Design Document for 3IE Registry for International Development Impact Evaluations

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Abbreviations

3ie	International Initiative for Impact Evaluation
AEA	American Economics Association
CCT	Conditional Cash Transfer
DFID	Department for International Development
EGAP	Experiments in Governance and Politics Network
IRB	Institutional Review Board
IP	Intellectual Property
IV	Instrumental Variables
NGO	Non-governmental Organization
NORC	National Opinion Research Center
PAP	Pre-Analysis Plan
RCT	Randomized Control Trial
RIDIE	Registry for International Development Impact Evaluations
UCD	User-centered Design

I. Introduction

Objectives of the Registry

This design document describes the structure and functionality of the Registry for International Development Impact Evaluations (RIDIE). The RAND Corporation has been engaged by the International Initiative for Impact Evaluation (3ie) to develop an innovative registry for impact evaluations of programs in low and middle income countries.[1] The registry serves as a database of information on prospective, ongoing, or unpublished evaluation studies and provides a means of systematically collecting and storing that information as well as making it publicly available.

A key function of RIDIE is to serve as a *prospective* registry, with two main objectives. The first objective is to increase transparency in the performance and reporting of research. A prospective registry seeks to avoid several well-known types of bias in research or reporting. These include *post hoc* data mining or specification searches, whereby researchers use the results to decide what outcomes to report or specifications to use, usually with the aim of being able to report results that are statistically significant, 'interesting', or in accordance with preconceived ideas. On the publication side, it is widely assumed that journals favor such results, so the end result, whether from the researcher or publication side, is that published results may present a distorted picture of which interventions work and which do not (and what share of the time they work).

In a prospective registry, researchers register specific information about their evaluation plan up front, before data are collected or impacts of the program are assessed. This information can include outcomes to be measured, hypotheses to be tested, main and subgroup analysis, and specifications to be used. When study results are later submitted, users of the registry (including researchers, journal editors, and funders) will be able to assess the extent to which researchers adhere to their plans and, more importantly, avoid selective reporting of results; of if plans change, the registry allows users a way to see how they have changed. Put another way, researchers are more likely to comprehensively report all their findings, significant and interesting or not, when their initial design is publicly known.

Prospective (and public) registration can also benefit researchers by allowing them to 'lay claim' to innovations in study design, testing of theory based hypotheses, sampling approaches, etc.

[1] The project is being led by Peter Glick and Bas Weerman, with Glick directing design activities and Weerman directing development (IT) activities. Sebastian Bauhoff and Elizabeth Brown contribute to design, while Christopher Skeels and Adrian Montero contribute to development. In addition, RIDIE has been significantly shaped by input from two expert task forces that have advised on design and development issues. The composition and roles of the task forces are described in Appendix 4.

by making public these aspects of their work well ahead of study completion and eventual journal publication.

The second main objective of the registry is to provide a repository of studies in a given field or of a given type. This will facilitate the aggregation or synthesis of findings across different studies. In this regard, a registry can significantly mitigate the problem of publication bias, since in theory it will assemble all studies of a given type, including those that were never published in journals--and those that were never even completed. This can help avoid concluding that a certain type of program is effective on the basis of one or two favorable published studies, when a larger number of unpublished evaluations actually find no benefits or only weak impacts.

RIDIE is intended to be a registry for **all planned, ongoing, and unpublished impact evaluations related to development in low and middle income countries**. It is designed to cover all such evaluations that rigorously attempt to estimate causal impacts of program impacts via specification of the counterfactual. Thus it includes randomized control trials (RCTS) as well as a range of quasi experimental approaches for establishing causality. In so doing RIDIE will fulfill the following objectives:

- By allowing researchers to register their studies before carrying out the analysis, *it will enhance the transparency of research and the credibility of findings* against concerns about *post hoc* choice of hypotheses, data mining or specification searches.

- Hence ultimately, when the use of RIDIE (together with other registries) becomes widespread, it can *lead to overall improvements in the quality and integrity of impact evaluation evidence in low and middle income countries*, along the lines of the ClinicalTrials.Gov registry for medical trials in the U.S. The need for reliable, high quality evidence for policy-making is especially strong in these settings, where resources for both development programs and evaluations of them are limited and, given high rates of poverty, the stakes are high.

- By collecting information on all impact evaluations, including those that were not published, *RIDIE will provide a better basis for policy decisions than simply relying on published findings*. Given reporting and publication biases, a single study reporting a successful intervention is likely to gain a lot more attention than several evaluations of similar interventions that failed to yield positive findings. Having knowledge of the full range of positive and non-positive findings will permit more informed policy choices about the allocation of scarce resources.

- By collecting information on all planned, ongoing, and never published impact evaluations in these countries, *RIDIE will also allow researchers, funders, and policymakers to find out what interventions are or will be carried out and evaluated in a given country or topical*

domain. This will serve to avoid undesirable duplication of efforts as well as to indicate where information gaps are largest—both of which are also crucial in light of resource constraints for programs in developing countries.

The first three items above (and especially the first two) suggest how RIDIE addresses the first objective of a prospective registry, which is to ultimately improve the quality of evaluation research by increasing transparency in the research process. With regard to the second objective, which is to serve as a repository of studies, RIDIE is not intended as a general repository of published impact evaluations in development. 3ie currently maintains a database of published evaluations, the Impact Evaluation Database, and this will soon be transformed into a general registry of published development-focused evaluations.[2] Nevertheless, by registering (together with other, linked registries) all initiated or ongoing impact evaluations in development, RIDIE will address the second objective in two ways. First, by helping to mitigate publication bias, since unpublished studies or those with non-positive findings are included in the registry. Second, by providing information on the range of planned or ongoing (as opposed to only published or completed) impact evaluations; for funders allocating resources and researchers deciding on interventions or countries to propose, access to systematic information on what is being done and where will be highly valuable.

Comparison with other registries

Several initiatives in addition to RIDIE are underway in the social sciences to create prospective registries, as part of a general movement inspired in part by the earlier implementation of registries in medical science such as clinicalTrial.Gov. The social science registries include those being developed by the American Economics Association (AEA) in economics and the Experiments in Governance and Politics Network (EGAP) in political science. The 3ie initiative will potentially overlap with these but also differ in important ways:

- Both the AEA and EGAP registries will be restricted (at least for now) to randomized control trials. While the benefits of RCTs are very well established, this leaves out many high quality impact evaluations in developing countries that use a range of quasi-experimental approaches (regression discontinuity, propensity score matching, natural experiments, and others).

- RIDIE focuses on low and middle income countries only while the other two registries also include studies in the US and other developed nations. As noted, the need for reliable, high quality evidence for policy-making is especially strong in low and middle income settings. This motivates the focus of RIDIE on these countries, as it does the mission and focus of 3ie itself as a funder of evaluation research for development.

[2] See http://www.3ieimpact.org/evidence/impact-evaluations/

- Reflecting an emphasis on policy impact, RIDIE will be restricted to actual program evaluations whereas the other registries also include behavioral laboratory experiments.

- Finally, and reflecting the same emphasis, RIDIE is not geared only or primarily toward scholarly research destined for journal publication. It will make efforts to include impact evaluations by non-academics—including consultant organizations as well as developing country analysts—produced for governments or other funders and not necessarily intended for publication.

Despite these differences in focus, there is likely to be, as indicated, significant overlap between RIDIE and the AEA and EGAP registries--and potentially other future registries. RIDIE has not been designed from a perspective of winning a competition among registries; quite the opposite, the overriding objective is to ensure that new impact evaluations in development get registered, and that a range of users will be able to find information on these studies easily wherever they are housed. To that end, RIDIE is being designed to ensure high interoperability with other registries, particularly with regard to searches across sites, as described below.

Intended users of RIDIE

The core user groups and how they are expected to use and benefit from RIDIE are as follows:

- Researchers (study authors): Researchers based in universities and research institutes who are conducting impact evaluations and would like to prospectively register their studies. These evaluations may be primarily research oriented or contract work with government or multilateral agencies. Prospective registration of studies will enhance the transparency and credibility of the researchers' work (and may also be encouraged or required by funders and journal editors). It also allows researchers to 'lay claim' to innovations in study design, testing of theory based hypotheses, sampling approaches, etc. by making public these aspects of their work, well ahead of study completion and eventual journal publication.

- Professional evaluators: Researchers based in firms such as Mathematica Policy Research or NORC, who carry out contracted evaluations primarily for government or multilateral agencies. As with the previous group, prospective registration of their studies will enhance the transparency and credibility of the research as well as lay claim to innovations.

