

Project factsheet information

Project title	Building low-cost telecommunications infrastructure in Myanmar: Localization and training of a practical guide
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Partner organizations	
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Project summary	As a country in transition Myanmar faces barriers to Internet access and connectivity due to high cost and lack of sufficient infrastructure, resulting in important challenges to the country's socio-economic development. Given this situation, strengthening the institutional and human capacity to recognize the importance of expanded access to the Internet as well as developing the knowledge and skills to develop and use this technology are critical. In order to support greater awareness of wireless networking as well as technical know-how, First Myanmar Korea Group Co. Ltd. is undertaking the translation into Myanmar language of the practical guidebook, 'Wireless Networking in the Developing World'. This guidebook delivers practical knowledge and skills on how to design, build, secure and maintain a wireless network within the developing country context. It will be made available and disseminated to stakeholders both on- and offline. Following translation, a workshop will be conducted to sensitize stakeholders to the guidebook while imparting key knowledge. This workshop will also serve as an opportunity for knowledge sharing and brainstorming on how to carry forward wireless networking development at the community level.

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Project Summary

Background

Emerging from years of closed-door economic and social policies, Myanmar is on the path towards change. Recognizing the benefits that information and communication technologies (ICTs) can provide for development, the government of Myanmar is investing in the development of the telecommunications sector. The government has also adopted its second ICT Master Plan covering 2011-2015, focusing on the improvement of ICT infrastructure and the ICT legal framework. While these steps are promising, accessibility to affordable and reliable Internet still remains a challenge for most people.

Project objectives

Building community wireless networks is one way of providing broad based and equitable access to the Internet, thereby allowing more individuals, groups and businesses the opportunity to reap the benefits of online communication. In order to support community wireless network development, First Myanmar Korea Group, Co. Ltd. (FMK) has received funding from ISIF Asia to translate the practical guidebook, 'Wireless Networking in the Developing World'ⁱ (WNDW) into Myanmar language. This guidebook provides instruction on how to design, build, secure and maintain community networks in the developing country context. Printed and CD versions of the guidebook will be disseminated to academic institutions, NGOs, telecenters, community groups and entrepreneurs.

Following the translation, a workshop will be held to impart key lessons from the guidebook and to build a group with the skills and knowledge to deploy wireless technology. The workshop will also serve as an opportunity to discuss strategies for sustainable use of the guidebook.

Project Status

The translation of the updated third edition of WNDW was completed in mid-July 2013. In order to ensure highest quality of the translation, FMK is working with the University of Computer Studies, Yangon (UCSY) to identify two academic reviewers to proofread the translated text. When possible, reviewers will also provide local case studies to make the guidebook more relevant to users in Myanmar. Following proofreading the translator will review comments and make any necessary corrections to the text before finalization. FMK will print and make CD versions for dissemination to academic institutions, NGOs, telecenters, community groups and entrepreneurs in Yangon.

FMK has started preparations for the training workshop by discussing possible partnership with the Hardware Technology Department of UCSY, which has tentatively agreed to host the workshop and provide training hardware. UCSY can also identify 30 Masters students and 20 university faculty to participate in the training. For its part, FMK is in the process of identifying experienced international trainers to lead the workshop. Discussion has been initiated with

Network Startup Resource Center (NSRC) as well as Jim Forster and Jane Butler, who have been involved in creating and updating WNDW. The training is tentatively planned for December 2013.

Sustainability

In terms of project sustainability, UCSY is considering adopting WNDW as part of its regular curriculum, which is currently undergoing review to reflect newer technologies, such as wireless networking. As UCSY and UCS Mandalay are jointly the head of a network of 26 universities covering upper and lower Myanmar, any change to the UCSY curriculum will result in similar changes across all intra-regional universities, resulting in countrywide adoption of the guidebook.

