating global goods. What being "open" means for your initiative will depend on practical and technical constraints, security and privacy concerns, and the dynamics of the people and networks in your space. For example, to what extent your initiative uses open source software will depend on the needs identified for your context and an assessment of which of the available options best meets those needs, factoring in their total cost of ownership [https://digitalprinciples.org/resource/howto-calculate-total-cost-enterprise-software/].

Core Tenets

- **Define and communicate what being open means** for your initiative.
- **Adopt and expand on existing open standards:** specifications developed by, agreed to, adopted by and maintained by a community and that enable sharing of data across tools and systems.
- **Share nonsensitive data after ensuring that data privacy needs are addressed;** to encourage open innovation by any group or sector, do not place restrictions on data use.
- **Use existing open platforms** where possible to help to automate data sharing, connect your tool or system with others and add flexibility to adapt to future needs.
- **Invest in software as a public good.**

PROJECT LIFECYCLE GUIDANCE

The following recommendations, tips and resources are drawn from the digital development community to give you options for applying this Principle during each phase of the project lifecycle. This guidance is not meant to be exhaustive, but rather suggests actions you can take to apply this Principle in your work. If you have other tips, resources or comments to add, please share them with the community at https://forum.digitalprinciples.org/.

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- **Develop new software code to be open source,** which anyone can view, copy, modify and share, and distribute the code in public repositories.
- **Enable innovation** by sharing freely without restrictions, collaborating widely and co-creating tools when it makes sense in your context.

Analyze & Plan

During this phase, research the open standards, open data, open source and open innovation environment for your initiative's ecosystem [http://digitalprinciples.org/understand-the-existing-ecosystem]. Consider how to use open policies and requirements to achieve your program's strategic goals given your specific context. Keep in mind that it is not always possible to include all open practices. If you are not able to participate in open practices, be sure to communicate to stakeholders why that decision was made so that you can continue fostering transparency.

- **Define what being open means for your program or initiative.** Ensure that your organization has an accurate understanding of what it means to be open. Misunderstandings about what open means could lead to fear or resistance. For example, stakeholders may not understand how open data can also adhere to privacy and security standards. The terms encompassed by this Principle are defined as follows:
  - *Open standards* are publicly available standards with proven implementation success. These standards are developed, adopted and maintained by a community to enable interoperability, or connected systems, across groups and to prevent dependence on any single vendor.
  - *Open data* comprise information that can be freely accessed, analyzed and shared, while still maintaining privacy protections. Being open means sharing data with an open license, in a machine-readable format and, preferably, for any purpose (for example, there are no restrictions on the private sector also using the data).
  - *Open source* is software with source code that anyone can view, copy, modify and share. The open source community prioritizes collective ownership.

ANALYZE & PLAN

TIPS AND RESOURCES

- **TIP:** Many donors require grantees to adhere to open data policies. These policies vary, but typically include requirements and recommendations to ensure data generated with their funding are made freely available.
- **TIP:** Include costs for complying with open requirements in your budget, including necessary staff and equipment.
- **TIP:** Creative Commons licenses can be used for sharing. [http://digitalprinciples.org/be-collaborative/]
- **RESOURCE:** The United Kingdom Department for International Development (DFID) "Open Access Policy" includes a summary of its requirements and recommendations and an Access and Data Management Plan template" https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/181176/DFIDResearch-Open-and-Enhanced-Access-Policy.pdf.
- **RESOURCE:** The Bill & Melinda Gates Foundation "Open Access Policy": https://www.gatesfoundation.org/How-We-Work/General-Information/Open-Access-Policy.
- **RESOURCE:** Code Innovation "Open Source and the Creative Commons: A Primer for Humanitarian Aid and International Development": https://www.codeinnovation.com/blog/2015/09/our-primer-on-how-to-use-open-source-and-the-creative-commons-in-aid-and-development.
- **RESOURCE:** Network World "Which countries have open-source laws on the books?": http://www.networkworld.com/article/3114619/open-source-tools/which-countries-have-open-source-laws-on-the-books.html.

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- *Open innovation* refers to co-created ideas, concepts and design or to inviting the contribution of ideas (crowdsourcing is one example).

