



Report on Participants' Evaluation of Wireless Workshops
Project Title: Capacity Building for Community Wireless Connectivity in Africa

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1. General notes

1.1. About the project

Project Capacity Building for Community Wireless Connectivity in Africa was implemented over a period of just over two years (from the end of 2004 to late 2006). It started out primarily as an initiative to gather knowledge and resources on community wireless connectivity. But, working with a network of partners to design the project, its eventual goals were to pilot face-to-face workshops, develop and maintain a distributed knowledge base on wireless for ICT4D, and build partnerships and knowledge networks.

Perhaps one of the most significant outcomes of the project was the four regional training workshops. Initially conceived of workshops to pilot training materials, they achieved significant results in raising awareness of wireless, and positioning most of the 140 people trained in different parts of Africa to teach others, build wireless network, re-use and distribute the materials, and in some cases, link to the emerging African wireless network. Every workshop was over-subscribed, which proves that the demand of training remains enormous in Africa.¹

A survey of participants in these workshops completed in early 2007, to which 95 of the 140 people trained responded, indicates how they valued these workshops, and the extent to which skills gained have been shared and put into practice. The findings of the survey are summarized in this document.

1.2. Partnership and financial support

Project was coordinated by The Association for Progressive Communications (APC) and it was supported by the International Development Research Centre (IDRC) and Open Society Institute (OSI).

Core project partners:

- IT+45 (Alberto Escudero Pascual)
- Wireless.dk (Sebastian Buettrich and Tomas Krag)
- Kyle Johnston
- Bruno Roger
- APC
- CUWiN

Organizational partners at the local level:

- ESMT, Fantsuam (West Africa)
- Women'sNet, Ungana-Afrika, CSIR, CECS, SANGONeT (Southern Africa)
- Alakhawayn University (North Africa)

1 More information about the project: <http://apc.org/wireless/>

1.3. Notes on methodology of the evaluation

The survey was conducted through an evaluation form, created in the online survey application SurveyMonkey. The call for evaluations was sent to workshop participants' list in August 2006.

Since the number of received evaluations was not satisfactory, the call was re-sent (and the survey re-opened) at the end of February 2007.

After the data collection has finished, the outcome was subjected to qualitative analysis. Graphs generated by SurveyMonkey were used to illustrate frequencies of answers to some of one-choice and multiple-choice questions (see below).

Appendixes 1-4 include full quotes of answers provided by survey respondents. Where the answers contained personal information (names of persons or organizations), such information was removed from the document.

1.4. Respondents

The total number of workshop participants who provided their evaluation feedback was **94**, which is **more than 2/3 of all participants** who participated in one of the four regional workshops. Not everybody responded to all questions – none of the questions were mandatory and some respondents skipped some of them. However, the response rate for most questions is high and the survey can therefore be considered representative for given purpose (evaluating wireless workshops and monitoring how the workshop learnings benefited trainees in their subsequent work).

The highest number of those who answered to the evaluation survey participated to North African workshop, which is understandable given that it was the most recent one. Yet, the number of evaluations sent by participants from different workshops is quite balanced and therefore representative.

Approximately one fourth of those who responded to the survey were women participants.

2. Evaluation Summary

2.1. Usage of received training

The questioning about how the participants have used the training they had received has shown surprisingly positive results. More than half of all workshop trainees have trained others on subject of wireless networks and also more than 50 % of (not necessarily the same) participants installed one or more wireless networks. Similar number of participants have given training materials to others. Nearly half of trainees advised others on wireless networks and about one third of them maintained or administered a wireless network. One in five participants managed a project making use of wireless technologies.

Among other most commonly mentioned follow-up activities are research, training and promotion of wireless networks, as well as fundrising for projects focused on building wireless networks.

Which of the following have you done to apply/disseminate the skills and knowledge from the workshop?			
		Response Percent	Response Total
Installed one or more wireless networks		53.4%	47
Maintained, administrated one or more wireless ntw.		33%	29
Managed a project making use of wireless technol.		19.3%	17
Trained others on the subject of wireless networks		58%	51
Advised others on wireless networks		47.7%	42
Given the workshop training materials to others		54.5%	48
Other		22.7%	20
Total Respondents			88
(skipped this question)			7

Chart 1: usage of training

In terms of the character of built networks, 83 % of the participants stated that the primary network(s) they have installed since taking the training are non-commercial ones.

About half of the participants have, since taking part in the workshop, build, maintained or administered 1 or 2 wireless networks, while one quarter of respondents build or administered 3 and more networks. 26 % of respondents built or administered none.

2.2. Workshop evaluation

Participants were asked how useful they found the contacts they made during workshops. One third of them found them *useful* (or "*somewhat useful*") while the rest referred to those contacts as being *very useful* ("*Great advantage to my vocation*"). On the front of networking, the workshops seem to have been a success.

Responding to *how the attended workshop compared to other workshops the participants had previously attended*, nine of ten participants found our workshop to be above average or superior and remaining 10 % of participants thought the workshop was average. Nobody found the wireless workshop to be below

the average of quality of other attended workshops. Very similar responses were given about the quality of training materials used in the workshops.

Practically the same can be said also about how participants perceived the level of trainers. However, even higher number of participants (40%) thought the trainers were *superior* than what was common in workshops they had previously attended. Another almost 50% thought that the trainers were “*above average*”, so the qualities of trainers were overall graded very positively.

When asked to elaborate on the reasoning behind the grade the participants have given to the workshop quality overall (see above), they mostly appreciated the high level of trainers and their approach, good and open atmosphere, good organization and the fact that the workshops were very hands-on. Several of the participants to North African workshop also pointed out the importance of the workshop having been made available in Arabic. The few critical remarks referred to insufficient duration of training and, in one case, tasteless South African food :-). To review all comments, see [appendix 1](#).

2.3. Impediments

Those participants who have NOT built or administered any wireless network since participating to one of the workshops have provided feedback on impediments that have prevented them from doing so. For more than half of them, the main obstacle was the lack of wireless equipment. Every fifth participant lacked necessary internet infrastructure and almost the same number didn't find themselves in any need to build a network. It is worth mentioning that the percentage of those who have not used acquired skills because there was no need (lack of opportunities) is notably higher among women (30%) than men participants (12%).