- Other researchers: individuals who are interested in knowing about particular ongoing studies, or trying to learn about findings of unpublished or not yet published evaluations, or planning their own evaluations and therefore seeking to learn where gaps in research are with respect to topic and countries or region.

- Evaluation funders: Foundations, governments, and multilateral agencies that fund impact evaluations, and want to monitor the progress and performance of these evaluations, or to

learn where gaps in research are with respect to topic and countries or region so as to inform which proposals to fund and to shape calls for proposals. Funders may also decide to make registration a condition of funding, as a means of ensuring quality and credibility of findings.

- Journal editors: For papers submitted for publication that use impact evaluation data, journals may decide to encourage prospective authors to register their studies or give higher priority to those that do; they may want to reference the registration number in published articles; and they may want to provide information from the registry (including initial analysis plans and changes to study design) to referees to assist them in evaluating submissions.

- Students/other: A broad class of users, including for example NGOS and development practitioners, who may not themselves be evaluators but seek to learn about a particular ongoing study, or get a sense of what is happening in their country, region, or subject area of interest.

- Policy makers: decision makers who similarly seek to learn about a particular ongoing study, or get a sense of what is happening in their country, region, or subject area of interest; or who want to understand what interventions work well in similar contexts and could be attempted in their own country. Note that while RIDIE can be used this way and will be accessible to anyone, it is not primarily designed as an information tool for the policymakers or the general public.

The diverse needs of these user groups have been taken into account in the design of the registry, including with the help of numerous "user stories"—imagined cases studies of individuals in different groups who would use the system. This process and the ways in which RIDIE accommodates the needs of different users are described later in this document.

The remainder of this document is organized as follows. The next section describes the structure and content (information collected) of the registry. This is followed in Section III by discussions of how RIDIE addresses key issues that arise for any such registry, including the determination of private vs. public information, required and optional fields, defining what is a prospective registration, and linkages to other registries. In Section IV, to better convey how the system operates from the point of view of individuals registering a study, we trace out the paths taken by researchers registering two different kinds of impact evaluations on RIDIE. In Section V, we describe the core functionalities of the registry (registration, updating, search and documentation) and how these meet the needs of the diverse groups of users identified above.

Appendices provide the full list of fields in the registry, examples of 'user stories' to illustrate how several different types of users (in addition to study authors) would engage with RIDIE,

additional technical details about the set-up of RIDIE including web hosting and user interface, and a list of members of the Design and Development Task forces that have advised on this project

II. Structure and data collected by the registry

The information gathered by RIDIE on an impact evaluation covers five domains: General Study Information, Intervention, Evaluation Method, Data, and Study Completion. Each is contained in a separate, relatively short, module and is described briefly below. The complete list of fields for these modules is presented in Appendix 1, showing field title and description, response type (e.g., text, drop down menu), whether the field is required or optional, and whether it is public or private. All of the modules are entered during initial registration (and can be updated during the course of the study) with the exception of Study Completion, which is entered when the study is finished.

The **General Study Information** module gathers basic information about the PI and other researchers and information about the study including study title, location, description (including keywords), current status of the study, funders, local partners, and the like. Also, researchers can upload their research proposal for the study if there is one (this is optional).

The **Intervention** module records information on the intervention or program being evaluated, including a general description of the intervention, unit of assignment for treatment or receipt of the program (e.g., individuals, schools, firms), expected beneficiaries, implementing and funding organizations, and timing. The fields are made flexible so as to handle evaluations of scaled up and ongoing programs rather than only interventions or pilot studies that are directly linked to the evaluation (as in RCTs).

Evaluation Method gathers information on the approach that will be taken to estimate causal impacts, outcome variables, unit of analysis, sample size, and hypotheses to be tested. Details on the approach are gathered in both public and private open ended text fields, the latter making it possible to withhold release of some details until study completion if the researcher desires. Again, the fields are designed to be flexible to accommodate a range of methods (the methodological specifics of matching, for example, are different from those for RCTs or IV methods). In addition to specifying hypotheses to be tested, which is required, the researcher is asked to upload a more detailed analysis plan document, though this is optional. The prospective registering of hypotheses and other details of the analysis in this module is at the heart of the idea of a prospective registry as discussed earlier.

The **Data** module collects information on the data used to measure impacts. It distinguishes data on outcomes and on treatment (or more generally, on which units participate in the program) as these may be drawn from separate sources, and asks about the nature of the data (e.g., household survey, firm survey). The fields cover both primary data that will be collected as part of the evaluation and secondary data sources that many quasi-experimental studies are likely to use, with researchers routed by automatic skips to the appropriate fields for their study. For existing

(secondary) data, information is gathered on how the data are obtained (e.g., through a formal approval process or without restrictions) and if they have been obtained yet, and if the research team or others have previously used these data. This information is used by RIDIE to categorize the registration as prospective or not, and within the prospective designation, several types are demarked, as described in Section III below. The researcher is also asked if the data and survey instruments can be shared at this time, and if so, is asked to indicate a link or email contact for obtaining these materials.

In the **Study Completion** module, the researcher is asked to provide information on final sample sizes and intervention completion dates; a detailed summary of the results (this could be a pasted-in paper abstract or executive summary), a link to a full report, and citations of any published studies. The module also asks about availability of the data and survey instruments uses, as well as of program files (e.g., Stata .do files) and provides options to provide links to this material. This module is also intended to be used in cases where the study ended before completion for whatever reason (e.g., political strife, lack of funding); there are fields for the date the study was stopped and the reason. For the bulk of cases where this did not happen, the researcher also is able to describe any changes that occurred to the study design (method, sample, etc.) since initial registration.

Unlike ClinicalTrials.gov (which includes studies for which results reporting is legally required) and the proposed EGAP registry for trials in political science require, RIDIE's Study Completion module does not require researchers to use highly structured fields to enter data on study results, e.g., mean values of outcomes for treatment and controls for each hypothesis test. These fields would have to be quite complex given the wide range of evaluation methodologies included in RIDIE and hence difficult for researchers to work through, in contrast to registries that are limited to trials.

RIDIE incorporates the full range of quasi-experimental impact evaluations, for which new data may or may not have been collected, as indicated. Thus from both the methodological and data point of view the cases handled are necessarily more varied and the site structure more complex than a registry such as the AEA registry that deals only with RCTs; this applies as well to information on the intervention itself, as this may be a pilot linked to the evaluation or a fully scaled program long in operation. Therefore many fields or sequences of fields will be relevant to some studies but not others. To accommodate this, the program features numerous skip patterns, which with a few small exceptions are built into the program and automatic, rather than being instructions to the user. Therefore the number of fields for a given study is considerably smaller, and the passage through the registry simpler, than the impression one might get by looking at the full set of fields in Appendix 1.[3] In Section IV below, we walk through the registration process for two specific cases to show how this would work. Although comparisons are not straightforward

[3] A detailed Excel spreadsheet with internal skip patterns indicated is available upon request.

given the wider variety of studies to be registered on RIDIE, we estimate that the amount of information a researcher must enter for a study will be generally comparable to the AEA registry for experimental evaluations and slightly more than that for quasi-experimental evaluations using secondary data.[4]

[4] The length of the AEA registry in turn was informed by informal polling of individuals who tried out the prototype J-PAL registry for experiments. Responses suggested that ½ hour to 45 minutes is acceptable to researchers for the initial registration process. We thank Patrick McNeal of J-Pal for discussions on this issue.

III. Key characteristics of the registry

This section discusses in detail several important aspects of RIDIE.

Eligibility criteria for studies

RIDIE adopts a relatively open approach, and does not restrict the registry to studies using specific evaluation methodologies. However, the introductory page on the registry web site will make clear that the registry is meant for studies that:

(1) Use a counterfactual to assess program impacts
(2) Evaluate a specific intervention or program

The purpose of (1) is to encourage rigorous evaluation approaches, whether experimental or quasi-experimental. The purpose of (2) is to encourage concrete evaluations of well-defined programs, as opposed to regression studies that say, include variables for 'distance to clinics' or 'local school quality'. Still, the definition of 'program' can be broad, and can include for example the rollout of HIV testing facilities by the health ministry or a school construction policy.

Some ambiguity will doubtless remain as to what constitutes 'rigorous' or 'a program'. However, this is acceptable and in fact the aim is to err on the side of including all relevant studies with the possibility that some studies may not really fit the definition. Those who use the registry to do searches or assess individual studies will be able to determine whether the study(s) meet their own criteria.