FMK is also in the process of discussing adoption of the guidebook with another academic institution in Myanmar called the Center of Excellence (COE), which was created in 2012 and is based in Yangon. COE currently provides students with basic level IT courses, but is looking to expand into more advanced topics, such as Networking, in the near future.

FMK is also looking for opportunities to work with institutions and groups outside the academic sphere and will reach out to such stakeholders through the dissemination of the translated guidebook.

Background and Justification

Internet access in Myanmar is still a challenge for many given prohibitory costs and lack of countrywide infrastructure. Myanmar now ranks 1.71 on the International Telecommunication Union's (ITU) ICT Development Index, positioning it 119th out of the 158 countries surveyedⁱⁱ. In 2011 only 0.98% of Myanmar's total population was using the Internetⁱⁱⁱ. And according to ITU statistics the fixed broadband sub-basket as a percentage of gross national income per capita in Myanmar is 155.40%. Ranking 159th out of 161 countries, broadband remains largely unaffordable to the vast majority of citizens^{iv}. These statistics indicate an important need to promote more broad based and equitable access.

Added to these challenges is the present lack of content within universities to provide students with the knowledge and skills to help overcome networking issues. This shortfall has been recognized by academic institutions in Myanmar, such as UCSY, which are currently looking to update their curriculum to reflect newer technologies, such as wireless networking.

Project objectives

The objective of this project is to support ICT capacity building in Myanmar by translating into Myanmar language a practical guide on wireless networking titled, "Wireless Networking in the Developing World" (WNDW). This guidebook was developed out of a project initiated at the 2005 session of the World Summits on Free Information Infrastructures (WSFII) in London, England and is available under the Creative Commons license. The third and most

recent edition of WNDW was launched in early 2013 and has been used as the source text for the translation. When possible local case studies will be added to the guidebook in order to make it more relevant for users in Myanmar.

The translated version will be distributed through printed and softcopy forms to stakeholders such as universities, NGOs, telecenters, community groups and entrepreneurs.

Following translation, a workshop will be conducted in order to promote WNDW, impart key knowledge and brainstorm on how to further roll-out the guidebook. Following the workshop, learners will better understand the importance of connectivity and how to build wireless networks at the community level.

Throughout the project duration FMK will work with stakeholders and workshop participants to strategize on how to sustainably roll-out the guidebook.

Users and uses

The workshop on the practical guidebook, WNDW, is currently being planned in possible partnership with UCSY. The university plans to identify 30 Masters students and 20 faculty to participate in the workshop. As a result of training, learners are expected to gain a better understanding of how wireless networks can facilitate connectivity, as well as practical skills on how to develop and maintain these networks at the community level.

Discussion is underway with UCSY on possible inclusion of WNDW into the curriculum as part of an updated Networking course. This course is designed for students majoring in Computer Technology and covers basic to advanced theories and applications of networking, communications, etc. As UCSY and UCS Mandalay are jointly the head of a network of universities covering upper and lower Myanmar, any change in the UCSY curriculum will result in similar changes across the 26 universities in the country. There is therefore a potential for countrywide dissemination of the guidebook, which would ensure that numerous learners are reached on a continual basis.

Opportunities with other academic institutions are being sought out, including with the Center of Excellence (COE) in Yangon. The Center was recently created in 2012 and is still in the process of defining its curriculum. It now offers introductory technical courses and is hoping to expand courses to cover more advanced topics, such as wireless networking.

In the medium- and long-term, the translated guidebook will be targeted for learners beyond the academic sphere. Wireless networking knowledge and skills can be of interest to NGOs, telecenters, community groups and entrepreneurs. Opportunities for capacity development among these stakeholders will be explored.

