Digital Public Goods Maturity Model

Open-source software is a key to social change

As part of its programming focused on long-term sustainability of open source software projects, DIAL and its Open Source Center have assessed multiple projects to monitor effectiveness of its interventions and offerings to make a positive impact on the productivity, impact, and reach of these projects. Historically, DIAL used existing maturity models from other industries and open source communities, and did not coordinate with other organizations in our sector for a common operational definition of "maturity".

The new project introduced and outlined in this document is a collaborative effort for those creating, maintaining, supporting, and sustaining digital public goods -- open source software used by international development, humanitarian response, and other efforts working to achieve the United Nations' Sustainable Development Goals. The project's intent is to drive multilateral conversation and collaboration to define core standards and specifications for a "rubric" of criteria that can be utilized in creating models of maturity of these digital public goods, and to evaluate and vet those solutions across a variety of use cases. Ultimately, this will fill the gap of not having this common understanding of what "maturity" means, and provide a common set of tools for its measurement.

Overview of the Project

An unknown large number of digital platforms have been developed over the past many years to support those working to advance and achieve the UN's Sustainable Development Goals. However, there have historically been few metrics or systems available to evaluate the maturity, quality, and sustainability of these goods. Without understanding where these digital public goods exist in their individual lifecycles from early-stage ideas to mature, widespread adoption, it remains difficult to make informed decisions about investments in developing this software, and to evaluate effectiveness of those investments.

This cooperative effort was launched in 2020 by the Digital Impact Alliance at the United Nations Foundation, along with initial partners at PATH's Digital Square and UNICEF's Digital Public Goods Alliance. The project's goals are to establish a core set of categories and criteria that can be used to evaluate and 'score' digital technologies. These data will provide much needed information to help actors understand and select digital tools to support their projects and use cases. In alignment with the principle of "Reuse and Improve" from the Principles for Digital Development, several upstream initiatives began to be harmonized to create the first iteration of the categories and criteria, including:

- CHAOSS
- Clearly Defined
- Digital Square
- DIAL Open Source Center

We intend to continue to rely on the active communities behind CHAOSS (Community Health Analytics for Open Source Software) and ClearlyDefined to remain as upstream guidance for criteria for our models. As those models evolve, as part of this project's governance processes, it will review those upstream changes and adapt them where appropriate. During 2021, we hope to deprecate the Digital Square and DIAL Open Source Center models with downstream implementations of this project. Further, we anticipate harmonization with the emerging assessment process currently in early testing with UNICEF's Digital Public Goods Alliance. Thus, by the end of 2021, we expect this collaborative work to be the authoritative framework for assessing digital public goods.

Goals

The primary goal of this work is to define a common ontology for evaluating digital products. This ontology will include broad categories for evaluating products and specific indicators or data points that can be collected about a product.

The project team fully understands that effort to evaluate digital public goods will continue to have unique priorities, so it is not creating a static "one size fits all" model to be used by everyone. Rather, the initiative is designed as an ontological approach in order to offer everyone a "standardized menu" of metrics and indicators from which to choose, as well as guidance on how to implement those measurements. Further, since the project is designed to foster an ongoing collaborative community, it aims to continually integrate downstream feedback from those implementing and using this rubric in their evaluation projects, ultimately allowing the framework to grow and optimize for its users need.

Process, Workflow, Usage

The initial work on the maturity rubric during the year 2020 was constrained to definitions and agreement on preliminary categories that will be used for evaluating digital public goods. The preliminary set of categories for use by the governance board in early 2021 are outlined below.

The second phase of the work, in 2021, will be to define specific indicators for each category. Indicators are data points that can be collected for each product that we wish to evaluate. These indicators may be either quantitative or qualitative. A subset of initial indicators has been outlined by DIAL for the project's launch. These examples are intended to be expanded, discussed, debated, and adapted to other categories by the governance board in 2021.

Alongside the work above, the project will also develop user profiles that describe different types of users and how they will interact with the maturity rubric. Finally, the project develop a process for establishing scoring systems, where a product is assigned a specific score to indicate its maturity.

Currently, the rubric is not yet adopted for use by an evaluation team. In early 2021, project partners at Digital Square will conduct an evaluation of the current state of the rubric through this project vis a vis their Global Good Maturity Model, and offer suggestions on revisions of this rubric in order to harmonize the two. After these modifications are merged into this project's rubric, Digital Square will then identify the final sub-set of indicators from this rubric that they will use in evaluating projects that apply for funding through their ongoing program work. We anticipate this rubric to be used by their team by mid-2021.

Although the project hopes to form strong partnerships with those groups who are using this rubric in their own work, its open source license allows anyone to create their own individualized evaluation system by selecting multiple indicators from one or more categories in the rubic. Each rubric indicator also offers suggested tactics for measurement, but these techniques may vary based on the unique needs of both the product/project under evaluation as well as the needs of the evaluating organization.