The registry will not assess the quality of the evaluation designs. In this we regard we follow the 'soft touch' approach used in other registries such as ClinicalTrials.gov and the J-Pal/AEA registry. As in these registries, the focus will be on quality and consistency of *reporting*, not quality of the study design or implementation (or analysis of the data). It will be up to users to ascertain the quality of registered studies in these dimensions.

Public and private information

There are some valid arguments for not making public at the time of registration all the information about a study provided by researchers. One is an intellectual property (IP) rationale: researchers may fear that their innovations will be 'scooped' before they get a chance to publish their results. For some interventions, it is also possible that study participants may get on line and read about the study, potentially contaminating the results by changing individuals' behavior or what they say in interviews. In addition, in some cases there is a risk that a study would become politicized or threatened—or study personnel themselves placed at risk—if details were made

public about research on sensitive issues or in potentially unstable countries. Having portions of an entry initially hidden from public view does not mitigate the transparency function of pre-registration, as long as the researcher is obligated to make these details public at some time in the (not too distant) future.

On the other hand, from a public goods perspective there are strong arguments in favor of having all registration data completely public. Having plans hidden from view for an extended period—it typically takes several years from the start of the study to completion—deprives the research community of information on all the work that is taking place in a given country or on a given topic, potentially leading to unnecessary duplication of efforts and an incomplete understanding of where the needs are for specific evaluations. Immediate release of details is likely to encourage greater transparency.[5] There is also an ethical human subjects argument, which is that it is exploitative of study participants who are volunteers to have significant parts of the study privately held (excepting personal identifiers of course).

Further, even the IP rationale may be challenged: *not* having your innovative designs public may increase the risk of your idea being introduced publicly by someone else before you release this information. The time-dated registry entry can in fact serve to publicly and 'officially' certify that one has developed this idea at a certain point in time.[6]

To meet the needs of a wide range of researchers and studies, RIDIE will allow some fields to remain private until study completion. This will also include the uploaded Pre-Analysis Plan. A trigger date would be agreed to after which this information is made public; this normally would be expected study completion date but could be sooner. There will be a possibility of extending that date if there are delays in implementation or analysis.

The following categories are used:

[5] Katherine Casey, Rachel Glennerster, and Edward Miguel, "Reshaping Institutions: Evidence on Aid Impacts Using a Pre-Analysis Plan." *Quarterly Journal of Economics* 127(4): 1755-1812. http://elsa.berkeley.edu/~emiguel/pdfs/miguel_gbf.pdf

[6] EGAP VIII Steering Group, Draft proposal for a Pilot Registry for Political Science (PREPS) October 3, 2012

Hidden	Fields used for internal control, not shown publicly.
Public	Field is made publicly available as soon as registration is complete (or for later changes, as soon as entered)
Private	Field is private until after the study has been completed, at which time it is made public. A trigger date will be used to determine the timing of the public release. Normally this will be the expected date of completion of the analysis. Release will be preceded by an email reminder, with the possibility of extending the release date.
Private (by request)	The default for these fields is public, however, registrants may request that the information remain private until after the study has been completed or sometime earlier.

The list of fields in Appendix 1 indicates which of these designations applies to each field. 'Private by request' items are actually public fields capturing basic study information (location, partner name, etc.). This option is included to deal with cases where revealing basic details of a study may imply security risk or jeopardize the study for political reasons. Registrants would have to specifically request that these details be kept private. This information will have to be revealed upon study completion in the same manner as standard private fields. Researchers will be able to allow funders or others to see the full study, including private information, at any time, by downloading and emailing the registration to them. Researchers will be sent email reminders of impending release dates, and be allowed to request an extension with reason (e.g., delays in implementation, in the survey process, etc.).

Required and optional fields

All registries collect mandatory basic information at registration, such as study title, PI name, funder, country, and start and end dates of the study. Typically there are both required and optional fields. The proposed AEA trial registry has 80 fields in total for both initial registration and final reporting. Of these, only 26 will be required. Even ClinicalTrails.gov, where most U.S. medical trials must register by law, has many optional fields. In fact, the number of required fields at registration at ClinicalTrails.gov is fewer than the 25 that the International Association of Medical Journal Editors, following WHO guidelines, agreed to require for publication of any study. (A warning in the system flags such cases for journal editors.)

RIDIE follows this pattern and has a core set of fields (most of which are among the required fields). In general, the registry is liberal in terms of these requirements. For example, while the registrant is required to specify hypotheses that will be tested, there is no requirement to upload a more detailed Pre-Analysis Plan. When reporting after study completion, researchers are required to provide some basic details in structured fields including final sample size and dates of completion of the intervention and data collection. For reasons given above, they are not required to specify findings (e.g., means of outcomes for treatment and control groups) in structured fields,

but rather are asked to provide a detailed summary of the findings and a link to a report. Of course, funders or journals may choose to require that a Pre-Analysis Plan be uploaded at registration and prior to data collection, or that specific fields be supplied that RIDIE considers as optional. This will be left to these parties to request of the researchers. As discussed further below, the registry will automatically flag required fields that have not been filled in. Appendix 1 indicates which fields of RIDIE will be required and which will not be.

Classifying prospective registrations

In the most general terms, a registration of an impact evaluation is prospective if researchers prepare and submit a research design and hypotheses to be tested *before the impacts of the program they are evaluating are measured, or if measured, are known to them.* Impacts are measured using a data set or data sets that contain information both on the outcomes and on treatment assignment. As discussed earlier, pre-registering evaluation plans is a means for ensuring transparency in reporting and protecting against researcher bias, reporting bias, and publication bias.

For RCTs, there is usually very little ambiguity in what constitutes a prospective registration. Such evaluation designs are themselves prospective; they collect primary data for measuring outcomes after an intervention has been implemented (we are referring here to post intervention data, not baseline data which RCTs also usually collect).[7] A Pre-Analysis Plan and specification of hypothesis is often provided in some form to funders or other parties in advance of the intervention or at least, in advance of the collection of data on impacts. This can be contained in the proposal submitted to the funding agency, which may have to include detailed research design and hypotheses, or in documents that need to be prepared for IRB requirements. For a range of evaluations using existing (secondary) data, however, things are less clear cut, at least from the point of view of being able to independently verify whether hypotheses and other aspects of the study design, such as subgroup analyses, have been specified in advance of the researchers having knowledge of outcomes. This will apply to many quasi-experimental studies using existing survey data to estimate the impacts of a program.

In some cases, researchers can document that they only accessed the data after registering the study hypotheses and other detailed plans. For example, access may be highly restricted, requiring a formal approval process from a government ministry, and the timing of access can be validated through an approval letter. In many more cases, however, researchers will use data that are either freely available via download or have been used by many other researchers, making it hard to rule

[7] There are important exceptions to this, namely, studies that revisit RCT data to examine new outcomes. For example, a randomized evaluation of a conditional cash transfer program focusses on the direct targets of the program, children's health and schooling, but later another researcher decides to use the data to consider the impacts on maternal time use and labor supply. In this case the evaluation method is still RCT but the study uses what has become secondary data.

out informal transfer of the data. For such cases verification of the prospectiveness of a registration is not possible. In general, therefore, verification is not a very practical or helpful standard for studies using secondary data. Still, verification of prospective registration may be of concern to a funder or journal even in these cases.

The approach taken by RIDIE is to gather (in the Data module) and report information on the nature of the data, whether it has been collected yet, and if so, whether it has been accessed by the researchers, and if accessed, whether work has already begun with the data (again, we are referring to follow-up or post intervention data, not baseline data.) Several categories of 'prospective' registration are used, based on the responses. In some cases, as noted, the timing of access to existing impact data can verified (documented), which is equivalent to verifying the prospectiveness of a registration. *However, RIDIE does not ask for verification, and instead accepts the researcher's statements on data access and its timing, hence whether the registration is prospective.* The reasons for this are first, as indicated, that verification can be ambiguous, and second, that attempting it may give the strong impression that the registry is 'policing' researchers—an impression to be avoided if we want to incentivize participation. If verification is important to external parties such as funders or journal editors, this would be worked out between these parties and the researcher.

The categories are:

1. *Prospective Registration, where data for measuring impacts have not yet been collected*

This encompasses all registrations that take place before the intervention begins, since obviously impacts have not yet been measured in this case. It also encompasses cases where the intervention has started or even finished but the data capturing impacts have not yet been collected. This category conforms to the standard notion of a prospective registration of a study. Prospectiveness is verifiable, since the outcomes and/or treatment data do not yet exist.