Less than one in ten participants asserted that they didn't build a wireless network due to the lack of skills. One third of participants who did NOT build a wireless network since the workshop (34 in total) haven't done so for other reasons, such as delays in planned projects implementation, lack of access to funding and/or hardware, problems with security issues, etc.

If you have NOT installed, maintained or administered a wireless network since the workshop please indicate the reasons why (check all that apply)			
		Response %	Response Total
Lack of skills		8.8%	3
Lack of internet infrastructure		20.6%	7
Lack of wireless equipment		55.9%	19
No need		17.6%	6
Other		35.3%	12
Total Respondents			34
(skipped this question)			60

Chart 2: impediments

2.4. Most helpful aspects of workshops

When participants were asked what aspects of the workshops were most helpful for promoting wireless networks in Africa, most commonly they mentioned the networking/community element and the practical training experience using low-cost materials and free software, allowing thus easy replication. Among other mentioned important aspect are the establishment of a follow-up mailing list on which people can from now on seek support when building wireless networks, as well as availability of good training materials. For full list see [appendix 2](#).

2.5. Recommendations for subsequent activities

Feedback on possible future activities mentioned by participants as the most needed ones could be basically divided into three main groups:

Firstly, these are calls for assistance with acquiring affordable hardware. Secondly, many participants have expressed need for additional training on security in wireless networking. The third most frequently mentioned issue is the need for more practical experience with building real networks, as well as ongoing technical support for participants initiatives.

Another specific request mentioned a need for further specialized training, specifically in bandwidth management, content development and adaptable business model concepts. For full list of participants suggestions on useful subsequent activities see [appendix 3](#).

2.6. Other feedback

Participants provided a plethora of recommendations and general comments about the project. Following are the most commonly mentioned or otherwise interesting suggestions:

- Several participants requested an assistance with rolling out local versions of workshops, using the capacities of people who had been already trained.
- There have been a couple of suggestions that if there are any future trainings, more emphasis should be given on practical (hands-on) elements of workshops.
- One participant suggested that the training scheme should be turned into an academic program.

To review all participants' comments and suggestions, see [appendix 4](#).

2.7. Usage of acquired skills - gender differences

The evaluation showed that there are significant differences in how the male and female participants have used what they learned during workshops. While the men had significantly more experiences with actually building and maintaining a wireless networks, since they took part in the training, women participants got more often involved in further promotion of the subject, such as giving trainings, sharing training materials or advising others on the subject. The differences are significant and they are best illustrated by a chart ([appendix 5](#)).

3. Additional results

Although this report provides summary of evaluation results, participants full comments and recommendations are attached as appendixes. It is important to read them to get a complete picture of evaluation given to the project!

Additional details on the type of networks the participants have built can be extracted from charts in appendix 6 ([section 3: networks](#)).

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More information on this report: wireless@apc.org

Appendixes

Appendix 1: Rating of the training (reasons)

Can you elaborate on your reasoning for the grade that you gave to this training?	
1.	le theme étaitrès interessant et l'oganisation est excelente
2.	it is my first training
3.	le plus intéressant que j'ai trouvé dans ce genre de rencontre c'est l'ampbiance amicale loin d'ambiance académique. l'animation extra-workshop (ex:sorti) ca aidé à améliorer les contcats avec tout les participant et qui a ajouté un aspect culturelle et sociale en plus de l'aspect scientifique. j'ai apprécié l'utilisation de la langue arabe.
4.	temps insuffisant pour la formation
5.	the workshop was well organized with qualified and helpful trainers.
6.	la formation sortait de l'ordinaire, l'ambiance étais magnifique de telle sorte que tous les participants ont pleinement échangé leurs expériences et ont profité de l'expérience des formateur
7.	Very Good
8.	Excellent training : The workshop was the first to show me about the usefulness of CANs after eating the food inside; that this CANs can be use to share resources among various communities
9.	The Trainers in the workshop knew there area of specialisation very well and were able to pass on knowlege to us trainees in a manner that even a person with little background on technolgy could understand. The workshop in Zanzibar was well organized. In a nutshell the objectives of the course were met.
10	The content was new to me. It taught me the potential of using it as a affordable and appropriate technology solution for both poor and disadvantaged communities. The regulatory aspects were also incredibly interesting. The convergence potential also gave lots of ideas about how NGOs can use wireless eg with radio. The power of wireless is its inherent potential to democratise and make access to the Internet affordable.
11	Because I have appropriated the resources into a project proposal that has received funding. I am able to articulate the application of the WiFi ISM band to decision makers in Zimbabwe, convincing them that use of 2.4GHz solves the riddle of the first mile connectivity. The training has also made me look up buildings I pass just to see what kind of Antenna is there and to imagine the data network that they are accessing
12	I've had access to the trainers for support/assistance. Have also been able to contribute in the way of training/other workshops together with trainers from other workshops
13	La formation était destinée pour un niveau débutant. Les informations que nous avons eu étaient en général des notions de base des réseaux sans fil.
14	le choix des paricipants etaos judicieux, mais la qualité de l'animation et la logistique a fait que l'atelier a été une réussite
15	because of the great organization and valuable information with an intresting presentation and aplication in real environment .
16	i have gained the knowledge early i didint have,also help me to know the wireless technology and its advantage,help me to work using wireless technology.
17	En effet, c'etait une formation de haut niveau et très important qui repondai bien à mon aspiration future, notamment qui avait une conotation avec nos projet dans le cadre de ma structure associative. Il est bien frai que nous eprouvons encors des difficulté de demarrage mais avec la

grâce du créateur tout y ra.

18
Je trouve que dans l'ensemble c'est satisfaisant. L'organisation était bien

19
LES FORMATEURS TRES COMPETANT LES TEST EFFECTUER REUSSIS

20
IA FORMATION ETAIT DE NIVEAU SUPERIEURE AUSSI BIEN SUR LE PLAN CONTENU, QUE CADRE D'ACCUEIL, QU'ORGANISATION (INFRASTRUCTURE, LOGISTIQUE, RELATIONS HUMAINES, COMMODITES, ETC...)

21
The training was superior because it was hands-on, Training materials were easy to follow to do all the practicals and the instructors were always willing to assist in case of any problems.

22
I'd have gave it an average degree but given the fact that this is the first Arabic training, I can notice the ammount of effort it took.

