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CBICT - Capacity building through ICT: The Satcom element

CIRCUM

Communication Informatique pour la Réconciliation et la Culture a Man

Man (Côte d'Ivoire)


Installation Report

Document History

<i>version</i>	<i>date</i>	<i>note</i>
1.0	7 May 2009	Preliminary version
1.1	11 May 2009	review

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1. Introduction

The ActNow Alliance CIRCUM project is part of the CBICT project (task 4).

The project is in partnership with CBICT consortium and a group of NGOs that operate in the field (all members of ActNow Alliance). The intervention area is located in the West of Côte d'Ivoire.

This report describes the results of the installation mission in Man (Côte d'Ivoire), from April 14th to 26th.

The team was composed by: Nicola Di Tella and Simone Di Tella (satellite antenna deployment and network installation), Lorenzo Troiano (WiFi deployment), Cesare Borin (coordination and training). The local team was composed by the Victoria Centre and CHR Library technical staff lead by Dominique Djiré.

The objectives of the mission was:

- a) the installation and setup the DVB-RCS station in Victoria Centre,
- b) the wireless connection between the Victoria Centre and the Man Regional Hospital (CHR)
- c) the installation of the 14 wifi points (both access points and clients) to connect the different buildings in the 2 sites
- d) the training of the local technical staff in the usage of the technical infrastructure
- e) the explanation of the CBICT Reference Model to the local team and the gathering of their comment and suggestions, mainly from the local Project Manager (dr. Carlo Montaguti) and the project staff (ACIM and Victoria Centre CIF representatives).

2. Preparations steps

2.1 Configuration and test

As reported in the Technical Plan document, the technical solutions were designed on the basis of a similar experience in the AERC project in the Cameroon conducted in the last months of 2008.

On March 25th the DVB-RCS station components have been tested at the ESA Hub of Frascati (Rome): the tests were successfully executed with the IDU connected to the BUC and the LNB installed to an antenna of the same characteristics of those acquired for Man. The IDU was registered in the Hub and the IDU software was upgraded.

2.2 VSAT Licence

The obtaining of the VSAT Licence from the local authority required a very complex and long activity. Under the normal conditions, this licence is not granted to providers located out of the Côte d'Ivoire. The project obtained the licence under the personal support of the Educational Minister.

