

Risk modelling standards and best practices for companies engaged in IDF projects for sub/sovereigns, including the Tripartite Agreement

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Introduction

The following is a set of standards and best practices covering risk modelling activity for IDF projects. All projects of the Sovereign and Humanitarian Solutions (SHS) Working Group should adhere to these standards and are encouraged to follow the best practices.

These standards and best practices are consistent with the IDF Risk Modelling Steering Group's (RMSG) strategy of growing risk understanding through adoption of open-source risk platforms, principles and practices, a policy endorsed at IDF Steering Committee level.

Why are these standards and best practices important?

The IDF aims to accelerate the spread of risk understanding as a foundation for the achievement of the UN Sustainable Development Goals and economic/market development. This requires easy access to risk tools and models to promote local engagement and the integration of local data and knowledge in the modelling process. The way to achieve this is through use of open-source platforms, open data standards and interoperability¹. The underlying logic is shown in the RMSG strategy paper (updated January 2020) and the IDF Development Impact of Risk Analytics report (October 2020).

An over-riding principle in working with country partners is that of **co-development**. There should be sufficient mutual engagement that country partners are able to 'fly solo' at the end of the project's lifetime, meaning that the client is able to further develop the project risk analysis without seeking additional help outside the terms of the agreement.

This approach implies investment in capacity building (see below) which may involve close work with a range of local institutions. Beyond ministries of finance, common examples of such institutions include asset-owning ministries, risk management agencies, scientific or academic institutions, and possibly also regulators and domestic private sector partners.

Standards

1. Co-definition of risk analytics needs:

Close and continuous collaboration with country partners from the start of a project is the key to building sustainable risk analysis capacity from the start.

The objectives and work packages of the risk analysis and capacity building programme to be included in the IDF project are to be jointly defined with the project beneficiary ("the client".) Primary client organisations will usually be national ministries, mayoral offices and/or their nominated agencies specified within the Project Proposal.

A focus department or office for development and leadership of the risk understanding function

¹ Definitions of these key terms are shown at the end of this document.

should be identified at the outset. For Tripartite projects, the UNDP country office may also be able to contribute depending on its expertise, connections and experience.

2. Capacity development and support:

In general IDF projects aim to leave a lasting capability in the risk function of the client/ project beneficiary. Country partners should be able to own, use and further develop their risk information after the end of the project’s lifetime. This requires investment of time in capacity building for the relevant state actors defined by the client.

A key principle in building this capability is involving local partners in the **co-development** of projects – in other words, allowing them to learn by doing whenever this is feasible, for example when the Government or agency the project is working with has a risk team.

IDF project consortia should plan to include formal training, informal coaching and service and support to their local sub/sovereign beneficiaries during the life of the project and for a specified time afterwards, to enable country users to use and develop the model. This commitment should include:

- a. Training on purposes, modes and methodologies of risk analytics.
- b. Direct and open communication during the model development and testing process.
- c. Consultancy and training on options for platform access and model hosting.
- d. Provision of remote service and support for a specified, limited period after the end of the project period.
- e. Provision of documentation, manuals and training materials to ensure complete transparency of assumptions and model processes. These materials to be provided in English and if possible, one further language.

3. Compatibility of risk models and data:

The standard should be creation of models using existing, but evolving, open-source model and data standards.

Interoperability and choice are key principles and it is important not to leave country partners locked into a proprietary system, or confused by disconnected approaches. The Oasis Loss Modelling Framework is the IDF’s preferred platform and an increasing number of model builders, data providers and platforms are ensuring compatibility.

The following minimum standards of compatibility and interoperability are required in IDF projects:

- a. Models are to be formatted for use and continuous development on the Oasis Loss Modelling Framework platform. This in no way excludes initial model development on other platforms (for example open-source formats such as GEM OQ, CLIMADA, CAPRA, DAFNI and others). However, the intention is that users can choose Oasis (and the Open Data Standards suite) as their primary interface, bringing them the advantages of model variety, community, financial capability and practical tools for local integration such as model development kits.
- b. Exposure data is to be made available in the Open Exposure Data (OED) format. (<https://github.com/OasisLMF/OpenDataStandards>)

4. **Licensing:**

The setting of data/model licence fees will be the responsibility of each country project consortium. The minimum standard is that public sector clients / project beneficiaries such as ministries, mayoral offices or humanitarian agencies will benefit from zero or low-cost licensing where public funds have been applied.