23
APC workshop saw participants with diverse knowledge levels in IT/Wireless world. As a result trainers had to make sure that they serve everyone fairy thereby making their work more challenging. However trainers managed to equip us fairy regardless of challenges. I liked it!!

24
There was considerable information imparted on wireless networks, the trainers were great, and there was some practical practice. A bit more time on practicals would have been better though, particularly the linux track.

25
C'était une formation avec une pédagogie bien daptée au groupe cible. Il y avait de la théorie pour asseoir les concepts et après, beaucoup de pratiques pour que chaque participants puisse faire l'expérience de ce qui est dit. En plus, la pratique etait basée sur des materiaux qu'on trouve facilement dans nos localité. Donc les experiences faites pendant la formation sont facilement reproductibles.

26
La chance n'a pas été donnée à tous pour suivre les travaux dirigés sur la conception des antennes et les configurations sur Windows et Linux en pratique, car c'était des travaux de groupes.

27
J'ai installer des réseaux wifi pour des organisations, j'ai expliqué à d'autres personnes sur comment configurer un réseau wifi sous windows. Les contacts noués durant la formation sont très utiles. En comparant la formation à d'autres que j'ai suivi. celle de APC est mieux que le standard

28
La formation a été très pratique. Les intervenats étaient diversifiés et disponibles et il y a eu un réel partage de connaissances entre les participants

29
I liked the mixture of participants, also the workshop was practical and hands on.

30
The training had a very rich content with experienced trainers that had hands on experience with every aspect of wireless technology. The methodology used was extremely professional and it made me acquire advanced skills that i had never had before in this area. The Logistics were extremely perfect that created a good environment to learn without any interruptions

31
the organization was perfect ,we gained lots of information in a clear and easy way.the most important thing that it upgraded my way of thinking ,teaching towards .i have learned from our trainers 'facilitators' that the role of the teacher is to make things easier for students.

32
Training was quite practical and the resource persons were highly knowledgeable

33
We did a real practical seesion

34
Because there were more information, documents, materials and practices, moreover of the best mixer trainers.

35
Je suis instructeur réseaux dans notre institut en BTS. La formation De Dakar m'a aidé à améliorer mes prestation (formation) auprès des étudiants. S'assure également l'installation et le service

après vente en réseau auprès des clients de ma société. A ce titre, la formation de Dakar a été un grand plus pour moi.

36
the workshop should be practical oriented

37
The training was above average because it was really practical for everyone to understand, although the trainers did not really go deeply into the notion of wireless networks. Actually it has helped me in reading and understanding more resources on wireless networks

38
9/10

39
I think no, according to the limited abilities

40
Unlike other trainings this was more of a hands on than listening. There was more of practical work. And the availability of training materials and the links given made this training to be more close to superior

41
The training materials were good, the coordination okay as well. The food was specific to south african food. It was difficult for those of us from other countries to get satisfaction of taste, not that the food was bad or low quality, no, but may be the choice.

42
The training was conducted by professionals in their respective fields, who have wide experience with the technology and its downfalls, the trainers and the coordinators were always welcoming comments and suggestions both positive and negative, this improvised space to open up minds.

43
1.0The Study Packs(Material)were not as many as i wanted, little time to practice on the gadgets really,(at least gave me more zeal to pursue wireless technology even further) 2.)The workshop on the other Hand was an eye opener 4 me using tin Cans for wireless communication (interesting)

44
Les formateurs étaient compétents; l'ambiance fraternelle a permis aux participants d'apprendre sans complexe; La prise en charge fut acceptable.

45
the training is useful but i think it will be superior if there is more time to the practical session, and the applied of the technology.

46
I'd have gave it an average degree but given the fact that this is the first Arabic training, I can notice the amount of effort it took.

47
Because we attained what we anticipated and it was organised wonderfully

48
Because, the trainers was of superior level, the trainees was very professional people, the logistic was excellent

49
- L'equipe de formation etait competente - le materiel de formation etait de pointe - les TD permettaient une amelioration de la theorie

50
ras

51
La formation de APC a été excellente car non seulement il y'a eu beaucoup de travaux pratiques mais les formateurs nous ont donné beaucoup d'outils (logiciels et documentation).

52
i think no according to the limited abilities in my Governorate

53
It was a professional training whereby you knowledge and experience at the same time. Wireless networking was new to me and found it cheaper and easier to maintain. The materials were excellent although the time was short and hope more shall be done. The facilitators were super and I learnt a lot from them and utilise some of the skills learnt. It was a hands on training workshop and covered nearly all aspects of wireless networking.

- 54 The trainers were very knowledgeable. A forum was setup to allow for ongoing support/questions. The training material is very useful.
- 55 C'est parceque j'avais entendu parlé du wireless avant et la formation de l'APC a permis de de l'utiliser concrètement, de fabriquer des antennes cantenna et d'échanger avec des spécialistes d'autres pays. Ce qui reste à faire c'est la capacité nationale à promouvoir le wireless au Sénégal.
- 56 Cost constraints result in large classes, limited duration and limited hands-on experience. I feel that this workshop, although thorough in its theoretical materials, would have benefited from more practical experience. This is not a criticism of the trainers and organisers involved. It is rather a reflection on the negative effect that limited hands-on training has.
- 57 C'est le premier workshop auquel je participe et j'avoue que j'ai été fort impressionnée par le niveau de la formation et des professeur, ainsi que l'ambiance de la formation, très conviviale.
- 58 La formation s'est faite dans les normes (standard) mais avec lesd ateliers cela a été mieux que les standard
- 59 ETANT DONNE QUE LE CONTACT ET LES FORMATEURS ETAIENT A HAUT NIVEAU AINSI QUE LES PARTICIPANTS
- 60 La pratique a tres limitee au cours de cet aletier.
- 61 En effet, je pense que cette formation m'ait très été utilisée dans la mesure ou elle m'as permie de voir claire et aussi en ma qualité de mediateur Internet être consultant auprès des non initiés qui souhaitait s'avoir d'avantage sur le fonctionnement du Wifi et ses nouvelles normes...
- 62 Le contenu du programme est très intéressant Pratique Lieu et condition de la formation agréable
- 63 la qualité des anilateur et des participants était très élevé innsi que le bon niveau d'organisation logistique
- 64 la formation que j'ai pris lors de l'atelier à Maghreb était très intéressante surtout que c'était ma première expérience de ce genre. j'ai eu tout simplement un peu de difficulté lorsqu'elle a été faite en arabe. en général, elle est efficace.
- 65 La formation d'APC de Dakar était très riche en théorie mais surtout en pratique. Tous les après-midi il y'avait des séances de travaux pratiques comme par exemple: la configuration des points d'accès sous windows et sous linux, la fabrication des antennes cantonas et botlnet, etc... En une semaine nous avons fait énormément de choses.
- 66 It is the kind of training that is needed in Africa. It was not only very theoritical but it was also very practical. It ensures that the participants have a very good understanding of what is happening as well as being able t implement what we learnt.
- 67 Dans cette formation on a suivi un plan standard et un contenu qu'on peut trouver dans la majorité des formations sur le thème de wiFi
- 68 Down to earth, Targeted, very practical
- 69 LA FORMATION ETAIT VRAIMENT AU NIVEAU DANS TOUS LES SENS AUSSI BIEN ORGANISATION QUE CONTENU QUE FORMATEURS QUE PERTINENCE QUE PARTICIPANTS QUE CADRE GLOBAL.J'AI PARTICIPE A DES DIZAINES DE FORMATIONS MAIS ELLE ETAIT DES MEILLEURES.
- 70 L'organisation de la formation était de trÃ¨s haut niveau sur les plans logistiques ainsi que techniques. Les formateurs ont assuré un contenu théorique et pratique trÃ¨s réussi. L'utilisation de la langue arabe était un défi bien gagné malgré quelques difficultés de traduction. Sur le plan humain aussi, les relations entre les participants étaient fraternelles et nous avon fait de bons amis.
- 71 the workshop had balance between technical and theory in content and practice. I should mention