- **Identify policies and standards for openness with which your initiative must comply.** These policies and standards might include national policies for open government, donor open access policies that require that publications are made freely available or aid transparency standards, such as the International Aid Transparency Initiative (IATI) [http://iatistandard.org/] [http://digitalprinciples.org/understand-the-existing-ecosystem/]
- **Plan for open licensing.** Agree on a set of licenses for any resources developed or produced by the initiative, such as a specific open source license, an Open Data Commons license (e.g., the Open Data Commons Attribution License) or a Creative Commons license (e.g., the Creative Commons Attribution license). In most situations, open sharing is not the default legal position, so an explicit license is required. To share as openly as possible, use the public domain declarations offered by Open Data Commons and Creative Commons [http://digitalprinciples.org/be-collaborative/].
- **Identify open platforms to host your initiative's resources,** such as the repository you will use for your software code. For example, you could share humanitarian data, including data about a humanitarian crisis, the people being affected by it and their needs, and responses to the crisis, through the Humanitarian Data Exchange (HDX) [https://data.humdata.org], and you could share open geospatial data on OpenStreetMap [https://www.openstreetmap.org]. Also consider whether your work has outcomes that can be shared on Wikipedia, including a relevant local-language Wikipedia.
- **Collaborate with implementers who have done similar work to identify opportunities for making your initiative more open.** Collaboration may take the form of working groups or information-sharing meetings, or you may work together to build the technology itself [http://digitalprinciples.org/be-collaborative/].
- **Identify and build on existing application programming interfaces (APIs) and appropriate open standards.** If you do not know how to find this information, ask the Principles community [https://forum.digitalprinciples.org/] to help you connect with communities in your sector, such as the Open Health Information Exchange (OpenHIE) [https://ohie.org/].

"It is helpful to focus on the issues underlying the choice of a particular proprietary or open source solution, such as life cycle cost, availability of a robust support model, level of system interoperability, ease of ownership transition, ease of replacement and the effect on the local economy. Decisions should take full life cycle cost considerations, as well as support and maintenance implications, into account and consider impacts on local businesses and livelihoods."

CAROL BOTHWELL
CRS

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- **Plan for how you will make your initiative open.** Include requirements with which you must comply and steps that you will take by choice. Ensure that your plans align with data privacy and security requirements, which can conflict with open requirements and goals [http://digitalprinciples.org/address-privacy-security/].
- **Include open source options when evaluating technologies and tools, if possible.** This may not always be possible if, for example, a ministry, partner or funder has already selected proprietary software: software that an individual or group owns rights to and in some way restricts its use. If a selection has not been made, consider the long-term costs of your options [https://digitalprinciples.org/resource/howto-calculate-total-cost-enterprise-software/], the fit to users' needs, and the benefits and risks of open and proprietary technologies. This evaluation will help to identify a tool to best meet users' needs and the needs for your context. If there is an open source tool that has been implemented successfully in other countries, you may be able to use it as a starting point [http://digitalprinciples.org/reuse-and-improve/].
- **Foster open communities.** Simply making your software code publicly available is not the same as creating an open source product. Make sure there is a community willing to adopt the code, maintain low barriers to access and contribute to its further development.
- **Contribute back to existing open source platforms.** When you identify software code that you would like to use or adapt in the planning phase, make sure that any changes you make to the code are communicated back to the communities that share the code. Continue to contribute your modifications and lessons learned to the community, in case someone else has a similar need for the code in the future.

Design & Develop

Design and develop your tool using open approaches so that users, stakeholders and the digital development community all benefit. For example, advancing systems interoperability will help prevent the development of inefficient parallel systems that waste resources and time in the long term.

- **Make design choices that advance interoperability and open innovation.** Regardless of your solution, continue to use

DESIGN & DEVELOP

TIPS AND RESOURCES

- **TIP:** You can take several steps to make your data more beneficial and easier to use for others. These steps may also be required to remain compliant with open access policies:
  - Use standard data formats.
  - Format your data so that they are easy to compare.
  - Combine data sets using a machine-readable format.
  - Make full data sets available online at low or no cost.
  - Share source code on an open platform, such as GitHub [https://github.com/].
- **TIP:** When sharing your work, consider what partners may be able to build on your tool, and make sure they know that the tool is public and free for their use. You can also share through communities of practice, networks, presentations in webinars and events you host. Are there other ways you share your solutions? Please tell us your ideas and suggestions at https://forum.digitalprinciples.org/.
- **RESOURCE:** Open Data Handbook: How to Open up Data, Open Knowledge International. http://opendatahandbook.org/guide/en/how-to-open-up-data/.
- **RESOURCE:** Starting an Open Data Initiative, World Bank. http://opendatatoolkit.worldbank.org/en/starting.html.

open standards and to participate in open source networks. Document the APIs you develop in an accessible way to share with the wider community and to support sharing of data and functionality. For example, OpenHIE shares internal and external APIs on a wiki page [https://wiki.ohie.org/display/documents/OpenHIE+Transaction].

