

HUMANITARIAN INNOVATION FUND

Final Report

- Please try not to exceed 5 pages (Arial, 12pts) excluding attachments –

Organisation Name	Motivation Charitable Trust
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Project Title	Appropriate and affordable emergency wheelchairs
Problem Addressed / Thematic Focus	The lack of suitable wheelchairs in emergency settings causes life threatening situations for injured and disabled people.
Location	UK for the design and development stage, Pakistan for trialling
Start Date	1 st October 2011
Duration	6 months
Total Funding Requested	£19,992

Partner(s)	Handicap International
Total Funding	£30,671 (£19,992 HIF, £10,679 other contributions)

Innovation Stage	Invention of a wheelchair, designed to meet the urgent needs of people in emergency contexts
Type of Innovation	Product
Project Impact Summary	This product design process has started to enable a shift in international practice to integrate wheelchair provision into existing activities. That change has already started with Handicap International and Johanniter. Longer term, this innovation will result in thousands of disabled and injured people in the aftermath of a humanitarian crisis having faster access to an appropriate wheelchair, improving their survival chance and longer term health outcomes.

Reporting Period	October 2011 – March 2012
Total Spent	£19,992

ACTIVITIES CARRIED OUT

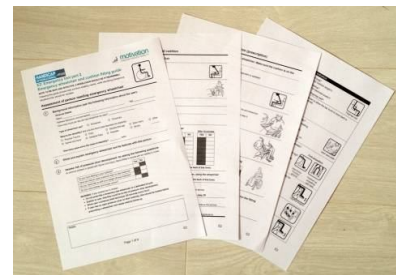
Having previously developed a design brief for a rapid response wheelchair with Handicap International, Motivation was able to begin working on the design of the wheelchair and the development of prototypes as soon as the project commenced. A factory in China was identified for production of the prototypes and future production roll out, and the technical team began to build a relationship with them. Design decisions were made based on the common disabilities encountered in emergency situations and the types of environment in which the wheelchair will be used.



Two prototypes with different design features were developed and reviewed with Handicap International and an agreement on the final design specification was reached. A final prototype was produced to this specification and approved. A wheelchair was sent to an

independent International Organization for Standardization (ISO) certified testing centre in China to undergo a range of strength tests and design modifications were carried out according to the feedback. The tests were then rerun and the wheelchair obtained the ISO certification.

The emergency wheelchair service package was developed, including service set up directions, an emergency assessment and fitting procedure, a user instruction manual and a user feedback form. Draft versions of these documents were produced and reviewed with Handicap International at their Headquarters in Lyon and in their county office in Nepal, where an emergency preparedness programme is running because of the high likelihood of an earthquake in the area.



Pakistan was chosen as the location for the field trials and the field trial protocol was agreed with Handicap International. Pakistan has been subjected to a number of emergencies in recent years, including earthquake and flooding, and fighting between the Pakistani army and the Taliban. Field trial documentation including participant briefing, questionnaires, and clinical feedback forms were developed. The wheelchairs were shipped to Pakistan for the commencement of the trials.

ACHIEVEMENTS

1. An innovative emergency wheelchair has been designed and prototyped. The wheelchair is compact and easy to transport, adjustable, durable and rough terrain capable. The wheelchair meets the World Health Organization

wheelchair guidelines, has passed strength tests to ISO 7176-8 and is currently undergoing field trials in different locations in Pakistan. The results from the field trials will be fed back into the design, ready for volume production.

2. A field support package of tools and training to go alongside the emergency wheelchair has been designed, and is currently being trialled alongside the products. The package of tools will ensure faster roll-out of wheelchair distribution, and that staff in the field will be assessing, fitting users in line with WHO guidelines.

The main objectives set out in the project proposal have been achieved, with the exception of the full results of the wheelchair field trials which will be available in June. On-going trial feedback will be published on our blog, and a format report will be made available once the trials are complete.