Indicators

Baseline	Indicators	Progress	Assessment	Course of action
<p>Practical guidebook on how to develop wireless networking within the developing country context does not yet exist in Myanmar language</p>	<p>Guidebook, "Wireless Networking in the Developing World" is translated into Myanmar language.</p>	<p>Translation of the guidebook is completed.</p>	<p>Two experts from UCSY will proofread the translated guidebook to verify the quality and accuracy of the translation.</p>	<p>Suggestions from reviewers on how to improve the translation will be included before finalization.</p>
	<p>Copies of the guidebook are printed for promotional purposes.</p> <p>The translated guidebook is disseminated via CD.</p>	<p>FMK has received quotations for printing the translated guidebook.</p> <p>FMK has received quotations for CD purchase.</p>	<p>The cost to print the translated guidebook is higher than originally expected.</p> <p>The cost of making CDs is under budget.</p>	<p>Since printing costs exceed the original budget, FMK will focus on distributing the CD-version of the guidebook.</p> <p>FMK is also exploring the possibility to shift any remaining funds from the CD budget line to printing.</p> <p>Printed copies of WNDW will be used mainly for promotional purposes, given the limited number of print copies.</p>
<p>A workshop utilizing the guidebook is held and learners' awareness and skills on how to develop wireless networking are strengthened.</p>	<p>A workshop is held engaging at least one experienced trainer and relevant learners.</p>	<p>UCSY has tentatively been identified as a partner to help conduct the workshop.</p> <p>The workshop will take place in early Dec 2013.</p> <p>UCSY can identify potential participants for the workshop, including 30 Masters students and 20 faculty in the department of Hardware Technology.</p> <p>Coordination of international resource persons is currently underway.</p>	<p>UCSY will be able to provide all necessary space and equipment for the training.</p> <p>FMK has contacted several individuals and organizations to help identify possible international trainers for the workshop. Unfortunately the Network Startup Resource Center (NSRC) has not been able to help with training plans due to their busy schedule. Jim Forster and Jane Butler, contributors to WNDW, are helping to identify a trainer.</p>	<p>FMK will continue to coordinate with UCSY on partnership arrangement and training logistics.</p> <p>FMK will continue to work with Jim Forster and Jane Butler on identifying a qualified resource person.</p>
	<p>Evaluation from learners show that they have gained new knowledge in the area of wireless networking and can apply these skills to the real world.</p>	<p>Pending workshop</p>	<p>Pending workshop</p>	<p>Pending workshop</p>

Project implementation: understanding the chain that leads to results

Narrative - project implementation

Background

Access to Internet or community networks provides countless benefits to both the individual user and to society as a whole. Those who are able to participate on the Internet find a platform through which to share ideas and knowledge at the local, national and global scales. The Internet serves as a vehicle for greater economic participation as well as more efficient and transparent government services. Even without access to the global Internet, local community networks provide users with important tools such as email and voice communication, which can benefit business, local governance and community life.

Despite these tangible benefits to socio-economic development, connectivity in Myanmar is restricted to the urban centers of Yangon and Mandalay. Internet access is also priced so as to make it unaffordable to the majority of the population. While the government has enacted telecommunications policies, such as the ICT Master Plan covering 2011-2015, community-level action has the potential to further improve accessibility, allowing more people to access the Web or community networks.

Project objectives

In order to support such community-level action, FMK has undertaken a project to raise awareness on the importance of wireless networking and to strengthen human and institutional capacity to develop and maintain such networks within the developing country context. The project seeks to translate into Myanmar language the practical guidebook titled, "Wireless Networking in the Developing World" (WNDW). Following translation a workshop will be conducted to raise awareness on the guidebook and impart key knowledge.

Translation of WNDW

The practical guidebook delivers knowledge and instruction on how to design, build, secure and maintain a wireless network utilizing inexpensive and easily located equipment. This guidebook was developed out of a project initiated at the 2005 session of the World Summits on Free Information Infrastructures (WSFII) in London, England and is available under the Creative Commons license. The updated third version of the guidebook was released in early 2013 and served as the basis of the translation. In order to ensure an accurate translation of highest quality, FMK identified a translator with relevant technical background with understanding in wireless network development.