2. *Prospective Registration, where data for measuring impacts have been collected by others but not obtained or analyzed by the research team*

Here the data for measuring impacts exist, but the study registration occurs before the accessing and analysis of the data. In some cases, prospectiveness may be verifiable when the data are restricted and access requires formal and documentable approval, and it can be established that this took place after registration. In other cases, data are essentially publicly available or even if not, are widely accessed, so that it is not possibly to formally establish that access took place after registration.

3. *Prospective Registration, where data for measuring impacts have been obtained by the research team but analysis for the evaluation has not started*

Here the researchers have accessed the data, whether through a formal approval process for restricted data, through a download of publicly available data, or informally from other individuals. However, they have not begun their analysis. Prospectiveness is not verifiable in these cases.

4. *Non-Prospective Registration, where data for measuring impacts have been obtained/collected by the research team and analysis for this evaluation has started*.

Since the analysis has already begun, presumably involving analysis of outcomes and treatment data, the registration is not prospective.

At the conclusion of the Data module, a message is generated indicating to the researcher which category the registration falls into. The message will be linked to a help function that elaborates the definitions along the lines above, and stresses that RIDIE does not attempt to verify prospectivity.

Researchers whose studies fall into the first category above have clearly prospective registrations, with research designs registered prior to collection of information on impacts, and thus can credibly claim that their evaluations are transparent and unbiased. For researchers applying a range of techniques on secondary data and whose studies fall into the second and third categories, registrations are generally not *verifiably* prospective in this sense (this applies as well to studies that revisit data from an RCT to measure impacts on different outcomes than were examined in the initial impact evaluation analysis; in this case the data are effectively secondary data). The question arises whether these researchers will have sufficient incentive to pre-register their studies, rather than simply going ahead with their work and publishing when finished, perhaps adding their study to a database of completed evaluations at that time. They may feel that they would not get due credit from the research community or others for having a truly prospective registration; after all, it would be possible for less scrupulous users to simply say they have not accessed the data on impacts when in fact they have done so and tailored their hypotheses and specifications to what they already know about the impacts.

As noted, in some cases under the second category it should be possible to verify that access to restricted data has been obtained after registration, or that the data in question have not been used before for research (this may be the case for administrative data). In principle, RIDIE could be designed to collect documentation such as dated approval letters from agencies supplying the data to the researchers. In fact, researchers currently could upload such material to RIDIE as part of an update to the study. However, for the registry to get deeply involved in this process, including trying to judge precisely when prospectiveness is verified, would be problematic for reasons noted.

We prefer instead to rely on what we hope are several strong motivations for registration of such studies. These have been noted earlier. First, the registry is a means of publicly 'announcing' one's innovations, whether these involve terms of evaluation design, theory, or sampling, and therefore establishing that one has developed this idea first. Second, it is a means of ensuring that others in the research community are aware that a given topic is being investigated in a given country. This avoids duplication or excessive overlap of efforts by two or more researchers which is to neithers' professional advantage as well as being a waste of resources. The last point also hints at the public good rationale, which is to avoid wasteful duplication of effort and to ensure that impact evaluations fill gaps in knowledge and therefore have high policy impact. This rationale may also appeal to many researchers, and enhance the recognition by the community of registering.

On the other hand, researchers may perceive risks that outweigh these benefits. For example, they may worry about publicly announcing a research plan and then not carrying through with the work, or feel that this would act as a straightjacket that inhibits more exploratory work on the data. These concerns apply to all impact evaluations, but may loom larger when the perceived returns to early registration are lower. Ultimately, the effectiveness of the registry in attracting the full range of impact evaluations will have to be observed as implement proceeds. However, we believe that strong marketing of the benefits for various users will be important to achieving this goal.

Links to other registries

Interoperability with other registries is a key design concern for RIDIE. In light of the emergence of multiple registries (AEA, EGAP) and possible future registries, it is important, to the extent possible, to ensure against: (1) fragmentation and duplication of records (2); confusion arising from registries having different approaches to data entry and reporting; (3) confusion arising because of differences across registries in standards and rules lead to funders and journals deciding not to accept some registries or require different fields; and (4) barriers to comprehensive searches and systematic reviews which will have to cover multiple overlapping registries.

In light of these concerns, the Design Task Force recommended that the various registries should aim to harmonize as much as possible while remaining flexible enough to accommodate the specific objectives and range of studies in each registry. Similarly, the registries should have a means for exchanging information. For the design of RIDIE fields, particular effort was made to ensure harmonization with the AEA prospective registry, because it is already fairly well developed and because it is likely to have the largest overlap with RIDIE in terms of types of studies. As a general principle, it is not expected or necessary that researchers register a study at more than one registry; instead the aim is to get all impact evaluations registered somewhere, and to create mechanisms for linkages and searches across registries.

To facilitate the exchange of information between the registries as well as searches across them, RIDIE features a core set of fields that are, or will likely be, common to AEA and other registries. Most of the content of the General Module falls in this set. Many other fields are similar to those in AEA as well as EGAP, and in some cases where this did not compromise the objectives of RIDIE, the fields, including the response codes, are essentially the same as in AEA. However, the experimental focus of both AEA and EGAP means that many fields in RIDIE must be different so as to accommodate other methods, and as noted above, there is a variety of data collection experiences to accommodate since secondary data studies are part of RIDIE.

Additional technical considerations regarding interoperability are detailed in Appendix 2.

IV. Registering a study: Paths through the registry site

To better convey how the system operates from the point of view of individuals registering a study, we trace out the paths that would be taken by two researchers registering very different impact evaluations on RIDIE. It is important to note that while registration is presented below as if it were a single session, in practice, until the study has been formally submitted, researchers will be able to complete part of their registration and save what they have done, log off, and return to complete the process later, and can change any fields that were filled in earlier. Further, at any time the researcher can download and review at their leisure the information they have entered up to then. Nothing is considered final until the researcher formally submits the study.

This section takes the researcher/evaluator's perspective. Other users such as funders will engage the system in very different—and less complex--ways than researchers who are submitting studies. We discuss how these users will work with RIDIE, and how the registry accommodates their needs, in Section V.

The discussion that follows refers by number to fields in Appendix 1. The letter prefix to field numbers indicates the module: G=General Study Information; I=Intervention; E=Evaluation Method; D=Data; C=Study Completion .

Case 1: RCT, intervention not yet started

On the RIDIE homepage the user is asked to select a reason for the visit to the site and selects "Register a new study". She is directed to the General Study Information module and enters basic study information. She continues to the Intervention module, where, after describing the intervention and supplying information on the implementing and funding agencies, she indicates that the intervention has not started (field I8). She proceeds to Evaluation Method and in field E1 selects the main approach to estimating impacts, Randomized Control Trial. Details of the approach are requested in a text box, with the option of entering private information separately (E2, E3). Questions follow on outcomes, planned units of analysis and randomization, hypotheses to be tested, and sample size by individuals and by cluster/groups (for a cluster randomized trial). All these fields are mandatory. Finally, E13 allows the researcher to upload a pre analysis plan document.

Next she is directed to the Data module. After describing the data to be used to measure outcomes (D1), she is asked whether the data have been collected (D2) and responds No. Skip patterns take her past a number of questions about data access and approval, which are reserved for studies using secondary data, to a field asking if the data will also contain information on treatment assignment (D10). In this case, these indicators will be included in outcomes data set

collected as part of the experiment, so she answers No. She next is asked whether survey instruments or related information are available and shareable (D15) and if so, so supply links or contact information to access these materials. This completes the Data module entry, and based on the information supplied, a message is generated indicating that the registration will be designated as '(Prospective): Data for measuring impacts have not been collected'.

The researcher is then asked if she is ready to submit the registration. If yes, the system conducts internal consistency checks and searches for required fields that were not answered. A message is generated reporting on any problems detected and the researcher is asked to correct them or fill in the missing data. She then formally submits the study. The registration will not be made public until a further manual review for consistency is made by RIDIE staff (within a few days) and the researcher, after being notified by email, has a chance to correct any problems. At that point, when the study is resubmitted, it will become public and will be time stamped.

After the completion of the study, and if there are no updates in the interim, she returns to the registry site to record the outcome of the study. As before, upon getting to the main RIDIE web page she is asked to select a reason for the visit and now selects "Report on completed study" and is taken to the Study Completion Module. (She will also have the opportunity at this time to update fields in other modules, as is the case any time she visits the site. Any changes to the earlier fields are flagged.) She reports on final sample size and is asked to summarize the results of the study (C8). A link to the report of the study is requested as is information on any published work to date arising from the evaluation. Questions follow about availability of the data, survey instruments, and program files for other researchers. Finally, the researcher is given the opportunity to describe any changes to the study design or implementation since initial registration or last updating (C23).