Each project will need to reach agreement on data/model licence terms for its project partners and/or sub-contracted agencies, such as national insurance associations, science institutes, private sector partners and national reinsurers.

Treatment of intellectual property and licensing requirements within Tripartite Agreement projects must have regard to the donor's conditions.

IDF sets the following specific licensing standards:

- a. Licence terms should be clear for both data inputs and models. Licensing should enable the sub/sovereigns to:
 - I. Have access to the data inputs that went into the building of the model. All data should be accompanied by metadata conforming to common standards such as ISO 19139:2007 / ISO 19115.
 - II. Be able to re-run and further develop the full model for an agreed period of time after project completion, to be specified in the licence. This implies the provision of the necessary toolset to make that possible.
- b. Rights to new intellectual property remain with the model provider.

Best practices

1. **Use of local research:**

Use of local research sources significantly improves the likelihood of model acceptability and adoption. Wherever possible, the IDF recommends that project teams include research data from local organisations on hazard, vulnerability and exposure in the IDF project risk analysis, insofar as those data add to the analysis and meet data quality requirements. Please see the document "RMSG Services for IDF country projects" for further details.

2. **Protection of Intellectual Property (IP)**

Even in development and humanitarian programmes a competitive modelling market is healthy. It brings the advantages of continuous improvement and choice for the end user, but the disadvantage is that full transparency becomes more difficult. Organisations (including commercial model vendors) must protect the investment they have made, otherwise there is no incentive to keep on investing in research.

There is no definitive rule that will overcome this tension, but the spirit of the IDF's work is to share and encourage transparency and sustainability wherever possible. The benefit is the trust and confidence such practice engenders with the client government and other users. The IDF recommends the following best practices:

- a. **Background IP:** (underlying data, code and methodologies generated outside the project being considered, for example a global hazard model or vulnerability research).

Background IP may be licensed to the client government or partner for the duration of the project, but the client may not by default retain access to that IP after the end of the project.

- b. **Foreground IP:** (data, code or methodologies generated within the project for the specific geographical area and risk question being asked). Foreground IP should by default be licensed to the client government or partner in perpetuity, particularly if this is encouraged by project funders.

Some key principles that may be applied in contracts include:

- Open conversations with the client about how much detail (such as underlying code) they will actually need for the decisions they have to make.
- Honesty and contractual clarity about what can and what cannot be shared.
- Use of confidentiality clauses.
- Specificity about which government departments and agencies are included in the definition of the client.

3. **Complexity of risk models and data:**

Consistent with the aim of connecting private sector capabilities to development challenges, the IDF encourages the development of event-set based probabilistic models that are sufficiently transparent to communicate sources of uncertainty and confidence levels in results. The use of deterministic approaches also has a place, e.g., through the analysis of well-defined scenario analysis or using large sets of deterministic events, though such an event set may fall short of a complete probabilistic event set.

IDF acknowledges that probabilistic analysis is not always required because the decision concerned does not merit such deep analysis; or is not possible because the source data is insufficient. The RMSG (or GRMA once operational) can provide guidance on the appropriateness of model development in the context of each project.

4. **Curation of data and models:**

Capacity building should include consultancy with country partners on setting up a sustainable geospatial repository for users to access and share data, where one does not already exist.

5. **Use of disaggregated data:**

Where demographic data is included in the modelling process, the data should be disaggregated on the basis of gender and age group (as a minimum,) so that the resultant impact analysis can distinguish potential impacts on women/girls and men/boys. Where relevant to the project, data should also be disaggregated for the identification of a given population's most vulnerable groups.

Practical considerations

Definitions

There are many definitions on the area of open risk analytics, summarised in the Development Impact of Risk Analytics report (pp 90-92). For the purposes of this document:

- Data standards are rules by which data is described and recorded. In order to share, exchange and understand data we must standardise the format as well as the meaning.

- Interoperability is the ability of two or more networks, systems, devices, applications or components to share and use information with little or no inconvenience to the user.
- Open data is defined as data that is free to use, re-use and redistribute.
- Open source denotes software for which the original source code is made freely available and may be redistributed or modified (as in the case of Oasis LMF).