The translation of the guidebook was completed within the reporting period. In order to further ensure the quality of the translation, FMK is working with UCSY to identify two academic reviewers to proofread the translation. Experts may also contribute relevant local case studies where appropriate. Comments and suggestions from reviewers will be used to improve the translation before finalization and dissemination.

Dissemination

FMK had indicated in the original grant proposal that it would print 100 copies of the translated guidebook and create 100 CD-versions for dissemination. Based on quotations received from local vendors, it is now apparent that the original budget did not accurately reflect the costs of printing and CDs (printing will be more expensive; producing CDs will be less expensive). For this reason FMK will explore if it can redistribute the budget for printing and CDs to produce as many hard and softcopy versions of WNDW as possible. Since a limited number of print versions will be made, these copies will be used as mainly promotional materials.

The hardcopy and CD versions will be distributed to academic institutions in Yangon as well as non-academic institutions and groups, such as NGOs, community groups, telecenters and entrepreneurs who may be interested in utilizing the translated guidebook. Due to limited budget, FMK will focus on dissemination of the guidebook within Yangon.

Online dissemination will also be conducted and key sites within Myanmar will be contacted to discuss possible hosting. Further, FMK will seek to place the translated version on the official WNDW website^v.

Workshop on wireless networking

In order to build awareness and impart the key learnings from the guidebook, FMK will conduct a workshop with tentative partnership with the Hardware Technology Department of the University of Computer Studies, Yangon (UCSY). The training is currently scheduled for December 2013. For the training, UCSY can identify 30 Masters students and 20 university faculty to participate. UCSY can also provide training space and equipment for the workshop.

For its part, FMK is in the process of identifying experienced international trainer(s) to lead the workshop. Discussion has been initiated with Network Startup Resource Center (NSRC), however, due to their time schedule cooperation on this event seems unlikely. FMK has also contact Jim Forster and Jane Butler, contributors to WNDW, to enlist their support in the identification of at least one resource person for the upcoming workshop. FMK is in the process of reviewing the objectives and scope of the training with both Jim and Jane and hopes to identify the appropriate trainer soon.

Once the trainer(s) have been identified, UCSY will submit a formal request for training to the Ministry of Science and Technology. UCSY can only partner on the training if permission is granted from the Ministry.

Partnerships

At the moment, UCSY is planning to revise their course offering to bring it more up to speed with recent technologies, specifically in the area of Networking. Within this context, UCSY is considering using WNDW within the revised curriculum. UCSY jointly heads a network of 26 universities with UCS Mandalay. Should UCSY adopt the guidebook within its revised curriculum, this would result in countrywide dissemination among the UCS network. To

support UCSY's decision, FMK has delivered four printed copies of the guidebook in both English and Myanmar language.

Opportunities for partnership with other academic institutions are being explored. Another institution that has demonstrated interest in partnering is the newly created Center of Excellence (COE). COE was established in 2012 and currently offers a limited number of introductory technical courses. COE has expressed an interest in using WNDW as part of a more advanced course it hopes to develop in the future.

In the medium- and long-term, FMK will also explore partnerships beyond the academic sphere to include potential groups such as NGOs, community groups, telecenters and entrepreneurs.

Challenges

While FMK has identified UCSY as a potential partner for the training and potentially for the roll-out of WNDW, there are still some risks that may affect the outcome of the project. One risk is that while the partnership has been approved by the Dean of UCSY, the training cannot take place until UCSY receives permission from the Ministry of Science and Technology. This process is done through the submission of a formal request letter. Although the Dean has reassured FMK that the approval is likely to go through, there is still a possibility that the Ministry does not give permission, at which point FMK will have to re-evaluate the feasibility of holding a workshop.

Another challenge to the success of the project is that the international resource person(s) have not yet been identified. Jim Forster and Jane Butler are currently helping FMK to identify someone suitable to the task. If an international resource person cannot be identified FMK will explore the possibility of engaging a local resource person for the workshop.