At the end of the Completion module, the researcher is asked if she is ready to submit the information. The system will generate a message if there is incomplete or inconsistent information and will request that the indicated fields be filled in or corrected. As with initial registration, studies will be reviewed by RIDIE staff for consistency and coherent reporting. It is important to emphasize that the manual reviews of registrations and completed studies, like the automatic checks, are focused on the quality of *reporting*, not quality of the study design, implementation, or analysis. As noted earlier, the registry will maintain a 'light touch' approach to review, and it will be up to end users to ascertain the quality of registered studies in these dimensions.

Case 2: Quasi-experimental evaluation on an existing program using existing data (regression discontinuity design)

The researcher starts the process as in the previous case. In the Intervention module, she indicates that the program has already started and is ongoing (I8-I10). In the Evaluation Method module she selects regression discontinuity design (RDD) as the main approach to estimating impacts and fills in details of the approach in the next field. She next fills in fields on outcomes, planned units of analysis and treatment (program participation), hypotheses to be tested, and

sample size. Note that for sample size questions (E11-E12), the terminology in the field descriptions are general enough to accommodate a range of approaches; specific guidance for different methods will be detailed in the help facility. In the case of RDD, the user will be asked to indicate the expected number of units in the data participating in the program, and not participating. The researcher can upload a pre analysis plan document if there is one.

In the Data module, she indicates that the study will be using existing data (D2). Several fields follow asking whether the data have been used by other researchers, whether they are restricted access, and if the research team has obtained approval and accessed the data (D3-D8). For this example, assume that the data have been used before but have not yet been obtained by the team for this evaluation. Also assume that the data set used for outcomes also contains treatment assignment data (for example, where the program is a means tested cash transfer and the household survey used to measure outcomes contains information on receipt of the transfer). The researcher indicates this in D9 and goes on to answer questions about shareable survey questionnaires and other materials (D16-D18).

Finally, based on information provided about the status of the data to be used, a message is generated indicating that the registration will be designated as '(Prospective): Data for measuring impacts have been collected by others but not obtained or analyzed by the research team'. The clickable help icon will lead to a detailed explanation of this and the other registration designations. If the researcher feels that this categorization of the registration is not accurate, she can explain why in field D20. The process for submitting the registration, as well as for updating and entering information at study completion, is essentially the same as in the previous case.

V. Mapping user profiles to RIDIE core functionalities

As we have noted, RIDIE will serve a diverse set of users including researchers and evaluation practitioners carrying out impact evaluations, other researchers conducting searches of evaluations, funders, journals, and others. The distinct needs of these groups provide the basis for the development of the registry's core functionalities: registration, updating, search and documentation. In this section we describe these four main functions and how they serve these users.

The table below maps user groups to RIDIE's core functionalities, based on how different users are expected to engage the system. As mentioned, the behavior and needs of various user types was explored via the creation of "user stories" by RAND and 3ie staff; several examples are given in Appendix 3. In the text that follows, we outline the needs of users and how each core functionality addresses these needs.

Table 1: Core user groups and their use of RIDIE functionalities

	Registration	Updating	Search	Documentation
Researchers (study authors)	✓	✓		✓
Evaluation practitioners	✓	✓		✓
Other Researchers (for metasearches, etc.)			✓	✓
Funders			✓	✓
Journal editors				✓
Students/others			✓	

Initial registration

Researchers and evaluation practitioners will be registering studies covering a wide range of research designs and in different stages of progress. These individuals themselves will have differing backgrounds: some will be experienced evaluators, but others will be less experienced and potentially have less familiarity with some of the information categories collected by the registry. Some users will be non-native English speakers, or may be accessing the site from countries with poor internet connectivity. Some level of error, or uncertainty about what is being asked, should be anticipated for all users. This suggests a need for some internal verification by the registry (discussed below) and flexibility to allow corrections to be made that will not be officially tracked. Finally, some researchers may want to keep certain details of their study initially hidden from public view, whether for intellectual property reasons or to avoid politically unfavorable (or even dangerous) publicity about the study.

The design of RIDIE responds to these needs in various ways. Researchers can field an initial registration at any stage of the study and update their record at any time. For the initial registration, RIDIE will route users through the registration form using skip patterns, as discussed, and will offer guidance on each field of the registration through a clickable help or 'details' icon. The registration form and guidance text will be easily downloadable to allow authors to prepare and revise their entry offline and in collaboration with colleagues (this feature will also help with internet connectivity issues); they can then copy and paste the information to RIDIE's online form.

Researchers will be able to complete part of their registration online and save what they have done, log off, and return to complete the process later, or change any fields that were filled in earlier. Further, at any time the researcher can download and review at their leisure the information they have entered to date, before the study is formally submitted. During registration, RIDIE will use automated checks and flags to highlight any problems before the researcher submits the study. Registrations will also be manually reviewed by RIDIE staff to detect any other significant issues with the registration; this feedback will be emailed to authors within several days. The study is not officially registered and made public until the researcher, after being notified by email, has corrected the errors and it is reviewed again. Note, following the earlier discussion, that this review will only check for internal inconsistencies or errors in reporting, not content quality.

For a number of fields, researchers have the option of having information kept private until the expected date of study completion, before which time a notification will be emailed to researchers with an option to extend the period to completion. Until that date, these fields will not be part of the public record to be seen by other users and will not be searchable. However, the author can download and share the complete record with anyone they wish, for example, a funding agency.

Updating

Researchers may update their studies as their projects proceed, in order to record changes in study design, sample, or other factors. In addition to the basic functionality of revising an existing entry, researchers and other users require a robust and transparent system that tracks and dates revisions. This record will be public, though as always, this applies only to public fields.

RIDIE will allow updating at any time, though our expectation is that many or most users will only make changes once, when they are entering information upon completion of the study, unless they are meeting specific requirements of funders. The tools and procedures that RIDIE offers for the initial registration (see above) should minimize the need for minor early revisions that are due to errors in the initial registration. Later revisions during the study process are made using the same on line modules. As always, when entering the site the user is first asked the purpose of the visit and in this case would choose "updating existing study". As with initial registration (and study completion), the researcher is able to save and edit input before finally submitting. Once an update is made it is tracked and time-stamped. To simplify the process, a separate version of the study will

be saved at each updating. On the current study forms, fields that have been updated will be highlighted. At the end of an updating session and prior to submission the author will also be asked to summarize the changes made in an unstructured text field; this will help others to understand the changes that have been made and the reasons for them.

The final 'update' occurs when the evaluation and main analysis are done and the Study Completion module is entered. Here, in contrast to updates during course of the project but similar to the initial registration, the automatic checks will be complemented with a manual review by RIDIE staff, again focusing on reporting consistency and coherence. The researcher will be notified by email and given a chance to fix any problems before the data entered are considered final and made public.

Search

Searches of RIDIE (and other registries) will be carried out by researchers and evaluation practitioners, funders, and researchers or students whose aim is to obtain information about evaluations rather than to register their own studies. They may be interested in learning of ongoing efforts in a specific geographic location or topic, or to delve deeper into the details of a study they have already identified. Others may be preparing systematic reviews. Funders may want to know what is planned or ongoing in different sectors or countries to help them in setting their priorities for new research support. All of these users may want to learn about recently initiated, ongoing, cancelled and completed studies in a specific field. Many searches will extend beyond RIDIE to include other registries and other sources, including abstract aggregators and other websites.

RIDIE's search functionality will meet these requirements in several ways. Standardization of core fields and their values allows users to easily subset studies according to their interests. The overlap of these fields and values with those used by other registries will facilitate interoperability and searches across multiple registries within a single display.

RIDIE's search function will provide these users with drop-down menus for key fields with pre-populated values and keywords (study country, topic, method, etc.) as well as free-form text search. The free-form search will facilitate searches based on commonly used logical statements, e.g., "Health AND (Chile OR Peru)" and "CCT OR "conditional cash transfer". The search facility is similar to that used for PubMed and will be easy to understand for non-researchers but also sufficiently powered to support expert searches by researchers for systematic reviews or other purposes. The search results will be exportable: users will be able download in tabular csv file format the (public) information for each registered study or for multiple studies. Presently, we expect to provide two basic formats for download of multiple studies: core information (study name, country, topic, funder, method, registration data, current status), and complete study information, in both cases arrayed in tables with one row per study and the fields in columns. These tables will only show the current study information as of the last update. For information on changes made to the study

design, the user can to look online at individual studies and if desired download forms containing current as well as previous entries for fields that have changed.