3. Installation details

3.1 Site ¹



Fig. 1 – Côte d'Ivoire

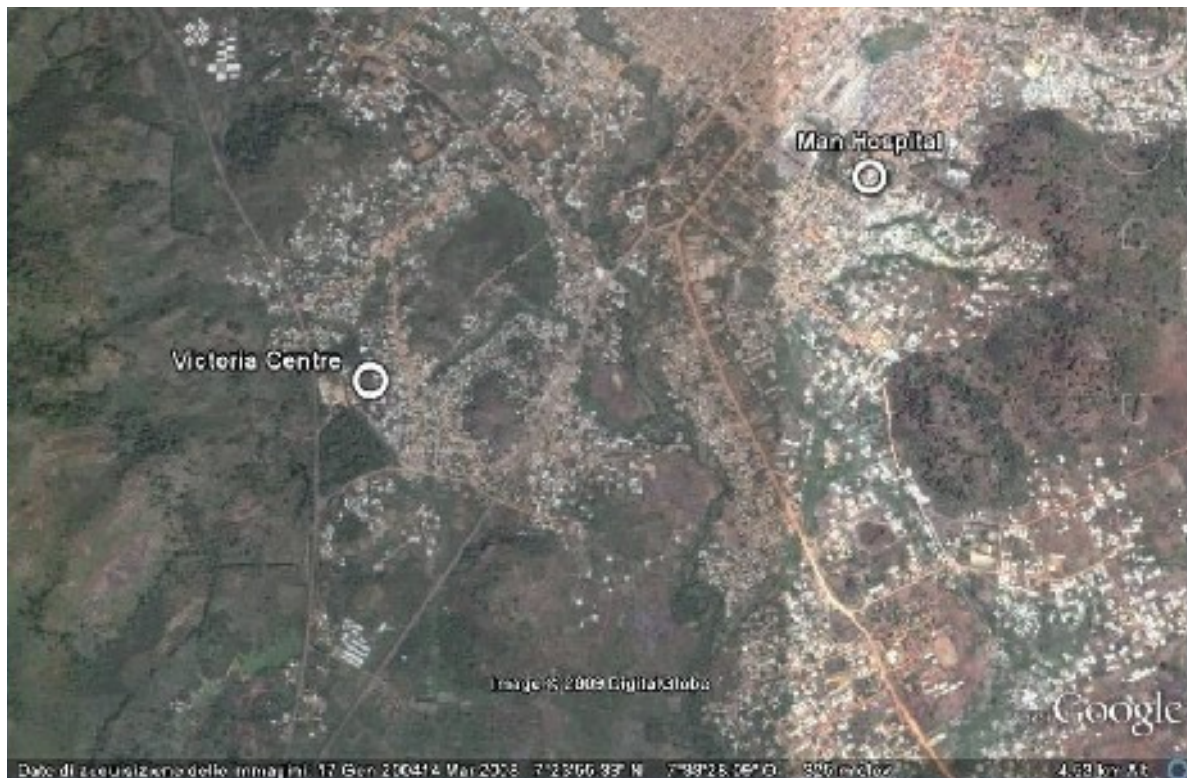


Fig. 2 – City of Man with the Victoria Centre and the Regional Hospital

¹ In September 2002 a troop mutiny escalated into a full-scale rebellion. Although the fighting has stopped, Ivory Coast is tense and divided. French and UN peacekeepers patrol the buffer zone which separates the north, held by rebels known as the New Forces, and the government-controlled south. Under a 2003 peace deal the government is to disband loyalist militias and pass political reforms. In return, the New Forces are to lay down their weapons. (BBC News) Man is the main New Forces-controlled town in the West.

The trip from Abidjan to Man requires about 6 hours by car.

3.2 Activities report

<i>Wk</i>	<i>Day</i>	<i>Planned</i>	<i>Effective</i>
16	Apr 14	Arrival to Abidjan	Arrival to Abidjan with the loss of a case
	Apr 15	Abidjan to Man transfer	Awaiting for the completion of custom operations (started 15 days before) Acquiring of technical materials in Abidjan Arrival of the lost case
	Apr 16	Site inspection and plan update	Abidjan to Man transfer
	Apr 17	Installation Antenna DVB-RCS	Victoria inspection Bridge CHR-Victoria inspection
	Apr 18	Installation Victoria-CHR bridge	Radio Wifi preparation CHR inspection Satellite antenna preparation 1st workshop for the revision of Ref. Model
17	Apr 19	Revision of Reference Model	Arrival of antenna from harbor Installation Antenna DVB-RCS
	Apr 20	Test antenna DVB-RCS Local technician training	Setup Victoria - CHR bridge Victoria LAN deployment Local technician training
	Apr 21	Setup Victoria-CHR bridge Local technician training	Installation CHR bridge Test Victoria-CHR bridge (without power supply)
	Apr 22	Installation WiFi CHR Revision of Reference Model	Installation WiFi Victoria Revision of Reference Model (separately with CIF and library committee) Marratech test
	Apr 23	Installation and test WiFi CHR. Local technician training	Installation WiFi in the CHR site Local technician training
	Apr 24	Installation WiFi Victoria Local technician training	Installation WiFi in the Victoria site Marratech tool test with pharmacological "Istituto Mario Negri" in Milan
	Apr 25	Installation WiFi Victoria Revision of Reference Model	Installation WiFi in the Victoria site Remote assistance tools installation
18	Apr 26	Man - Abidjan transfer	Man - Abidjan transfer
	Apr 27	Arrive to Rome	Arrive to Rome

We had to change our program dramatically because of three day delay due to custom import operations in Abidjan and the following transportation of the imported material from Abidjan to Man² (Satellite Dish, cables, wireless radio etc.). Furthermore we had to delay one day our trip from Abidjan to Man because an installer's suitcase had been missing at the time of our arrival.

It was therefore necessary to shorten some planned activities (additional Reference Model verification) and remote assistance procedure test) in order to be able to complete all the installations.

² Due to politic situation, the transports from Abidjan to Man are slow: during the night the road for the North region is closed.

3.3 DVB-RCS Station

The choice to install the DVB-RCS antenna in the Victoria Centre was determinate mainly for security reason, for the presence of an autonomous emergency power generator and for easy maintenance.

Antenna support has been locally constructed: the reseller of ASC antenna did not include the supports in the furniture, in order to reduce transportation costs. The antenna location was appropriately chosen with the support of the technical team during the preparation phase; the cement base has been built by local personnel before the arrival of the technical team and resulted appropriate.



Fig. 3 - DVB-RCS Station installed in Victoria Centre

The antenna positioning and the pointing was successfully executed in less then 4 hours.

Moreover, when connected, the IDU immediatly acquired the satellite forward channel and starts transmitting.