Finally, due to the policy and limited budget of the future partner institution, UCSY can only provide narrow support for the workshop through training space and hardware. FMK is therefore reviewing its budget allocation to see how it can use the grant funding most effectively for items such as international resource person travel and accommodation.

Input	Project activities	Outputs	Outcomes	Timeline	Status	Assessment
<i>Project Management Consultant hired for project duration.</i>	<i>Liaised with international partners and experts</i>	<i>Outreach</i>	<i>FMK has received expert advice and support on the translation, roll-out of the project and project sustainability.</i>	<i>01/02: contract signed</i>	<i>On-going</i>	<i>FMK will continue to seek international partnerships and expertise.</i>
<i>Translator hired for 75 working days.</i>	<i>Translation of WNDW completed.</i>	<i>Myanmar language version of WNDW available.</i>	<i>The community has a local language guidebook on developing wireless networking.</i>	<i>20/04: contract signed 15/07: translation completed</i>	<i>Completed</i>	<i>FMK is identifying two expert reviewers to review the translated text in order to assure highest quality.</i>
<i>Expert reviewers hired.</i>	<i>Translated version of WNDW reviewed for quality assurance. When possible, relevant local case studies included in the translated guidebook.</i>	<i>Highest quality version of WNDW made available with local case studies.</i>	<i>The community has a local language guidebook on developing wireless networking with relevant case studies.</i>	<i>01/07 – present: In process of identifying expert reviewers through UCSY</i>	<i>On-going</i>	<i>FMK had reached out to UCSY to provide two faculty to review the translated document.</i>
<i>Project Associate hired to liaise with potential university partners.</i>	<i>Outreach and communication with UCSY and other universities undertaken for upcoming training.</i>	<i>Tentative partnership agreement with UCSY.</i>	<i>Training may be held at UCSY, which will also provide necessary equipment and identify relevant participants.</i>	<i>18/07 contract signed</i>	<i>On-going</i>	<i>The project team believes the training plans are on track. Once the international trainers are identified, UCSY will submit a formal request for training to the Ministry of Science and Technology.</i>

Project outputs, communication and dissemination activities

Communication

FMK has reached out to both national and international stakeholders throughout the duration of the project. At the local level, multiple universities in Myanmar were contacted to discuss a potential partnership for the workshop and roll-out of the guidebook, including UCSY and COE.

To help with any clarifications needed for the translation and to support the identification of qualified resource persons, several international experts were contacted, including the Network Startup Research Center (NSRC) and contributors to WNDW. Although NSRC will be unable to participate directly in the training, they were able to provide helpful guidelines on equipment and training agendas that have been taken into consideration by FMK and UCSY. In addition to NSRC, several of the contributors to WNDW were contacted, including Jim Forster and Jane Butler, to seek their advice on translation and roll-out of the guidebook.

FMK also contacted Mr. Mahabir Pun of the Nepal Wireless Networking Project to discuss project sustainability. Since 2001, this has been providing wireless Internet access, education and other community services to villages across Nepal^{vi}. The project has had success in developing and maintaining wireless networks at the community level. It is therefore a benchmark for how increased connectivity can be achieved through local community efforts. Mr. Pun provided helpful insights into community partnerships and the need to develop a sense of ownership within local stakeholders.

Based on the experience of Nepal Wireless and its utilization of international volunteers, FMK has been exploring the possibility of partnering with a university outside of Myanmar in order to bring student volunteers to help with networking issues in the future. Towards this end, communication was initiated with Dr. Royal Colle, Professor Emeritus at Cornell University, who has been working to promote engaged learning within the university.

Outputs

To date the following outputs have been achieved:

- First draft of translated version of WNDW in Myanmar language.