Documentation

In general terms documentation is the central function of RIDIE, in the sense that researchers publicly register their impact evaluations on the site, and this information is available to a wide range of users for a range of purposes described in Section I. A key aspect of this function is the search functionality just described. With respect specifically to the needs of funders, we anticipate that in time many funders of impact evaluations will request that the studies they support be registered on RIDIE or elsewhere, and will want to have documentation on the registration, any subsequent updating, and study outcomes. Similarly, journal editors, when evaluating submissions related to impact evaluations, may choose give preference to those that were prospectively registered, and would need confirmation of registration. They may also want to provide information from the registry to referees to assist them in evaluating submissions. Whereas funders may require that grantees or contractors provide periodic reports of their work and modifications to their original plans during the course of the project, journal editors and referees become involved only after research is done, written up, and submitted for publication; hence they would be interested in assessing the integrity of the completed research by looking over the past record of the study.

Since RIDIE is conceived as a public registry, all this information will be largely accessible for such users by simply going to RIDIE site and viewing or downloading the information on a specific study. However, funders, who likely will be reviewing registration or updating information during the course of a study, may need to see information that is being kept private during that period. Researchers will be able to download the full record (public and private fields) of their studies with the change history as a report in pdf format and forward this information to funders, journals, or any other parties. In contrast to a setup whereby RIDIE sends documents directly to third parties or allows them access to an author's registration, this approach puts the authors in charge of their own information and emphasizes that RIDIE is a tool to support their research and reporting requirements. This approach is also more straightforward technically as it avoids RIDIE having to send email notification to designated external parties, or arranging to permit access of these parties to a particular study on the RIDIE site. Although in principle the researcher would be able to alter the reports as these are not 'official' documents sent directly from RIDIE to the external party, there would be no motivation to do so. The researcher has already made the changes on the RIDIE site, and all parties will understand that the information and dates when changes were made is public, or if not, will eventually be public at study completion.

APPENDICES

1. RIDIE Fields
2. Details of Development and Technology
3. Example User Stories
4. Design and Development Task Forces

Appendix 1: List of RIDIE Fields by Module

1. General Study Information
2. Intervention
3. Evaluation Method
4. Data
5. Study Completion

Note: text in [brackets] is for internal reference and will not be seen by the user

General Study Information

Field No.	Field Title	Field Description	Field Type	Required?	Visibility
1	Study Title		Text	Yes	Public
2	Study ID	Study Identification Number	System Generated	Yes	Public
3	Registration Date		System Generated		Public
4	Last Update Date		System Generated		Public
5	Status	What is the status of your study?	Drop down	Yes	Public
6	Study Abstract	Please describe your study in non-technical language. This abstract will be public for people who search the registry even before the study is complete, so only share what you are comfortable sharing at this time.	Multiline Text	Yes	Public
7	Keywords - pre-defined using 3ie standard categories	Please click on any of the following words which describe your study	Check boxes	Yes	Public
8	Keywords - user supplied	Additional descriptive terms for the study, if any (use a comma to separate terms)	Text	No	Public
9	Secondary Identifying Numbers	Numbers given to the study by funders (e.g., grant number) as well as other registries (Clinicaltrials.gov, ISRCT, etc.) if any. For each, please give the number and the organization and website that assigned the number. This will help with searches of the database and to avoid duplication.	Text	No	Public
10	PI Name		Text	Yes	Public
11	PI Affiliation		Text	Yes	Public
12	PI Email		Text	Yes	Hidden

13	Other PI Name		Text	No	Public
14	Other PI Affiliation		Text	No	Public
15	Other PI Email		Text	No	Hidden
16	Study Sponsor: Name	Please provide information on the primary funder of your study	Text	Yes	Private (by request)
17	Study Sponsor: Location		Text	Yes	Private (by request)
18	Study Sponsor: Website URL		Text	No	Private (by request)
19	Funding Proposal Document	If you have a funding proposal that you would like to be included as part of this registration, please upload it here.	File upload	No	Private (by request)
20	Research Partner Name	If you are collaborating with another research organization to perform this research, including in the study country, indicate the institution.	Text	Yes	Private (by request)
21	Research Partner Type	What type of institution is this?	Radio button	Yes	Private (by request)
22	Research Partner Country	In what county is it located?	Text	Yes	Private (by request)
23	Research Partner Website	Please provide the website of the research institution if there is one	Text	No	Private (by request)
24	IRB approval	Does the study require Institutional Review Board approval?	Drop down	Yes	Public
25	IRB Name	Please provide the full name of Institutional Review Board that has or will review your study	Text	No	Public
26	IRB Approval Date	Date of IRB approval if already obtained.	Date	No	Public

Intervention

Field No.	Field Title	Field Description	Field Type	Required?	Visibility
1	Intervention (public)	Please describe the **intervention or program** being evaluated in this study. Please be sure to indicate the objectives and expected beneficiaries.	Multiline Text	Yes	Public
2	Intervention (private)	Please describe the **intervention or program** being evaluated in this study (details you do not want to be made public at this time)	Multiline Text	No	Private
3	Implementing Agency	Who is carrying out the intervention/program? (name of organization)	Text	Yes	Private by request
4	Implementing Agency-type	What type of organization is this?	Drop down	Yes	Private by request
5	Implementation Funder	Who is funding the intervention/program? (primary funder)	Text	Yes	Private by request
6	Implementation Funder-type	What type of organization is this?	Drop down	Yes	Private by request
8	Time Dimension	Has the intervention/program already started? (if started and completed answer yes)	Drop down	Yes	Public
9	Intervention start date	Intervention/program Start Date (give estimated date if not yet started)	Date	Yes	Public
10	Intervention end date	Intervention/program End Date (estimated date if not yet completed). If this is to be an ongoing program leave the date blank and check where indicated.	Date	Yes	Public

Evaluation Method

Field No.	Field Title	Field Description	Field Type	Required?	Visibility
1	Main Methodology	What is the main methodology you will use to estimate the causal impacts of the intervention or program?	Drop down	Yes	Public
2	Methodology Details (public)	Please provide details of this methodology	Multiline text	Yes	Public
3	Methodology Details (private)	Please provide details of this approach that you do not want to be made public at this time.	Multiline text	No	Private
4	Outcomes (end points)	What are the outcome variables (endpoints) of interest in this evaluation? You may distinguish primary and secondary outcomes if you like.	Multiline text	Yes	Public
5	Measurement	If some of your outcomes will be constructed (e.g. “satisfaction with services”, "empowerment", etc.) please provide a description of how the outcome will be constructed from the main variables.	Multiline text	No	Private (by request)
6	Unit of analysis	What will be the main unit of analysis for the evaluation?	Text	Yes	Public
7	Hypotheses	What specific hypotheses do you plan to test with these outcome variables specified above (or other outcomes)? You may distinguish primary and secondary hypotheses.	Multiline text	Yes	Public
8	Unit of intervention assignment	What it the unit of assignment for receipt of the intervention/program (or for experiments, the unit of randomization): for example, individuals, schools, clinics, firms.	Text	Yes	Public
9	Sample size - clusters	If you reported in field E8 that the intervention/program is to be administered by cluster or group, what is will be the total number of groups or clusters in the analysis? E.g., schools, villages, etc.	Text	Yes	Public
10	Sample size -- individuals	What is expected total number of *individual* observations in the sample? (e.g., students, households, enterprises)	Text	Yes	Public
11	Size of treatment, control, or comparison subsamples	What is the expected number of observations in treatment and control or comparison subsamples? (i.e., those getting the intervention and those not). If the intervention/program is to be administered by cluster or group, please give the number of groups, not individuals, in each subsample.	Text	Yes	Public
12	Analysis Plan Documents	If you have prepared a Pre-Analysis Plan or related documents, please upload them here.	File upload	No	Private by Request