METHODOLOGY

The main focus of this project has been a design project with tried and tested product design methodology that has been successfully used in the development of other Motivation wheelchairs. This consists of problem analysis (completed before the project) design brief, producing design solutions and prototypes, evaluating and refining the design, and running field trials. The involvement of Handicap International from the beginning of the project has guaranteed the design is relevant for its purpose. The collaboration with the production facility from the outset has been key to ensuring costing and manufacturing considerations have been integrated into the design. This methodology has been successful in bringing the wheelchair design to the pre-production stage.

The trialling of the products within the remit of this project has involved two stages; initial factory and laboratory testing to ISO standards, and subsequent field trials in a protracted emergency scenario to assess its functionality, and adaptability. The methodology for these trials was based on previous wheelchair trials and tailored to an emergency scenario with Handicap International. Funding restrictions have limited the size of the initial trials, which ideally would have involved more wheelchair users, and the involvement of Motivation staff in the

field, who ideally would have assisted the trial set up on the ground. It is hoped the next stage of the project will involve larger secondary trials that Motivation will be able to have greater input in this stage.

MAJOR OBSTACLES

A wheelchair was sent to an independent ISO certified testing centre in China to undergo a range of tests that simulate impacts and long term use, showing physical weaknesses where a wheelchair might fail. This test highlighted that the castor barrel area needed strengthening. The wheelchair design was modified and again subjected to the tests. The second time the wheelchair passed the tests and has now certified to ISO 7176 Part 8.

Delays caused by customs clearance of the trial wheelchairs into Pakistan meant that the trials could not commence within the project time frame, and we could not involve Motivation staff who had been visiting the region in the trial set up. However we developed detailed trial protocol systems for Handicap International staff to follow and are in regular communication with them via Skype and email. We are confident that they have the capacity to implement the trials effectively, and gain useful feedback that will inform the future product development.

BENEFICIARIES/HUMANITARIAN INTERVENTIONS IMPACTED

In line with our original plans, we will see large numbers of beneficiaries once this project has moved out of the initial design and development phase and when we are convinced that we have developed the most appropriate product to meet the needs of wheelchair users in an emergency setting. However, disabled people and local wheelchair services have already been engaged with the testing of the wheelchair and their feedback will inform the final design choices.

The Handicap International team has gained a greater awareness of the needs of wheelchair users in emergency situations and is already using the knowledge to include wheelchair users in emergency response planning.

PARTNERSHIPS AND COLLABORATION

The partnership in this project is between Motivation and Handicap International. Design decisions were made with Handicap International's emergency team in their head office, Handicap International Nepal inputted into the support package and Handicap International Pakistan are implementing the field trials. As the project has developed, both partners have gained a better understanding of the way each organisation operates, and have been able to utilise each others' expertise where appropriate and in cooperation where necessary.

One interesting learning point has been that due to the nature of our partner organisation's emergency remit, their on-going activities are reactive and at times

key people have been unavailable due to field visits to emergency responses which are by nature difficult to plan around. We have learnt to recognise and work around this, seizing opportunities to communicate and make decisions as they arise whilst continuing to progress other aspects of the project.

DISSEMINATION

Full collaboration in terms of sharing the product will take place after the development and implementation stage.

A paper discussing this project has been submitted for presentation at the 14th International Society of Prosthetics and Orthotics (ISPO) World Congress to be held in 2013 in India. The ISPO World Congress is tri-annual event that has become the main meeting point for NGOs working in this particular field.

Meetings have been held with the Johanniter who recognise the need for emergency wheelchairs within their emergency response programmes and will now become a partner in the next stage of the project.

In the next stage of the project, Handicap International and Johanniter staff will be trained as trainers in emergency wheelchair response.

TRANSFERABILITY

Through this project we have been working on the product development stage – we are hoping to take the project forwards to the implementation stage. The results of the project; the products and support package, are intended to be transferable once the implementation stage is complete. In this stage we will trial and finalise the training, logistics and protocols involved in an emergency wheelchair response.

Every wheelchair design that Motivation works on builds our design and knowledge base and informs our future work. All designs are carefully documented and individual components and design improvements are shared across product ranges.

We would like to thank the Humanitarian Innovation Fund for giving us the opportunity to develop an emergency wheelchair to this stage.