

Tracking and Tracing Books Prize Competition

Solution requirements

1. The innovation should be able to track orders of textbooks and supplemental reading materials from being ordered to delivery in the classroom or learning center. The innovation should integrate with current ordering and delivery processes – an outline of which is provided in the Resources section below. The innovation can be either general or target a specific country or region.
2. The innovation would need to handle inputs and outputs from and to a range of different users, including:

(1) Government Officials/Donor Agent Officials

- These users would have higher level access to the system through a mobile/network-connected device, which at a minimum would allow them to see a list of at-risk orders and more specific information on the current or last-known location of orders.

How this higher level of access is granted is open to Solvers, however it is suspected that an administrator account for the system would be given to the Ministry of Education at the point of implementation in order for them to assign these roles. This also applies to (3) Supply Chain Actor.

(2) Parents/Teachers/Local Officials:

Using just a basic mobile phone with SMS functionality, these users should be able to obtain the answers to four different questions:

- i. What textbook and materials will be provided to students in a specific grade at a specific school?
- ii. When are the textbooks and materials scheduled to arrive at the school?
- iii. Where are the textbooks and materials now?
- iv. Who can I contact to advocate for the receipt of these textbooks and materials?

(3) Supply Chain Actors

- At a minimum, information on which orders have arrived/dispatched would need to be easily logged in the system in a timely fashion, either automatically or manually, at each stage of the supply chain.

How this process would work is open to Solvers.

3. Innovations should:
 - a. Be secure from tampering
 - b. Protect information that could be misused
 - c. Be low-cost
 - d. Operate well in a low income country environment which, amongst other things, may have:
 - o Damp, dusty and hot environmental conditions
 - o Limited or intermittent internet access
 - o Limited or intermittent power supply
 - o Limited personnel for equipment maintenance
 - e. Incentivize use among, engage, alert, and/or integrate well into the lives and habits of the three end-user groups

4. Solvers should:
 - a. Have the experience and expertise to develop the proposed innovation
 - b. Be able to work with the ACR GCD partners, representatives from a low income country and, if needed, other partners to pilot the innovation in Phase 3.

Desired but not essential requirements

- The innovation(s) is wholly or largely non-proprietary.
- Parents/teachers/local officials, using just a basic mobile phone with SMS functionality, can subscribe to alerts that would notify them of changes to the delivery time or location of orders or when assets are outside of a set of customizable parameters such as delivery time or location.
- The system automatically sends alerts to supply chain actors when any asset is outside of a set of customizable parameters such as delivery time or location.
- The inclusion of low-cost "location" identification technology and methods to locate "books" either as individual units and/or in shipping units (e.g., boxes).

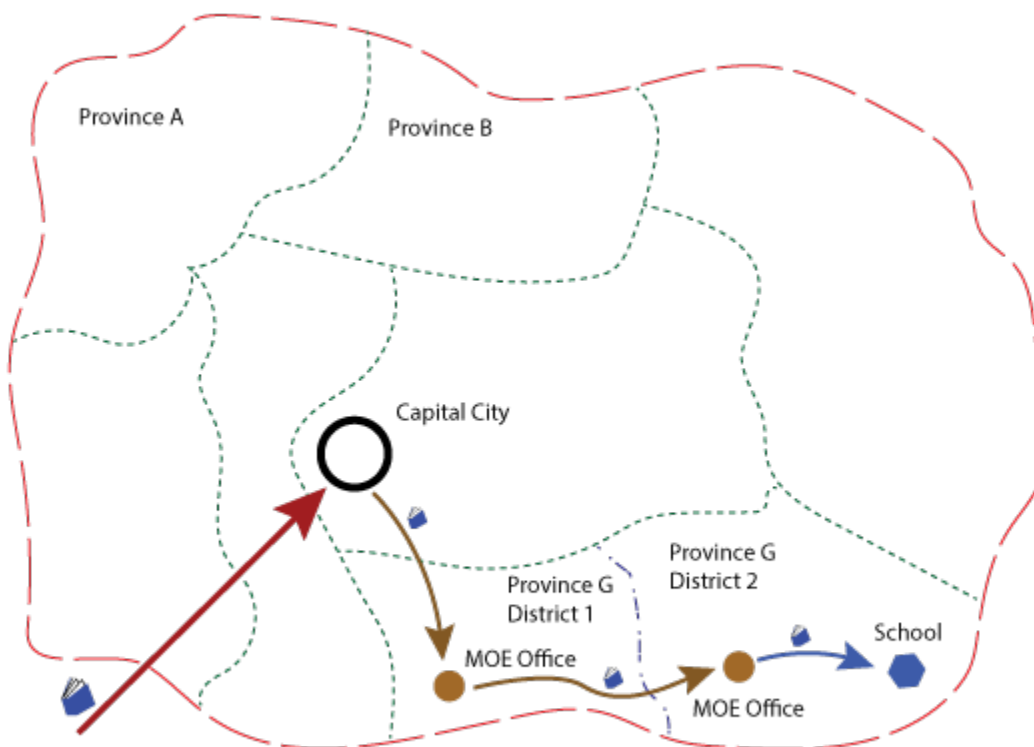
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Resources