- . the excellent hospitality.
- [72](#) En effet, malgré le rythme assez élevé de la formation, les intervenants étaient d'une grande qualité et possédaient leur art. La transmission de connaissance s'est faite assez facilement, et l'organisation des journées permettaient d'éviter l'accumulation de fatigue aux apprenants. Les cas pratiques ont été la partie la plus intéressante de la formation. Mais je regrette que certaines parties de la documentation soient assez difficiles à comprendre (phase de calcul des fréquences) ainsi que le choix d'un matériel non disponibles localement
- [73](#) first it's some useful to me, but i hoped that we focuses on a practicing training over than a theoretical training. Second i think that arab language is not useful at this level of training.
- [74](#) Well The APC training helps me to understand the way community connectivity and to share resurces to reduce cost.
- [75](#) logistics organisation were so well but I think you can make best about training, I think that the 1st part of the workshop which was interested with theoric aspects took for us more time tnan the 2nd part of the workshop :practices I propose to give more time for this 2nd part
- [76](#) la qualité de la formation, le cadre général, l'hébergement, les formateurs sont d'une très haute qualité
- [77](#) The training was excellent. The only reason why I did not give a superior grade is because some participants lacked the basic skills in Telecommunications and that was a problem because we lost some time in basic theory.
- [78](#) -bonne organisation et bonne ambiance. -facilitateurs sympatiques.Ils ont communiqué l'information d'une manière simple et ont incité les participants à poser des questions lorsqu'ils ne comprenaient pas. -Le contenu était bon. -les transparents manquaient de schémas explicatifs animés, je trouve que c'est une bonne manière de présenter des notions trop théoriques . -Les parties pratiques étaient très intéressantes et j'ai beaucoup apprécié -j'ai aussi apprécié le travail d'équipe.
- [79](#) The practical approach of the workshop was great, lots of hands-on exercices and alot of case studies and participation of the trainees. Selection process was better also in order to balance the audiance (in gender and in profiles and levels)

Appendix 2: Most helpful aspects of the program

What aspect of this program did you find to be the most helpful in promoting the establishment of wireless networks in Africa?

1. l'aspect adaptation social
2. many workshops in each country
3. -*l'aspect applicatif et fabrication -*étude des coûts -*étude juridique
4. installation et configuration des réseaux sans fils
5. la formation théorique suivie d'essais pratiques sur le terrain ont été d'un grand apport en plus la documentation riche et diverse donnée forme une bonne référence technique pour ceux qui y sont intéressés même ceux qui n'ont pas participé à la formation
6. The use of wifi mesh to allow the communities to link to each others can be helpful in promoting wireless networks in Africa
7. The experiences of the trainers and that it can be done.
8. Training Material
9. L'installation simple des systèmes sans fil et le niveau de sécurité assuré
1. yes its helpful.
1. les ondes ombres, les champs les antenne de fabrication artisanale. Les rélets d'interconnexion.
2. La configuration des points d'accès
3. les exemple etudier et tester
4. L'ASPECT PRATIQUE PLUS QUE L'ASPECT THEORIQUE.
5. Making own antenna
6. It's mainly community. Getting all the people to meet together, blend their experience with good training and with others' experience. Connecting people is also important. I always wondered whether we have other people who are into wireless in the region ? Now I know.
7. Involvement of Participants from different countries in Africa and sponsoring them.
8. The mailing list that allows for continued consultation and interaction even after the event, plus the materials we received.
9. Configuration des AP et des postes clients, fabrication des antenne directionnelles (cantenna), l'étude du terrain
2. Oui, commela conception des antennes radio, car le coût n'est pas à la porter de tous. Le partage d'expérience entre les participants.
2. La réalisation de cantenas configuration wifi sous linux même si cela reste
2. The fact that , the type of devices or AP used where affordable in most cases for Africa and also reasonably robust.

2 Creating awareness and demonstrating that some of the equipment ought not to be very expensive
3. to create a wireless network

2 well people are afraid and we do not also have enough confidence to talk about security, unless we
4. also get more information

2 netstumbler
5.

2 Les phases des paramétrage des AP, de fabrication des antennes, de présentation des normes,
6. d'étude de cas, de calcul etc..

2 the practical aspects
7.

2 What was really interesting was its goal in which the training was focussed on. That is 'community
8. aspect', Being able to reduce cost by producing own equipments from local materials.

2 The use of locally found raw materials. eg The making of an antenna using a tin. Using locally
9. found raw materials could help in promoting the establishment of wireless networks in Africa. Normally lack of resources hinders people to go ahead with the new technologies. If we could come up with more locally found material it could be helpful

3 practical experience
0.