Data

Field No.	Field Title	Field Description	Field Type	Required?	Visibility
1	Description	Briefly describe the data that will be used to **measure outcomes,** for example, a household survey, school or health facility survey, administrative data, etc. If there is more than one such data source, please describe the most important one.	Text	Yes	Public
2	Data Collection Status	Have these data already been collected, whether by you or someone else? (This refers to data collected after the intervention was implemented, not baseline data).	Radio Button	Yes	Public
3	Survey Name	Name of the survey or data set (if no name, leave blank)	Text	No	Public
4	Previous use of the data	Has this data set been used before by you or others for analysis, even if for unrelated research?	Radio Button	Yes	Public
5	Data Access	Is this a restricted access data set?	Radio Button	Yes	Public
6	Approval	Briefly describe the approval process	Multiline text	Yes	Public
8	Approval Status	Have you obtained approval? Accessed the data?	Radio Button	Yes	Public
9	Participation or Assignment Information	Does/will this dataset also contain information on the treatment assignment or program participation, i.e. specifying which units received the intervention or participated in the program?	Radio Button	Yes	Public
10	Description	[If treatment assignment in separate data] What kind of data will you use for information on **treatment assignment or program participation**, i.e. indicating what units received the intervention or participated in the program? For example, administrative data, household survey, etc.	Text	Yes	Public
11	Data Status	Do these data already exist?	Radio Button	Yes	Public
12	Previous use of the data	Has this data set been used before by you or others for analysis, even if for unrelated research?	Drop down	Yes	Public
13	Data Access	Is this a restricted access data set?	Radio Button	Yes	Public
14	Approval Process	Briefly describe the approval process	Multiline text	Yes	Public

15	Approval Status	Have you obtained approval? Accessed the data?	Radio Button	Yes	Public
16	Upload Study Materials	It is helpful for other researchers to be able to see survey instruments used in prior studies, if this is possible. Are you interested in uploading or providing links(s) to the instruments(s) or any other study information at this time? (you will also be able to do so at a later date of your choosing, including at study completion).	File upload	No	Public
17	Links	Please provide links to instruments, other websites or documents related to your study that you are willing to share	File upload	No	Public
18	Links Description	Please describe the linked content	Multiline text	No	Public
19	Registration Category 1	Based on the information you have provided, this registration will be classified as: **(Prospective): Data for measuring impacts have not been collected** CLICK FOR EXPLANATION OF REGISTRATION CATEGORIES	Text		Public
	Registration Category 2	**(Prospective):Data for measuring impacts have been collected by others but not obtained or analyzed by the research team** CLICK FOR EXPLANATION OF REGISTRATION CATEGORIES			Public
	Registration Category 3	**(Prospective): Data for measuring impacts have been obtained/collected by the research team but analysis for this evaluation has not started** CLICK FOR EXPLANATION OF REGISTRATION CATEGORIES			
	Registration Category 4	**(Non-Prospective): Data for measuring impacts have been obtained/collected by the research team and analysis for this evaluation has started.** CLICK FOR EXPLANATION OF REGISTRATION CATEGORIES			Public
20	Registration Category Comments	If you believe this categorization of your registration is not accurate, please explain here	Multiline text	No	Hidden
21	Submit Registration	[This field asks the user if she is ready to submit the completed registration. A valid registration must have all required fields completed in the General, Intervention, Evaluation Method, and Data modules. The system will generate a message if there is incomplete or inconsistent information and request that the indicated fields be filled in or corrected.]			Public

Study Completion

Field No.	Field Title	Field Description	Field Type	Required?	Visibility
1	Intervention Completion Date	When was the intervention/program completed? If this is an ongoing program leave the date blank and check where indicated.	Date	Yes	Public
2	Data Collection	When was data collection (on outcomes) completed?	Date	Yes	Public
3	Unit of analysis	What was the main unit of analysis for the evaluation?	Text	Yes	Public
4	Final sample size: clusters	If the intervention involved clusters or groups as the unit of randomization or program assignment, please indicate the final number of clusters or groups in the sample *used in the analysis*	Text	Yes	Public
5	Final Sample Size: total	For estimating primary program impacts, what was the total number of individual observations *used in the analysis*?	Text	Yes	Public
6	Size of treatment, control, or comparison subsamples	What is the number of observations in treatment and control or comparison subsamples (i.e., those getting the intervention/program and those not) for the main analysis? If the analysis is at the cluster or group level, please give the number of groups, not individuals, in each subsample.	Text	Yes	Public
8	Preliminary Report	Is there a report on the results?	Radio button	Yes	Public
9	Summary of findings	Please summarize your results (you can cut and past the abstract or executive summary of your report as appropriate). Please highlight the results for the key outcomes and hypotheses you outlined when registering.	Multiline text	Yes	Public
10	Preliminary Report URL	Please provide a link to the report, if available.	Text	No	Public
11	Paper	Are there any published studies based on this evaluation?	Radio button	yes	Public
12	Paper Summary	Please include titles and brief summaries of the studies	Multiline text	No	Public
13	Paper Citation	Please provide the citation(s)	Text	No	Public
14	Data availability (primary data)	[If primary data were collected] Is the data set you used available for other researchers (or will it be in the future)?	Radio button	yes	Public

15	Data URL	Please provide a link to the data set, if available, or name and email of a contact person	Text	No	Public
16	Data available?	When will the data be available? (if now, click where indicated)	Date		
17	Restricted Data Contact	Email address or website of person/institution to contact for access to restricted data.	Email	No	Public
18	Survey	Can you share the survey questionnaire(s) you used (if not already publicly available)?	Radio button	No	Public
	Survey instrument URL	Please provide the link to the survey instrument(s) or describe how to obtain them	Text	No	Public
19	Program Files	Are program files available for public distribution? (e.g. Stata.do files).	Radio button	Yes	Public
20	Program Files URL	Please provide a link to the files or name and email of a contact person	Text	No	Public
21	External Link	Link to other related websites, documents, etc.	Text	No	Public
22	External Link Description	Description of linked content.	Text	No	Public
23	Description of changes	Please add any comments you would like to make on changes in this project from the initial registration to the reporting of the results (changes in evaluation method, sample size, hypotheses, etc.)	Multiline text	No	Public
23	Study Stopped Date	[Studies ending before completion] When was the study stopped?	Date	Yes	Public
24	Study Stopped Reason	[Studies ending before completion] Why was the study stopped?	Multiline text	Yes	Public
25	Submit information	[This field asks the respondent whether she is ready to submit the results. The system will generate a message if there is incomplete or inconsistent information and request that the indicated fields be filled in or corrected.]			

Appendix 2: Details of Development and Technology

1. Hosting, Processing and Persistence

The project parameters for the RIDIE platform require open-source operating systems and database software with a high degree of security and reliability. The Technical task force recommended Red Hat Linux as operating system given its widespread use and strong service support. CentOS, a free variant of Enterprise Red Hat, was selected, together with the MySQL as the object-relational database system.

RIDIE will be hosted on a Rackspace.com cloud server under the domain www.ridie.org. This solution provides scalability and flexibility as changing storage and computing needs can be easily adjusted. This is useful for RIDIE since the level of participation in the registry is unknown but expected to grow over time. Moreover, this external hosting solution includes backups, security patching, and maintenance services and will allow for easy transfer from RAND to another maintainer of RIDIE in the future. A development server at RAND has been set up to host the RIDIE during the development and testing phases.

2. Usability

Making the registry as easy to use as possible is an essential precondition for successful implementation and wide acceptability. This is especially important since participation is voluntary. Given that the average researcher who is registering a study will not visit the site more than a few times, there will be little tolerance for learning; the site should be easy to figure out immediately.

The Technical task force agreed that RIDIE should adopt a User-Centered Design (UCD) approach under which design efforts focus on users and their environment, including iterative testing and redesign with real users. To start this process, the design team and 3ie produced a number of User Personas and Stories, that is, stylized examples of different kinds of users interacting with the envisioned system in different ways. The stories included researchers registering various kinds of studies as well as other users such as representatives of funding organizations and academic journals (See Appendix 3). The needs of these users were discussed by the Design and Development teams and are guiding the development of the interface and other aspects of usability. A first mockup of the registry that incorporates the usability considerations can be found on www.ridie.org/mockup.

To support users with limited internet connectivity and collaboration among authors, RIDIE also provides a downloadable form that can be completed offline. The completed information can then be pasted into the online interface. While RIDIE's interface and submission use English, the online help instructions for the fields can be made available in other languages.

3. Interoperability

As noted in the text, as there will be several overlapping evaluation registries, there are substantial benefits to all stakeholders of harmonizing reporting, forms and certain standards. Moreover, it is important to be able easily search across other registries and databases.

The RIDIE team is working with the AEA and EGAP registries to develop well-defined interfaces, common data models and a core set of common fields to allow easy searches across all registries. The registries are also working to develop a common application programming interface or API to allow registry websites to search through each other's databases. These linkages will ensure that multiple registrations by researchers is not necessary, that searches across registries do not turn up duplicate listings for the same study, and that an individual registry will not need to "scrape" data from other registries to store in its own database (which leads to multiple and outdated versions across different websites). In addition, we will work with the other registries to avoid the problem of drift, whereby each registry makes changes over time that render them less harmonized.