1. Description of the typical ordering process for textbooks and supplementary reading materials

Textbooks and supplemental reading materials might come into a country from a foreign printing press or may be printed locally, either by a government press or by a private sector press. The Ministry of Education arranges either for warehousing or for direct distribution from the printer or point of arrival from outside the country. Typically, a load of books comes through the capital city and is then broken up into smaller loads that the Ministry sends out to provincial center offices of the Ministry of Education. Each provincial office breaks its load of books into smaller shipments, one for each district office. A load of books for each school then moves from the district office to a school.

2. Map of an example supply chain



Tracking and Tracing Books Prize Competition

Judging Criteria

Submissions will be given a score for each criterion on a scale of 0 – 3 which is then multiplied by the associated weighting given in brackets [].

Functionality

1. Will the innovation provide answers to the four questions: **[3]**
 - a. What textbook and materials will be provided to students in a specific grade at a specific school?
 - b. When are the textbooks and materials scheduled to arrive at the school?
 - c. Where are the textbooks and materials now?
 - d. Who can I contact to advocate for the receipt of these textbooks and materials?
2. Will the innovation provide additional information to help government and donor agency officials better manage the distribution of textbooks and supplemental reading materials? **[3]**
3. Will the innovation work well on range of devices, including but not limited to basic mobile phones with SMS functionality and computers and other devices that are mobile/network-connected device? **[3]**
4. Will the innovation work well in low income country environments, where there may be: **[2]**
 - a. Damp, dusty and hot environmental conditions
 - b. Limited or intermittent power supply
 - c. Limited or intermittent internet access
 - d. Limited personnel for equipment maintenance
5. Does the innovation include low-cost "location" identification technology and methods to locate "books" either as individual units and/or in shipping units (e.g. boxes)? **[1]**

Cost

6. Are the estimated development and set-up costs cost-effective and scalable for implementation in low-income country settings? **[2]**
7. Are the estimated annual recurrent costs reasonable for system utilization in low-resource settings? **[2]**
8. Is the innovation wholly or largely non-proprietary? **[1]**

9. Has the organization or team identified the types of partners, if any, which would enable them to develop and help pilot and/or implement the innovation in a low income country? **[1]**
10. Does the organization or team have a development methodology that will allow stakeholders the ability to see demonstrable results in an iterative fashion? **[1]**

Usability

11. Is the innovation easy to learn, requiring minimal or no training? **[1]**
12. Is the innovation easily customizable for contexts where English is not the primary language and accommodate multiple scripts as well as where prospective users who may have low literacy skills? **[1]**
13. Is there a feasible, efficient and low-cost plan for the provision of technical support? **[1]**

Security

14. Is the innovation secure from tampering? **[2]**
15. Does the innovation protect information that could be misused? **[2]**

Scalability

16. Does the innovation have the potential to be deployed in other locations? (*e.g. is it limited by country-specific partnerships and/or technologies*) **[1]**
17. Does the innovation allow for independent evolution of partner services, if used in collaboration, while preserving end user capabilities? **[1]**
18. Does the innovation provide for rapid growth potential to be regionally or national deployed? **[1]**

Serviceability

19. Does the innovation or organization include a model for easy upgrade or patching with little or no input from end users? **[1]**
20. Does the innovation or organization provide for extensibility as new infrastructure or devices are fielded? **[1]**

Testability

21. Is the innovation testable and demonstrable in and out of field conditions? **[2]**

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Frequently Asked Questions (*updated 03/02/2015*)

1. Would the warehouses be owned/operated by the Ministry of Education or third parties?

The warehouses may be owned/operated by either the Ministry of Education or other third parties.