Only some small nuisances occurred during the installation:

- the OMT polarization change of 90 degrees respect to the configuration sent by ASC;
- some problems with the working tools (drill and concrete drill bits).

In Fig 4, it is possible to see the values reported by IDU at the installation time: you can see the very goods values of Es/No obtained on the Forward Link carrier (14,5 dB) and of the Es/No reported by ESRIN Hub in the Return Link (8 dB) with the ODU power level attenuated of – 20 dB.

These very good values are the result of the extremely favourable position of installation site in respect to the Eutelsat AB3 satellite emission profile.



Fig. 4 – IDU monitoring panel

The two changes made after the IDU preparation in ESRIN are:

- a) change of the geographical coordinates
- b) attenuation of the ODU power at -15 dB.

Due to the time limits, it was not possible to make additional tests on the ODU power margins.

In the proximity of the basement it has been placed a reserved earthing system, to which it has been connected the metal structure of the antenna.

In a building close to the antenna, it has been installed the electrical panel with:

- the power supply (220V) with a circuit breaker with a differential protection and a socket;
- the RF cable coming from the IDU
- the 24V power supply and the BiasT, connected with a cable to the antenna, in order to feed the BUC.

The RF cable coming from the LNB is directly connected to the IDU (40 mt length).

In the same site it has been placed the *rMain* router and the power stabilizer and a little UPS (the Victoria Centre have an emergency autonomous power generator).



Fig. 5 – The IDU, Bias Tee, Power Supply and the rMain router

3.3 Victoria Centre – CHR radio bridge

In Man Hospital and in Victoria centre there are two “Chateau d’Eaux” (the water deposit) in an elevated position that are in line of sight for the wifi bridge.

During the first day in Man (waiting for the antenna arrival), the team conducted the final visual inspection of the Victoria Centre and CHR radio path with some simple tools (for security reason the CHR premises are not usable during the night).

The on site check confirmed the good visual connectivity of the path. There are a couple of trees to be kept on check to avoid signal attenuation in the future.



Fig. 6 – The “tools” for visual path checking (500W lamp)



Fig. 7 – The light of lamp of Victoria Centre seen from the CHR chateau d’Eaux

Fig. 7 is a useful reference in order to control the future height of the two highlight trees.

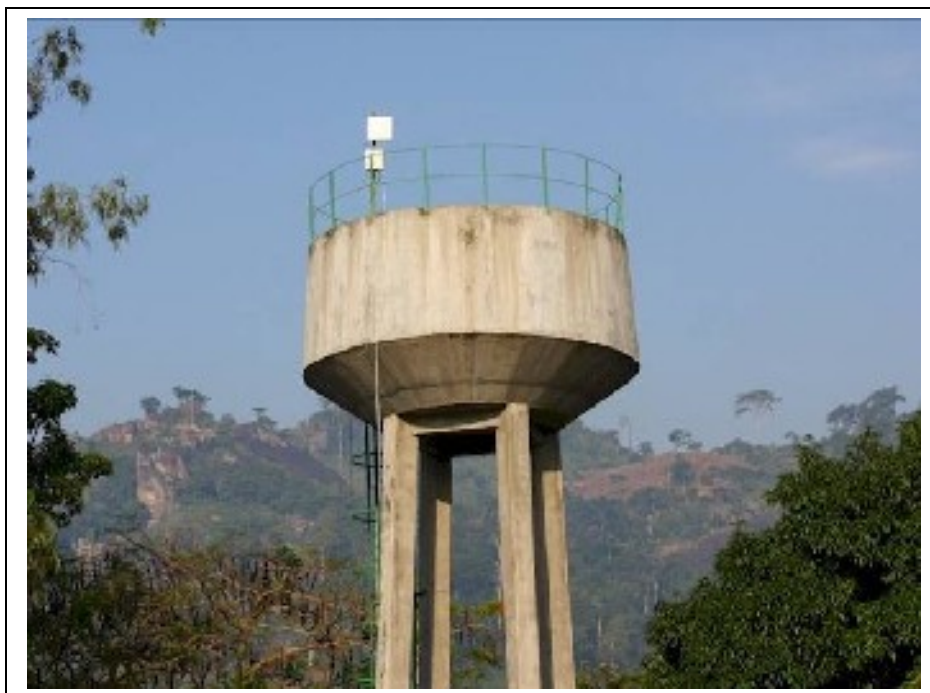


Fig. 8 – The Wifi antenna in Victora Center *Chateau d'Eaux*



Fig. 9 – The Wifi antenna in the CHR *Chateau d'Eaux*

3.4 CHR Man Regional Hospital

In the Hospital inside the main building a room has been set up with the signal coming from the Chateau d'Eaux. This room will be used for consultation and the session of telemedicine.