Once a consumer has identified the desired metrics and integrated them into their own internal processes and documents, it is important for that consumer to stay informed of "upstream" changes to this rubric that may occur over time. The project will offer opt-in methods to track these changes and updates, but importantly, the consumer is under no obligation to stay "up to date". This introduces a risk that there may be fragmentation across versions of the rubric as time goes on. However, the project will attempt to mitigate this risk by offering a community for discussing and sharing knowledge about project evaluation, offering an incentive for the relevant stakeholder-consumers to stay involved and aware of the model's evolution over time.

Governance

While all interested parties are encouraged to contribute to this model, deliberation and evaluation of proposals for modification, deletions, or improvements are carried out by a continually-serving governance board. Initially, this board will be comprised of one representative from each of the three founding partner organizations (Digital Impact Alliance, Digital Square, and the Digital Public Goods Alliance). Organizations or individuals who would like to participate in the governance board are encouraged to apply. Note that each participant in the governance board participates in an individual capacity.

The primary responsibility of the governance board is to evaluate incoming requests or suggestions, and update the model accordingly. The board is also responsible for merging changes from upstream sources like CHAOSS or ClearlyDefined, as well as for outreach and encouraging participation in the project.

Contributing

Contributions to this work are welcome from all individuals and organizations. There are two ways to contribute or suggest changes to the information in this repository - create an issue or submit a pull request (PR). The project is initially hosted on GitHub, which will be the initial tool suite used for the methods below.

Create an Issue

Issues will be used frame conversations about potential changes to be made. For example, a user can create a new issue to suggest a new category for the maturity rubric. The issue can be discussed through the comment threads and once there is consensus on a course of action, the issue owner can make any necessary changes.

Submit a Pull Request

To make a change to an existing document in this repository, a user can make a change or edit to a file and submit that change as a pull request or PR. Comments can be made by other users on the contents of the change before it is approved and merged into this repository. Contributions to this work are welcome from all individuals and organizations. There are two ways to contribute or suggest changes to the information in this repository - create an issue or submit a pull request (PR). The project is initially hosted on GitHub, which will be the initial tool suite used for the methods below.

Create an Issue

Issues will be used frame conversations about potential changes to be made. For example, a user can create a new issue to suggest a new category for the maturity rubric. The issue can be discussed through the comment threads and once there is consensus on a course of action, the issue owner can make any necessary changes.

Submit a Pull Request

To make a change to an existing document in this repository, a user can make a change or edit to a file and submit that change as a pull request or PR. Comments can be made by other users on the contents of the change before it is approved and merged into this repository.

Current Maturity Indicators

For the initial launch of the rubric model, DIAL worked at the end of 2020 to harmonize indicators across a variety of categories. Some of these categories have been deferred for harmonization in early 2021 in close consultation with the other partners of the consortium. These models will be kept continually up-to-date in the project's online repository, and the governance board will declare certain "releases" or "snapshots" of the framework for more standardized implementation by users. Releases will be announced broadly to interested parties and will be indicated on the project web site (GitHub repository).

Community Health

This category measures the health of the product community - whether there is a broad and diverse set of stakeholders that are contributing to the product.

- **Short description:** Engagement, management and vitality of contributor community
- **Is core category:** Yes
- **Priority:** High

Indicators

The following are indicators for consideration for this category:

Indicator Name	Source	Description	Data Type
Community (CO40)	DIAL OSC	The community is a "holarchy" and over time aims to give more rights and responsibilities to contributors who add value to the project	Boolean
Community (CO80)	DIAL OSC	The project has actively recruited and retained a diverse set of contributing members representing underrepresented constituencies, including gender, geography, economic status, and previously unaffiliated organizations	Boolean
Diversity and Inclusion	CHAOSS	How inclusive is community collaboration? (what we mean by collaboration needs to be better defined)	Scale
Recognition	CHAOSS	TBD (i.e. thank you in PR comments, blog post, badges, etc.)	Scale
Project Documentation	CHAOSS	What is the thoroughness, and accessibility of documentation according to a set of criteria. This includes README/CONTRIBUTING	Scale
Communication Channels	CHAOSS	How welcoming, responsive, respectful are interactions even on hot topics of debate? What is the diversity of voices speaking/being heard?	Scale
Sentiment	CHAOSS	What is the sentiment within external communication channels regarding our own press releases and within our internal communication channels, e.g., mail lists or IRC?	Scale
Code Quality	CHAOSS	What are the documented community processes associated with the development of the source code	Scale
Project Velocity	CHAOSS	What is the development speed for an organization?	Numeric
Commit Count	CHAOSS	How many commits do employees of an organization create?	Numeric
Issue Count	CHAOSS	How many issues do employees of an organization create?	Numeric
Pull Request Count	CHAOSS	How many pull requests do employees of an organization create?	Numeric
COCOMO	CHAOSS	What is value contributed by employees of an organization as measured by COCOMO?	Numeric

Compliance

This category measures whether a product adheres to both technology/software standards as well as specific standards for the sector or domain that it addresses.