Dissemination

Project outputs	Status	Assessment	Dissemination efforts
4 copies of WNDW (2 in English, 2 in Myanmar language) distributed to UCSY	- Completed. 06/2013	Results of UCSY review are pending.	FMK provided copies of WNDW to UCSY for their assessment of the guidebook and consideration for eventual inclusion into the university curriculum.
Hardcopies and CD version of translated WNDW distributed to academic institutions and when possible NGOs, community groups, telecenters and entrepreneurs	- Not started. Translated version of WNDW will first undergo review by proofreaders and then correction by translator before being finalized.	Due to limited budget, FMK will focus on distributing copies of WNDW within Yangon to save on shipping costs.	In order to provide students and faculty with a learning resource, FMK will distribute WNDW to academic institutions in Yangon. Whenever possible, the guidebook will also be provided to NGOs, community groups, telecenters and individuals who may be interested in learning about how to develop wireless networking.
Translated version made available via local hosting on relevant websites in Myanmar.	- Not started. Translated version of WNDW will first undergo review by proofreaders and then correction by translator before being finalized.		To promote the translated resource and wireless networking FMK will explore different local websites to host WNDW.
Translated version made available via WNDW website.	- Not started. Translated version of WNDW will first undergo review by proofreaders and then correction by translator before being finalized.		To promote international awareness of the translated guidebook FMK will work with the WNDW website developers to include the translated version online.

Project management and sustainability

Established in December 2012, FMK is a relatively new group. Permanent staff consists of the CEO, Director, Administrative Assistant and Accountant. Given the limited staffing, FMK hired a Project Management Consultant and Project Associate to help with the implementation of the project.

Thanks to increased staffing, FMK was able to conduct outreach to stakeholders at the international and community level. This in turn provided FMK with a clearer understanding of the needs and constraints of stakeholders. FMK was also able to learn about the processes for curriculum reform within universities and opportunities for partnerships.

Based on these new understandings several potential areas for further development have been identified. In particular, further work can be done with the Center for Excellence (COE) to help this institution improve its curriculum, facilities and online presence. As a relatively new institution COE lacks a technical lab, hardware and basic infrastructure for its students. In addition, COE will need support developing a stronger online presence and expanding its teaching resources.

Impact

Through the outreach conducted by FMK, greater awareness of the project has been achieved among academic stakeholders in Myanmar. Discussions with UCSY and COE have helped drive ideas for how academic curricula can be revised in the future to bring them more in line with today's technologies. At the moment UCSY is considering adopting WNDW as a resource for its Networking course. If UCSY decides to adopt the guidebook, WNDW will be used at all 26 universities of the UCS network, which will help to strengthen the capacity of students and faculty to actually develop wireless networks.

Greater awareness of the project has also been achieved among groups and individuals involved in wireless networking at the international level. Thanks to outreach and ongoing discussions, NSRC as well as the WNDW network are aware of the project.

Overall Assessment

Two main outputs were outlined in the project document. The first is the translation of WNDW into Myanmar language. While proofreading and the addition of local case studies are still ongoing, the first draft translation of the guidebook is now finished.

The second output to be achieved during the remaining project timeline is the roll-out of the guidebook through a workshop. Progress on the organization of the workshop is ongoing and thus far FMK has identified UCSY as a potential partner to help support logistics of the workshop, including the venue, equipment and the provision of learners.

Through the course of its communication with the university, FMK came to understand that WNDW was perceived as a valuable and relevant resource for students and faculty. This view is the same for COE, which is also considering adopting the guidebook. At this time, universities in Myanmar still need content and reference materials to enhance curriculum

development. WNDW therefore has the potential to serve as an important tool for these academic institutions.

Recommendations

FMK has several recommendations to improve support. In terms of administrative support, weekly calls with ISIF may be helpful. In terms of networking, when possible, peer groups of ISIF grant recipients and alumni can be organized in the country where the project is ongoing, so that knowledge sharing and peer learning can occur. Further, if ISIF has any high level contacts within Myanmar, such as in NGOs, government or technical teams, connecting them with the project team may also help improve project implementation and sustainability. To improve international and regional networking, invitation to participate in ISIF events may be useful.

Bibliography

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