3 All was helpful, but Bandwidth & Network Management Wireless Networks These are the key
1. segments to effective use and wide spread of networks for places like here where bandwidth prices are unimaginable and infrastructure is deemed

3 The way it empowers communities to be able to access the internet
2.

3 Le programme a surtout été positif du point de vue l'aspect pratique de la mise en oeuvre des
3. réseaux wifi. en effet pendant la formation on a pu suivre effectuer une étude de cas pratique; cela nous a beaucoup aidé dans l'acquisition de la technologie BLR.

3 It's mainly community. Getting all the people to meet together, blend their experience with good
4. training and with others' experience. Connecting people is also important. I always wondered whether we have other people who are into wireless in the region? Now I know.

3 How to setup wireless networks and making Antennas
5.

3 The high pedagogical level of the trainers
6.

3 - Les infrastructures utilisant les systèmes libres (logiciel, matériel autofabriqué)
7.

3 La confection des antennes artisanales;
8.

3 Licensing and regulations have a strong impact on the use of wireless technology especially on
9. Wide Area Networks in some countries in Africa

4 low cost wireless equipment and regulatory issues.
0.

4 l'installation des points d'accès
1.

4 Just being better informed about wireless networking has made it possible for me to participate
2. further in advocacy around this matter in my country

4 La construction d'antenne artisanale

- 3.
4.
4. montage d'un reseau sans fil
4.
5. Les presentations ont ete tres bonnes. Il y a avait la disponibilite des encadreurs
4.
6. L'aspect communautaire comment équipe deux villes où des centre communautés à l'exemple du projet des mairies de Dakar.
4.
7. - Installation et configuration des wireless - mesure des DB des liaisons - les antennes
4.
8. l'utilisation de materiel local et de recyclage pour le montage de réseau Wifi
4.
9. The practicals especially the cantenna.
5.
0. simple methods, low cost material easy to understand traning material
5.
1. L'organisation des travaux pratiques dans des contextes réels d'aide au développement est une très bonne idée qui nous a montré l'utilité des réseaux sans fils dans le développement de nos pays.
5.
2. La formation, sans aucun doute. Enuite je dirais les contacts noués au cours de la rencontre, peuvent se révéler utiles dans le cadre d'une entraide
5.
3. i think that establish a wireless network in the campus is most helpful to beging wireless revolution in africa.
5.
4. The community connectivity
5.
5. les aspects pratiques et minimisation des couts
5.
6. The practical examples were very interesting and empowering. The field projects is something you will not forget.
5.
7. -les travaux pratiques (configuration d'un point d'accès, dépannage d'un réseau sans fil, construction d'une cantenna...) -les projets réalisés aux cours de l'atelier.-
5.
8. Self made antennas (cantenans and bottnelet). In Africa people were verz attracted by a self made, cheap, technology.

Appendix 3: Needs for subsequent activities

If there was to be a subsequent activity, what could this program do to facilitate your wireless work best? (name one activity)

1. une visite d'un village connecter par wifi
2. wide wifi installation in many points
3. -multiplier les projets. -inviter les participants lors de l'installation d'un grand projet ou réseaux.
4. sécurité administration
5. ce programme peut par exemple supporter techniquement l'implantation d'une BLR par le partage et la divulgation des expériences des autres participants ayant réellement baptisé une activité et le suivi de l'activité jusqu'à ce qu'elle tienne debout
6. Sharing Various activity between the Community Radio member stations, Like News,jingles, Advert etc We use the camcaster software to link the stations
7. Bandwidth Management and Content Development and Adaptable Business Model Concepts
8. how one could implement wireless mesh networks...ot providing expertise in the form of people to actually set up wireless networks for communities in a given geographic space or a school or etc
9. The budget calculation
- 10 J'ai commencé à partir du mois de février à enseigner un module qui s'intitule les réseaux sans fil.
Ce programme peut m'aider à mieux pratiquer mes connaissances théoriques.
- 11 we have more the five sever ,so we are taking offsite backup daily to the remote server using wireless knowledge
- 12 Dans un premier temps nous aidez à nous équipé du matériel informatique de seconde main recyclé par nos partenaires Compteur Aide Internationale afin que nous soyons plus pratique. Vous savez qu'un réseau Comment celui du campus Numérque avec tant d'abonnés nous ne pouvons pas avoir tu temps de faire des expérimentation... Nous souhaitons aussi voir les techniques d'utilisation du Imax que nous pensons qu'il peut revolutionner le développement des TIC et les BLR pour un meilleur développement du continent.
- 13 Vous pouvez nous aidez à mieux maitriser les calculs de distance en nous accompagnant dans l'étude de faisabilité.
- 14 Plus d'exemple etudier
- 15 FAIRE UN ATELIER AU PROFIT DES JEUNES (GARCONS ET FILLES) EN DEPERDITION SCOLAIRE ET/OU ANALPHABETES DANS LE CADRE D'UN PROGRAMME D'INSERTION. AUTREMENT DIT, LA PRISE EN COMPTE ET L'IMPLICATION DES JEUNES EN DIFFICULTE ET/OU ANALPHABETES ISSUS DES QUARTIERS PAUVRES MAIS AUSSI DU MONDE RURAL.
- 16 Intergrate Windows and Linux Wireless networks.
- 17 It depends on the type of activity: If it's training, I'll use the Arabic materials we have (For sure I'll use the mailing list) If it's implementation, I know where to seek help if I need.
- 18 Introduce specialised training workshops: e.g. "Securing Wireless network" etc as opposed to general one.
- 19 Bar any unforeseen obstacles, I will be working on a specific wireless project, as well as on the introduction of a course on the subject at a university. The workshop skills will certainly prove

important.