2. How large are the warehouses and how many entrances/exits are there?

To give a 'low bar' example: a dry storage warehouse in Afghanistan provincial areas outside of a major city is fairly uniform - it would typically be about 12 meters by 5 meters with one internal wall splitting the one large room. There would be two entrances at a maximum, usually on the west and east. If there is any window, it will usually face south. The roof will usually be flat corrugated metal and the walls will be thick stone/mud. This is only one example however and other countries and better-equipped locales will have differing storage arrangements.

3. What volume of shipping units (i.e. boxes or crates) do the warehouses handle daily?

Proposed Solutions should be able to track and trace 100,000 250-page books in a low income country. Books usually come in to the country and are distributed over the course of a few months before or at the beginning of a school year. If the printing is done outside of the destination country, it is likely the books will arrive in large units before being quickly broken down into units that can be carried by one man, probably weighing between 50-80 pounds.

4. Are the warehouse workers literate?

Managers and supervisors would be literate, however possibly only to a primary school level. Workers carrying the books and drivers of the trucks may be illiterate or have very rudimentary literacy skills.

5. Is it desirable to have input from these supply chain actors (i.e. shipment received/departed) be logged via mobile phone, as opposed to dedicated tech (e.g. a bar code)?

A Proposed Solution involving either of these methods would be acceptable. Ease-of-use, cost and the extent to which use is encouraged are all factors that would be considered at the evaluation stage. Further information can be found in the Judging Criteria and specifically point (3) of the Solution Requirements document.

6. What level of detail should Proposed Solutions be?

The Proposed Solution should cover the whole supply chain – from the point where the books are ordered to delivery in the classroom or early-learning center. It should contain concrete examples of technologies and processes, for instance if the Proposed Solution involved warehouse workers logging an asset with a mobile phone, there should at least be details on how a user inputs the criteria, what the criteria is, how that criteria is associated with an asset and what the path of data is from input to storage to retrieval. More generally, the level of detail given should be sufficient for evaluators to assess your Proposed Solution against each item of the Judging Criteria. Beyond this, full technical specifications of the components of the Proposed Solution and the mechanisms behind it do not need to be specified at this stage, nor do you need to have a prototype or product already in place. Feasibility of Proposed Solutions will be a factor in the evaluation stage.

7. Are there any countries of implementation that would be of particular interest and, conversely, any countries that would not be eligible?

Proposed Solutions can focus on any low-income country – there are no preferred or ineligible countries.

8. What exactly would be the role of the ACR GCD partners in Phase 2?

The exact role of the ACR GCD partners will be dependent on the particular assistance required by each finalist but could include offering advice, connecting finalists with book publishers/distributors and early-grade schools/learning centers, and helping secure government support for the pilot.

9. Should our Proposed Solution be successful in Phase 1 and/or Phase 3, are there restrictions on how the prize money would have to be spent?

There are no restrictions on how either the Phase 1 prizes or the \$100,000 prize in Phase 3 are spent.

10. Where in the supply chain are most books lost?

Textbooks and materials can go astray at any point in the supply chain. It is hoped that the solution to come out of this Prize Competition will allow us to determine more accurately where the books have gone missing and provide an answer to this very question.

11. What is main cause of book loss? Is it due to theft, wrong delivery, lack of resources?

The cause could be any of these including inefficiencies in current distribution systems. It is hoped that through increasing system-wide tracking and tracing of the planned route of books, isolating the point at which they go missing, and empowering stakeholders such as officials, administrators, teachers, parents and end-users to monitor and ensure oversight for on-time delivery, the Proposed Solutions would help tackle all of these causes.

12. Are the books repacked during the supply chain or combined with other books? If so, how often?

Typically, a larger load of books comes through the capital city and is then broken up into smaller loads that the Ministry sends out to provincial center offices of the Ministry of Education or other distribution sites before transference to schools. The initial larger load may be made up of multiple book orders. Book orders may be repackaged 2 – 3 times after leaving the warehouse or printer.