- **Short description:** Software standard and other domain-specific compliances
- **Is core category:** Unknown
- **Priority:** Low

Indicators

The following are indicators for consideration for this category:

Indicator Name	Source	Description	Data Type
Digital Interventions	Digital Scale	The tool meets to X (0, partially, 100%) the digital functional requirements (as defined by WHO's Classification of Digital Health Interventions) without significant customization or configuration	Scale

Product Design

This category measures whether there is a clear roadmap for future enhancements, and whether there a community of contributors who are defining the future of the product.

- **Short description:** Product design planning, feature release lifecycle code change / issue management
- **Is core category:** Yes
- **Priority:** Medium

Indicators
Indicators for this category are under development.

Governance

This category measures whether there is clear governance for the product and people who are actively leading the direction of the product.

- **Short description:** Governance, leadership and decision-making
- **Is core category:** Unknown
- **Priority:** Scheduled for 2021Q1

Indicators
Indicators for this category are under development.

Knowledge Management

This category measures whether there is clear documentation for the product, the codebase, and established procedures for contributors.

- **Short description:** Documentation robustness and knowledge distribution for usage and code contribution
- **Is core category:** Yes
- **Priority:** Medium

Indicators
Indicators for this category are under development.

Licensing

This category measures whether a product has a known license and whether the license used is a known open source license.

- **Short description:** Licensing and IP accessibility
- **Is core category:** Yes
- **Priority:** Medium

Indicators

The following are indicators for consideration for this category:

Indicator Name	Source	Description	Data Type
Source Code Accessibility	Digital Square	Source code licensed X (N, Y)under an Open Source Initiative approved license	Boolean
Source Code Accessibility	Digital Square	Software is structured to allow X (N, Y) local customizations and new modules and functionality without requiring forking of main code	Boolean
Licenses (LC10)	DIAL OSC	The code is released under one of the preferred copyright licenses explained in the Apache Maturity Model's Licensing Principles	Boolean
Licenses (LC10)	DIAL OSC	The project name has been checked for trademark issues, shown through freely-available documentation	Boolean
License Declared	CHAOSS	What are the declared software package licenses?	Boolean
License Coverage	CHAOSS	How much of the code base has declared licenses?	Numeric
Top Level Declared License	Clearly Defined	A project has specific key file(s) at the top level of its code hierarchy such as LICENSE, NOTICE or similar (and/or a package manifest) containing structured license information such as an SPDX license expression or SPDX license identifier, and the file(s) contain "clearly defined" declared license information (a license declaration such as a license expression and/or a series of license statements or notices). This is a binary score element	Boolean
File level license	Clearly Defined	Are all the licenses standard SPDX-listed licenses?	Boolean
SPDX Standard licenses	Clearly Defined	Are all the licenses standard SPDX-listed licenses?	Boolean

Dependency and Risk

This category measures whether a product has dependencies or other risk factors that could jeopardize the health and sustainability of the product.

- **Short description:** Risk and dependency on community composition and organizational affiliations
- **Is core category:** Unknown
- **Priority:** Scheduled for 2021Q1

Indicators

The following are indicators for consideration for this category:
Indicators for this category are under development.

Financial Sustainability

This category measures whether a product is financially viable, e.g., whether the project is generating sufficient revenue to sustain necessary operations and whether costs are well managed.

- **Short description:** Revenue generation and cost management
- **Is core category:** Unknown
- **Priority:** Scheduled for 2021Q1

Indicators

The following are indicators for consideration for this category:
Indicators for this category are under development.

Utility and Impact

This category measures whether a product is designed to address one or more of the UN Sustainable Development Goals (SDGs) or SDG targets.

- **Short description:** Product utility and impact (with alignment to SDG agendas)
- **Is core category:** Yes
- **Priority:** High

Indicators

The following are indicators for consideration for this category:

Indicator Name	Source	Description	Data Type
Country Utilization	Digital Square	Countries or states actively use the tool as part of their health information system	Scale
Country Strategy	Digital Square	Countries or states have included the tool as part of their eHealth strategy or framework	Scale
Impact (IM20)	DIAL OSC	The project should be able to clearly make the case for its importance in the Development and/or Humanitarian sector(s)	Boolean
Impact (IM21)	DIAL OSC	The project shows demonstrated downloads or use in countries classified as low- or middle-income by the World Bank	Boolean

Additional Resources and Rubrics

The project's Framework and Product Evaluation document provides information about DIAL's SDG Development Framework and how a product maturity rubric supports that work.

The Product Maturity Models spreadsheet contains detailed information and data that DIAL has collected about the various categories and indicators that may be collected, including how these indicators map to existing maturity models, how they may be collected, and their relevance.

Other Rubrics

Other rubrics and evaluation frameworks that were reviewed in the process of consolidating this maturity model are listed below:

- Digital Health Software: Global Good Maturity Model developed by Digital Square.
- Maturity Model developed by DIAL's Open Source Center based on the Apache Project Maturity Model
- CHAOSS Metrics
- ClearlyLicensed Metrics
- Health Information Systems Interoperability Maturity Toolkit funded by the United States Agency for International Development (USAID), in collaboration with the Digital Health and Interoperability Technical Working Group of the Health Data Collaborative.

About this Document