- 20 . Mettre l'accent sur la surveillance et la maintenance du reseau, le QOS
- 21 . -Stages pratiques: envoyer des personnes au niveau des centres qui utilisent cette technologie pour aquérir une expérience solide pour 1 ou 2 mois. -Financer et appuyer des projets techniquement des projets avec l'envoi et prise en charge des stagiaires volontaires pour l'exécution du projet.
- 22 . more discussions on the different types of wireless devices , and how to decide which are the best to use and where.
- 23 . more training especially on security, and caching
- 24 . Mettre à notre disposition des outils comme les connecteurs les câbles et tout l'équipement pour la fabrication des antennes
- 25 . explore other disabeled sites
- 26 . To provide access to communication for remote villages around my town. Help might come through provosion of equipments.
- 27 . many wireless networks are unsecure even for those of us who attended the workshop. Apart from the basic wireless network security features we covered like setting the password, keys etc, i would prefer that next time there should be a comprensive coverage of wireless network security taking the whole private network into consideration.
- 28 . Equipment
- 29 . L'aspect materiel(permettre au participant d'avoir facilement un accès au materiel WIFI). Il y'a le suivit apres la formation.
- 30 . It depends on the type of activity: If it's training, I'll use the Arabic materials we have (For sure I'll use the mailing list) If it's implementation, I know where to seek help if I need.
- 31 . Connecting neighbourhood institutions and schools
- 32 . Donation of equipment
- 33 . - nous aider avec certains materiels rares en afrique - etaler la formation sur 03 semaines
- 34 . Une formation sur la sécurité des réseaux
- 35 . Wireless and security
- 36 . Renforcer les capacités
- 37 . This is an internal wireless network - Zimbabwe has not de-regulated the requisite band to allow us to experimnt further with Wireless Networking in Harare
- 38 . wimax
- 39 . Je pense que pour faciliter mon travail en tant responsable d'une structure ONG à but non lucrative, il serai judicieux que l'on nous offres des pc pour des représantant des ONG. Vous savez c'est pas facile pour nous avec les prix qui sont pratique ici dans notre pays (ex: pc Dell équiveau

à 1.900.000 cfa en Euro 2900,763 c'est trop fort pour nous... Il faudra aussi que l'APC puisse voir comment elle peut apporter son aide au niveau des équipements des ONG du Sud dans le But qui est assigné dans leurs statuts.

40
Administration des réseaux

41
We really need to find a way of finding cheaper equipment. The cost of the wireless equipment here is about US\$500.00 which is approximately MK70,000.00. The secondary schools around our college can not afford the equipment, yet based on the VSAT policy of the college is that we would be willing to share our bandwidth with them at very cheap rates. Maybe the program could identify cheap producers of the equipment, buy it in bulk at cheap rates and we can buy from this program when we need the equipment at cheap rates too.

42
Enrichir mes connaissances et compétences pour mieux former les futurs techniciens en télécommunications

43
Keep the list alive so that we can exchange ideas and help each other out as situations arise.

44
L'un des principaux axes d'activité de notre association est le e-government vu la nécessité de cet axe dans le développement et l'encouragement de l'état à travailler sur ce projet. Durant l'atelier, nous avons vu l'utilité des réseaux sans fils pour la mise en place de l'infrastructure nécessaire pour assurer l'interconnexion entre les différentes administrations pour assurer au mieux les services à distance. J'ai proposé au sein de l'association l'organisation d'une manifestation internationale regroupant les pays du sud et du nord afin d'échanger les expériences et évaluer l'état actuel dans les pays en voie de développement. Une telle manifestation constituera le noyau d'un grand projet qui essaiera de promouvoir cet axe essentiel pour le développement de notre pays. Cette idée est encore en phase d'étude vu la difficulté de réunir les fonds nécessaires pour sa réalisation.

45
Advanced wireless workshop.

46
Appui technique pour une formation sur les technologies sans fils,

47
in my opinion this program could give a strong base to install and manage wireless networks by focusing on wireless networking layers, access point configuration and wireless networking management.

48
Sharing of programmes

49
faire des conceptions réseaux réels et réaliser la mise en place pour des zones démunies dans le cadre de la vie associative

50
- I would like to see training in long distance wireless (* 20 Km) with practical examples

51
travailler avec des experts ayant de l'expérience dans le domaine sur un projet en réseaux sans fil (mise en place de réseaux sans fil, formation,...) pour acquérir plus d'expérience.

52
More on engineering, planning, link budget and estimations, rather than practical "see if it works" approach. Also the use of professional software such as RadioMobile or similar.

Appendix 4: Comments and recommendations

In the space below, feel free to add any comments or recommendations that you have regarding the programme:

1. i hope to find other training skills in the future
2. je prépare maintenant un doctorat en réseaux Informatique j'espère participer au programme APC en tant que Formateur bénévole
3. je propose de coordonner un espace commun (portail-forum.....) pour que tous les participants aux différentes formations puissent échanger leurs expériences et discuter des problèmes techniques ou logistiques qui les rencontrent
4. Like for us in Sierra Leone, We do lack the wireless equipment eg N and M connectors, Routers etc are difficult to get. The use wireless in this part is not well know. I am asking If the APC can held a or support a workshop in Freetown to fully introduce the concept in Wireless technology.
5. Support for setting up community based wireless initiatives in Africa. Encourage and train people on content development to make these networks more relevant to the community.
6. As a non technical person it was a real learning experience and exposure. There were aspects of the training that went completely over my head but this did not detract from how much i learnt and how I could apply it to other areas of my life both personal and professional. The trainers were excellent in also not alienating people like me who are not techies. I am really glad that Ann encouraged me to attend.
7. It should focus on the policy issues much more. Africa has heterogeneous policies on use of 2.4 and most regulator work on hear say. For instance in Zimbabwe, one of the reasons given for banning 2.4GHz is that the frequency band interferes with medical equipment like XRays! (Xrays are in a different frequency band!).
8. Réserver plus de temps pour la partie pratique. Présenter les nouveautés dans ce domaine.
9. i wish all the best to continue educating other user wireless knowledge and even to have more training of awareness
- 10 J'ai un aspect qui touché beaucoup ma conception et celà c'est vérifier lors de l'Atelier de Dakare bcp des participants n'avait pas un ordinateur portable et s'avait été un point majeur d'ombre... Vous savez pour nous qui pouvons dans les organisme abut non lucratif c'est pas la joie de s'offre un ordinateur même pas un de seconde main ici chez nous au gabon cette outil demeure in veritable luxe. Je pense que l'APC et sont parténaires Computer peuvent voir ensemble comment ils peuvent régler cette équotion à plusieurs inconnu...
- 11 Faire des programmes spécifiques pour l'éducation pour initialiser les étudiants à ces technologies. Ainsi, vos formations dans le futur seront axées à une mise à niveau et un approfondissement.
- 12 IL Y A BEAUCOUP DE DOCUMENTATION ET DE THEORIE QUI NE SONT PAS FAITS POUR ETRE COMPRIS PAR N'IMPORTE QUI. C'EST A DIRE DES DOCUMENTS QUI REQUIERENT UN MINIMUM DE CONNAISSANCES EN MATH, PHYSIQUE, ETC... SI CETTE THEORIE ETAIT PLUS "PALPABLE", PLUS "CONCRETE", ELLE AIDERAIT, PAR EXEMPLE A LUTTER CONTRE LA FRACTURE NUMERIQUE DANS BEAUCOUP DE REGION. NOUS AVONS DE TRES BONS ELECTRICIENS, DES GENIES EN ELECTRONIQUES QUI N'ONT JAMAIS ETE...A L'ECOLE!
- 13 The program was great. I taught me new skills in Wireless. However,the program could also consider alternatives for selling wireless equipments at a subsidized price.
- 15 I would like to recommend APC for what it did by introducing me into detailed practical wireless knowledge. It is my hope that it is organising such workshops again in future. I am looking forward to be part of team of trainers for APC in future.
- 16 More opportunity for hands-on practice during the workshops would be great!