- **Validate that your tool still complies with open policies and privacy and security requirements before deploying.** For example, as you make changes to better meet users' needs, the changes could make the tool noncompliant with government data policies. Review data privacy and security standards, regional and local government data strategies and requirements, and donors' requirements for open access to data to confirm compliance [http://digitalprinciples.org/address-privacy-security/].

Deploy & Implement

As you deploy and implement, you can enable open innovation and help the digital development community to be more effective and efficient. Using open approaches can unlock more opportunities for your initiative to have a greater impact on a larger scale. At a minimum, being open can help to prevent duplicating the efforts of other programs.

- **Share data, content and source code, after validating that it can be shared.** First, ensure that you have the necessary permissions to share source code, that data security and privacy requirements are addressed, and that your design complies with open standards. Then, share early and add updates when you have them. Communicate with users, stakeholders and the digital community that data and code are available, so they can reuse and build on your work [http://digitalprinciples.org/reuse-and-improve/]. Being open does not automatically lead to engagement. Identify opportunities for sharing your work.
- **Engage your open source community, and make it easy for them to contribute updates and new features.** Provide a forum for your users to provide feedback on your tool or system, communicate challenges and report bugs. Ensure that your code is accessible to developers interested in contributing to the tool, and provide clear guidelines for how they can get involved.

DEPLOY & IMPLEMENT

TIPS AND RESOURCES

- **RESOURCE:** DFID Research Open and Enhanced Access Policy Annex: Access and Data Management Plan Template, U.K. Department for International Development (DFID) https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/181176/DFIDResearch-Open-and-Enhanced-Access-Policy.pdf#page=15
- **RESOURCE:** Toolkit – Digitalisation in Development Cooperation and International Cooperation in Education, Culture and Media, German Federal Ministry for Economic Cooperation and Development. https://www.bmz.de/en/zentrales_downloadarchiv/ikt/Toolkit-Digitalisation-Development-Education-Culture-Media.pdf
- **RESOURCE:** Open Government Data Toolkit, World Bank. http://opendatatoolkit.worldbank.org/en

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Cross-cutting: Monitor & Evaluate

Incorporating monitoring and evaluation across the project lifecycle will provide useful data on how the open approach affected users and communities. This information can then be used to advance openness in the development community.

- **Identify indicators and which data you should collect to measure results from using an open approach.** Identify measures around your use of open standards, open data, open source and open innovation, such as tracking demand for what you have shared and contributions from the community that build on your work. Also, consider adopting similar indicators used by other organizations that worked on open initiatives to continue building on existing data. For example, UNICEF asked the water, sanitation and hygiene (WASH) community for guidance on indicators for WASH conditions at health care facilities and developed common indicators and data standards through community involvement.
- **Gather baseline data on your indicators and regularly monitor progress.** Review the data you collect and your analysis with users, stakeholders and the digital development community, as well as with funders, for additional insight.
- **Calculate actual costs for your implemented tool and compare them against the costs you estimated during planning.** Share your data and findings with the broader community to build into total-cost-of-ownership models [https://digitalprinciples.org/resource/howto-calculate-total-cost-enterprise-software/].
- **Share your findings and lessons learned with multiple audiences.** Being open also means sharing the results of your program or initiative <<link to Be Collaborative Principle>>. Within your team, conduct a lessons-learned or retrospective activity to reflect on what went well and consider opportunities for improvement. Share findings and lessons learned within your organization. Also, seek out opportunities to share with the wider community. Consider if there are community groups that may present a safe place to share challenges and opportunities for improvement. If you do not publish a formal report, you can still write a case study [https://digitalprinciples.org/resource/case-study-template/] that can be shared with the digital development community.

CROSS-CUTTING:
MONITOR & EVALUATE

TIPS AND RESOURCES

- **RESOURCE:** Measuring Success for Open Data, European Data Portal. https://www.europeandataportal.eu/elearning/en/module6/#/id/co-01
- **RESOURCE:** Monitoring and Evaluating Digital Health Interventions: A Practical Guide to Conducting Research and Assessment, World Health Organization. http://apps.who.int/iris/bitstream/10665/252183/1/9789241511766-eng.pdf.
- **RESOURCE:** Readiness Assessment Tool, World Bank. http://opendatatoolkit.worldbank.org/en/odra.html.
- **TIP:** Camfed, a nonprofit organization focused on empowering young women in sub-Saharan Africa through education, is sharing the data it collects back to parents and the community https://camfed.org/latest-news/sxswedu-data-as-a-democratic-process/.