4. Software Application, Architecture and Design

The implementation of RIDIE is based on a foundation of the CentOS variant of the Red Hat operating system, MySQL database management software and the Apache web server. The RIDIE web application uses the scripting language PHP and the comprehensive Yii Web Application framework.

The Development team developed a first draft of the web interface and forms which are being tested continuously by in house 'white boarding' by the RAND development team in interaction with the design team. This will be followed by tests on a small group of individuals. The process will then iterate and culminate in the "soft launch" to a selected set of users.

Appendix 3: Example user stories

As indicated in the text, in the development of RIDIE we generated a number of specific user stories to help design both the structure of data fields and the functionalities of the system. We illustrate these below with several stories that capture typical cases and show (in italics) how these users would engage the system.

User story 1: Researcher/Author

Ahmed has just received grant funding for a randomized control trial study of a pilot intervention aimed at increasing citizen involvement in the democratic process in Yemen. The grant-making organization has a strict requirement that the study be registered prospectively. Ahmed is concerned that if the information regarding the intervention and the evaluation design is made public, some groups in Yemen might try to block his work, or even worse, threaten the citizens or study staff involved in the program. This is the first randomized evaluation that Ahmed has carried out.

Ahmed will create a user account in RIDIE and start a new entry for this study. In part due to internet connectivity issues, to prepare the initial entry, he will download the forms and complete more involved text fields offline, possibly in collaboration with his co-authors. He will follow the instructions and guidelines that RIDIE offers for each field. He will be able to use information contained in his proposal to the grant making organization to complete many of the fields, and based on the proposal, will write a Pre-Analysis Plan. Once ready, he will return to the RIDIE website and copy and paste the study details into the RIDIE online form and upload the PAP. After the submission, he will receive some feedback from the RIDIE staff on inconsistencies or other problems in his submission. He will correct these, and resubmit the study. It will be reviewed again and then the registration will be complete, time-stamped, and accessible on the RIDIE website.

In view of the security issues with this research, Ahmed will have chosen to restrict certain basic fields (study details and location) to remain hidden by changing the default field setting from "public" to "private (by request)." These fields as well as any other private fields will remain hidden until the specified study completion date. Ahmed will receive an email from RIDIE sometime before the time-lock on this private information expires and the information becomes public. He can also manually change the field designation to "public" through study updating at any time.

Since he is registering this study before the trial has started, Ahmed specifies in the Data module that outcomes and treatment data do not yet exist. RIDIE will classify his registration as category 1: "(Prospective): Data for measuring impacts have not been collected."

Finally, Ahmed will download the submitted final entry in report form, and email it to the program officer of the funding organization. This report will include all study details (public and private) and any change history. Other users who search RIDIE will only be able to view the public fields (and revisions to them) for this study.

User story 2: Evaluation practitioner/searcher

Lucia is a development practitioner with research training and some experience with impact evaluation. She is working with the Ministry of Education in Ecuador and learns that as they were rolling out a recent education reform program, they collected a rich set of data on schools and students for all the schools receiving the program. She thinks these data could be used for a stepwise impact evaluation. She looks at the published literature and finds a few examples, but she also wants to see if there are examples of such studies that are currently being conducted, particularly if there are any in the Latin American and Caribbean region--and also to establish that other researchers are not planning or have not started to evaluate the same program she is interested in.

To identify similar projects that are currently ongoing, Lucia searches RIDIE and other registries. She goes to the RIDIE search page (after indicating on the home page that she want to conduct a search of the registry), where she can conduct a targeted search by:

1. *Selecting "Education" as intervention type. The category options correspond to key words requested in the study registration*
2. *Selecting a geographic region in a dropdown menu; the menu lists individual countries and geographic regions (sets of countries) and she selects "Latin America and Caribbean"*

She could further subset her search by focusing only on studies that are "in development" or "ongoing." She could also use a more complex logical statement in the free-form search field, e.g. if she is interested in a specific program. She could also specify by methodological approach, again using a dropdown menu.

RIDIE's search function returns all records that match Lucia's request. Once procedures are in place to link registries, the search would also return relevant studies in other registries that are interoperable with RIDIE. The search results can be ordered along various dimensions. Lucia could click on a specific study to see those details that are visible to the public. Study information can be exported and downloaded individually or all together with the option of including basic study information or complete records.

User story 3: Funder

Jane is a program officer at an international grant-making organization that focuses on maternal and child health. She is responsible for reviewing and selecting research proposals submitted by teams of academics and other researchers. She is also responsible for monitoring the progress and performance of these projects once they are funded. The organization requires that the projects prospectively register their studies and transparently track any significant changes to the design as part of regular reporting on the grant. A full record of the initial design and revisions is a mandatory deliverable upon project conclusion.

Jane suggests to the grantees that they can register their studies with RIDIE, or possibly, another registry that is appropriate for the particular study. They are advised that as a condition of the grant, a Pre-Analysis Plan with specified study details must be uploaded at registration, even though this is not specifically required by RIDIE to register a study. She asks grant recipients to download their RIDIE reports from the platform and include it in their regular reporting and deliverables. This report contains the initial entry, including public and private fields, and the time-stamped revisions made thereafter. Upon project completion this information becomes publicly accessible.

User story 4: Journal editor

Mario is an associate editor at a leading field journal in education that among other work, publishes studies based on formal impact evaluations of education programs in developing countries. Mario reviews submissions to the journal, assigns referees and communicates with the study authors with regards to editorial decisions and requested revisions. The journal has high standards for empirical work. For some time it has required authors to submit their study data and analysis programs. The journal has also recently decided to include among its criteria for judging a submission (for impact evaluation studies) whether or not the study was prospectively registered, although currently it does not absolutely require this. Mario and his co-editors therefore need a way to receive documentation, if it exists, on registered analysis plans and hypotheses, and any changes to the study design. This material would also be given to referees. Finally, the journal would like to indicate in a footnote to the published paper that it was preregistered, provide the registration number, and indicate that details of the registration can be viewed online.

As part of a submission to the journal, authors can make available their study registrations through RIDIE. They will do so by downloading a RIDIE report that includes study's full entry (including private fields) and any associated change history as well as the study completion data. Mario and the referees can use the time-stamps included in the report to identify when revisions were made, and also read the author's summaries and explanations of these changes, which are part of the reports. Upon publication of the paper, the journals' office will add the RIDIE identifier to the paper's footnote. Interested readers can use this number to access the record in RIDIE just as they can download the data files and program code from the journal's website.

Appendix 4: Design and Development Task Forces

The RAND team has drawn on leading experts in several distinct fields to guide the design and development of RIDIE. Following discussion with 3ie, two separate task forces were created for this purpose. The first is the **Design Task Force**, which is advising on conceptual and design issues, including registry scope and eligibility criteria, reporting requirements, incentives to ensure registration, complementarities with other registries, and marketing. The task force includes individuals from various stakeholder communities, including funding agencies, journal editors, and academic as well as non-academic researchers and evaluators. A one and a half day workshop was held at RAND's Arlington, VA office on September 17-18, 2012 to discuss these issues. Task force members will be consulted periodically for further advice as the design process goes forward.

Following is a list of the members of the Design Task Force with their specific 'stakeholder roles' indicated in parentheses: Michael Carter, University of California, Davis (researcher, journal editor); Andrea Cook, DFID (donor agency, evaluation funder); Michael Findley University of Texas at Austin (researcher, co-developer of EGAP registry); David McKenzie, World Bank (researcher, journal editor); Patrick McNeal J-PAL (software design, AEA registry); Anu Rangarajan, Mathematica Policy Research (researcher, non-academic evaluation group); Richard Seldmayr, Wellspring Advisors (evaluation funder); David B. Wilson, George Mason University (researcher, meta-analysis researcher and expert on registries). Also present at the workshop was Annette Brown (3ie) and RAND team members Peter Glick, Bas Weerman, Sebastian Bauhoff and Elizabeth Brown.

The **Development Task Force** was created to advise on design implementation and computing issues relevant to the registry, including hosting, usability, interoperability with other registries, searching capability and software. A one-day workshop on these topics was held at RAND's Santa Monica headquarters on October 1st 2012. The members of the Development Task Force are: Gary Briggs (RAND); Edward Clarkson (Georgia Tech Research Institute); Carl Kesselman (University of Southern California); Patrick McNeal (J-PAL); Danielle Meeker (RAND); and Cord Thomas (RAND). Also present at the workshop were Annette Brown of 3ie and RAND team members Peter Glick, Bas Weerman, Sebastian Bauhoff, Christopher Skeels, and Adrian Montero.