- 17 Prévoir un AP type linksy par participant de sorte que chacun puisse bien s'exercer dessus et expérimenter plein de choses comme: la configuration, le flashage d'un AP, la sécurité, le QOS...
- 18 -appui financier et technique des projets qui peuvent être soumis par les participants.
- 19 Je pense qu'il serai interessant de séparer La configuration de wifi sous linux et la configuration du wifi sous windows Améliorer le temps imparti à la transformation d'un poste de travail en Point d'Accés.
- 20 This was a very good initiative and similar ones would be very welcome.
- 21 Since a number of systems admin are more comfortable in MS-Windows environment, both Linux and Windows should be used in network configuration. In other words, those competent with Windows should be trained in their cluster during demonstration (sorry if this is already being done, at least in Zanzibar, network configuration was done only on Linux platform).
- 22 Que les prochaines formations se déroulent sur deux semaines au moins. Cela pertmetra plus de maitrise des cours.
- 23 realize more that one network
- 24 I wish to recommend that the program shoulg go as far as assisting trainees materially to achieved the goal of the program. This assistance should not include commercial wireless projects.
- 25 The upload service is not available right now according to some secutrity procedures.but we are trying to overcome that obsticle.
- 26 the programme was a good experience an eye opener to cutting age technologies with direct impact to our work environments and societies. there are always these technologies every now and then. APC may continue the good job by organising workshops on such similar technologies for example: computer security, open source software etc.
- 27 We need to keep on promoting these programmes in our respective regions and as regions have trained personnels its time they give what they got to push on the ladder.
- 28 A l'avenir je pense que le programme devrait recycler les personnes formées afin de booster les connaissances déjà acquises; le programme peut aussi mettre dans chaque pays un micro-programme de formation qui va etre gerer par les peronnes déjà formées: ceci permettra d'elargir le cercle du monde wifi.
- 29 Support us to locate and purchase wireles network hardware cheaply.
- 30 The workshop was very nice. The people was very profesional
- 31 It is was very useful and hope Advanced programmes should be done. Technology changes and people should be kept abreast of new things and have skills sharing sessions
- 32 je suggère que le programme prenne suffisamment en compte les femmes car nous vivons une fracture numérique de Genre en Afrique.
- 33 Having access to proactive, passionate practitioners was fabulous. Whether or not we are able to expedite de-regulation in our country, being kept up-to-date with technology is essential for an IT4D-oriented organisation like ours. Many thanks for including our organisation.
- 34 Mettre en oeuvre des documents en français par exemple
- 35 L'aspect pratique de l'atelier beaucoup manque. Je souhaite par exemple un AP et un PC par

- . etudiant ou part binome lors des prochaines formations eventuelles. Aussi je pense toujours utiliser les ressources en ligne, la liste de diffusion et le wiki pour les propres experiences que je suis en train de faire apres avoir acheter un Linksys WRT54G. Je suis aussi en train de me preparer a jouer le role de formateur lors d'un atelier prevu avant la fin de 2006.
- 36 Je souhaiterai qu'à l'avenir l'APC puisse s'étendre vers la création des centres de formation régional. Vu que le wifi c'est l'avenir des TICs adapte pour le continent.
- 37 - plus de pratique
- 38 c'est un programme qui a été bien géré
- 39 I think that something really needs to be done to finally make sure that we network the rural areas, schools etc. As stated before cost of equipment is too high and there are other problems like electricity etc. Perhaps as the One Laptop Per Child increases the availability of computers to children in future, the need for wireless networks will be very very important.
- 40 Les formations doivent se faire sur un site réel où est installé un réseau fonctionnel pour mieux valoriser les intérêts de ce programme.
- 41 A Dakar, nous étions venus trouver un réseau tout fait que nous avons étudié. J'aurais souhaiter que lors des prochaines formations, le but soit de mettre en place un réseau fonctionnel au sein de l'institution pour tout le monde (Les grands principes, une pratique immédiate, un réseau fonctionnel en fin de journée : HA ça marche et c'est bien...). Ensuite la théorique (comment ça marche en fait) Je crois que cela pourrait être plus intéressant.
- 42 so i think that a program was some helpful for me , but as i said above i think that we should focuses on a practicing training more than theoretical without ignoring this last.
- 43 To help us to get the Wireless equipment
- 44 je propose que les programmes se realisent sur des sites réels et eviter les aspects trop academiques
- 45 I think two things could be made better: - Selection of more skilled participants in Telecommunications who lack only wireless practice - More time for field projects (Last Workshop only one day and half) I think two to three days field project will be interesting.
- 46 -je trouve que le programme est très intéressant et que c'est une bonne initiative. L'atelier auquel j'ai assisté était bien organisé et je l'ai beaucoup apprécié. Il m'a été de grande utilité. j'ai aimé la façon de présenter les cours, les eyes and ears pour reporter les commentaires des participants, l'utilisation de différents tableaux invitant le groupe à s'exprimer, le travail en équipe, les petites activités qu'on a faites (des petits jeux) pour que tout le monde se connaisse et apprécie le contenu des cours (une récompense symbolique pour chaque personne qui répond correctement aux questions posés), les sorties faites. ça a créé de l'ambiance et a aidé à rendre le groupe plus homogène (organisateur et participants). je suggère pour améliorer le programme: -plus d'exercices d'application (qcm par exemple) (+ corrections) pour que les cours soient plus maîtrisés. je pense qu'un qcm résume le contenu du cours et permet au participant de retenir une grande partie de ce qui été présenté. -de l'animation dans les transparents du cours. -d'alléger un peu le contenu des journées de formation pour que les participants aient le temps de réviser ce qu'il a été fait pendant les sessions de chaque jour. -de préparer les participants sélectionnés avant que la formation ne commence en leur donnant par exemple des documents à lire, un qcm résumant les choses à réviser et des notions générales pour qu'ils aient une idée plus précise sur ce qu'il va être abordé pendant l'atelier, ça facilitera la tâche des facilitateurs et le cours sera plus orienté pratique. Les questions des participants seront plus constructives. (je suggère d'améliorer le qcm de l'atelier de l'Afrique du Nord) -faire en sorte que les projets soient plus équitables. -s'il y a une possibilité que la salle de formation soient équipées de pcs pour certains travaux pratiques. - donner aux participants sélectionnés plus de détails sur l'atelier (procédure à suivre, procédure de remboursement,.....) et des recommandations utiles (exemple apport d'une casquette, nécessité



de faire l'échange d'argent, nécessité de venir un jour à l'avant pour pouvoir se reposer du voyage,.....) en tenant compte des ateliers précédents. Grâce à la liste de diffusion, tous les participants ont pu communiquer ensemble ,poser leurs questions et avoir la réponse à celles-ci. -des suggestions pour le futur: améliorer les cours de la formation : contenu et forme. je suggère que les cours soient faits avec flash avec des animations,avec plus de schémas explicatifs et des qcms pour chaque partie. sorte de cours interactifs. comme par exemple les cours cisco. -faire des vidéos (commentés) résumant les différentes étapes à suivre pour construire des réseaux sans fil (différents scénarii).

Appendix 5: Usage of acquired skills - Gender differences

Which of the following have you done to apply/disseminate the skills and knowledge from the workshop?					
Female participants	Response %	Response Total	Male participants	Response %	Response Total
Installed one or more wireless networks	36%			59.4%	38
Maintained, administrated one or more wireless networks	12%	3		40.6%	26
Managed a project making use of wireless technologies	12%	3		21.9%	14
Trained others on the subject of wireless networks	44%	11		62.5%	40
Advised others on wireless networks	44%	11		50%	32
Given the workshop training materials to others	56%	14		54.7%	35
Other	36%	9		17.2%	11
Total Respondents		25	Total Respondents		64

Appendix 6: Additional results

1. Questions about participants

Sex (male/female)		
	Response Percent	Response Total
Male 	71.9%	69
Female 	28.1%	27
Total Respondents		96
(skipped this question)		0

Sector		
	Response Percent	Response Total
NGO/ONG	39.6%	38
Private Enterprise	8.3%	8
Government	18.8%	18
Education	25%	24
Other	8.3%	8
Total Respondents		96
(skipped this question)		0

What is your role in your organization?		
	Response Percent	Response Total
Director,President	10.8%	10
Manager	1.1%	1
Project Manager	7.5%	7
Project Coordinator	10.8%	10
Contractor	0%	0
Employee (administrative)	1.1%	1
Technical specialist	33.3%	31
Accountant or Book-keeper	0%	0
Other	35.5%	33
Total Respondents		93
(skipped this question)		3




2. Questions about the workshop

Which workshop did you attend?		
	Response Percent	Response Total
North Africa (Morocco)	39.1%	36
West Africa (Senegal)	26.1%	24
East Africa (Zanzibar)	16.3%	15
South Africa	23.9%	22
None of the above	1.1%	1
Total Respondents		92
(skipped this question)		4




Over-all, you have found the contacts that you made at these meetings to be how useful?		
	Response Percent	Response Total
0 - not useful at all (hasn't helped me at all)	0%	0
1 - somewhat useful (has been helpful a few times)	6.5%	6
2 - useful (has been useful occassionally)	32.6%	30
3 - very useful (has been a great advantage to my vocation)	60.9%	56
Total Respondents		92
(skipped this question)		4

Compared to other trainings that you have had, how does the APC wireless training compare?		
	Response Percent	Response Total
0 - below average	0%	0
1 - average	12.2%	11
2 - above average	52.2%	47
3 - superior	35.6%	32
Total Respondents		90
(skipped this question)		6

Trainers for this program were...




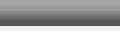


	Response Percent	Response Total
0 - below average	0%	0
1 - average 	11.4%	10
2 - above average 	48.9%	43
3 - superior 	39.8%	35
Total Respondents		88
(skipped this question)		8

The materials available and produced for this programme were ...



	Response Percent	Response Total
0 - below average	0%	0
1 - average 	15.7%	14
2 - above average 	51.7%	46
3 - superior 	32.6%	29
Total Respondents		89
(skipped this question)		7

3. Questions about participant's networks






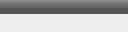

How many networks have you maintained, installed, or administered since the workshop?

	Response Percent	Response Total
0 	26.4%	19
1 	22.2%	16
2 	26.4%	19
3 	15.3%	11
4 	2.8%	2
5 or more 	6.9%	5
Total Respondents		72
(skipped this question)		24











For the principle or primary network that you installed, maintained or administered, is it a commercial or non-commercial venture?

	Response Percent	Response Total
Commercial 	16.7%	10
Non-Commercial 	83.3%	50
Total Respondents		60
(skipped this question)		36

What is the sharing ratio, i.e. how many other subscribers share this bandwidth with you?

	Response Percent	Response Total
1:1 	15%	12
1:2 	6.2%	5
1:3 	6.2%	5
1:4 	2.5%	2
1:5-1:7 	6.2%	5
1:8 	16.2%	13
Unknown 	47.5%	38
Total Respondents		80
(skipped this question)		16

How is your network connected to the internet?

	Response Percent	Response Total
dial-up 	7.1%	5
DSL 	27.1%	19
Wireless (802.11) 	11.4%	8
WiMAX 	1.4%	1
Wireless proprietary, incl. Alviron, Breeze etc. 	4.3%	3
VSAT 	17.1%	12
Ethernet 	5.7%	4
Fibre Optic 	7.1%	5
ATM	0%	0
Frame Relay 	2.9%	2
X.25	0%	0
Other 	15.7%	11
Total Respondents		70
(skipped this question)		25