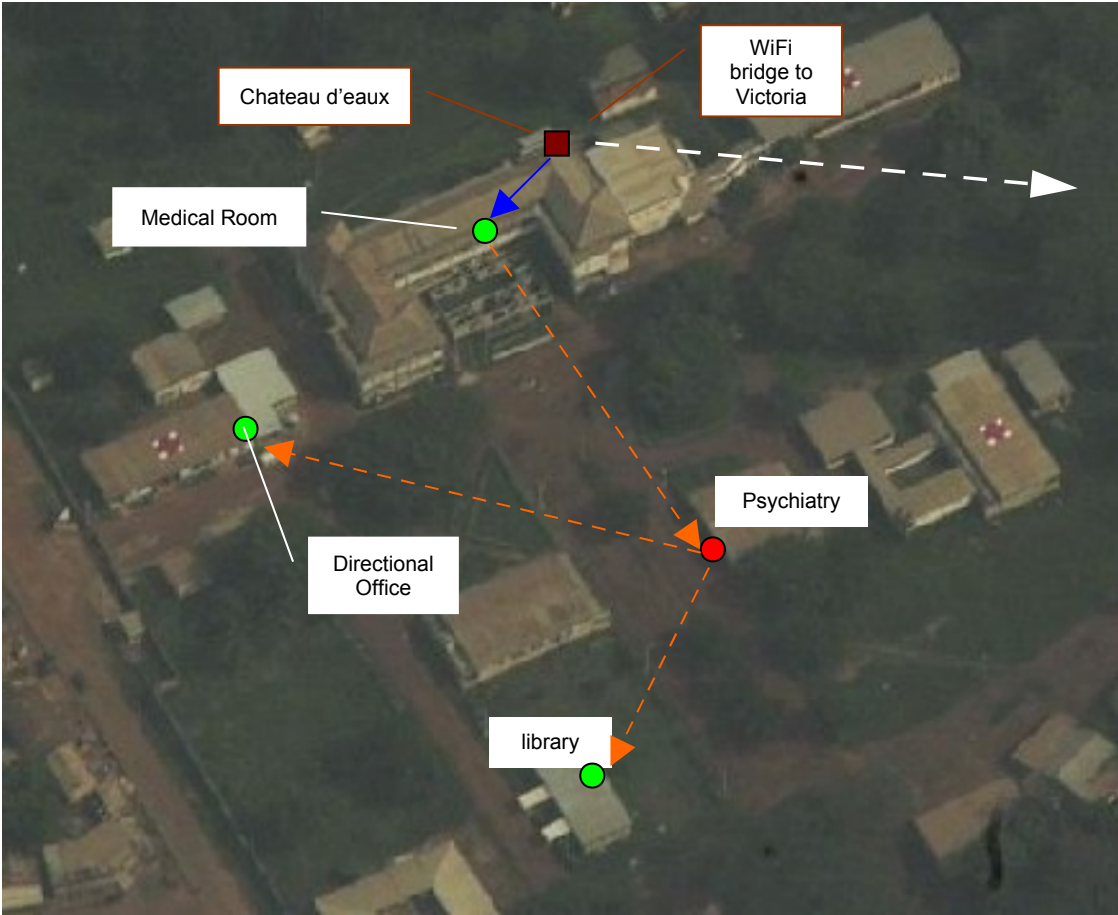


Fig. 10: CHR LAN distribution

- WiFi omnidirectional Access Point
- WiFi clients
- WiFi bridge connection with Victoria Centre



Fig. 11: From *Chateau d'Eaux* to medical room

The network distribution to the Library and the Hospital Management offices has been done through an omnidirectional Access Point installed outside the Psychiatric section. From here it will be easy to extent the connectivity to other sections if needed.



Fig. 12 – The Man Regional Hospital main building



Fig. 13 – The omni directional Access Point in the Psychiatry building



Fig. 14 – The CHR Library

3.4 Victoria Centre deployment

In the Victoria Centre the connection from DVB-RCS station is distributed by a omnidirectional access point to these different buildings:

- CIF (*Centre Informatique Focolari*), providing IT courses of 3 levels in the morning and an internet café during the afternoon.
- Medical center (60-80 people/day) with a first aid and diagnostic facilities
- *Camp Gaulois*: a permanent observer group of French Army
- The Focolari staff premises
- The typography laboratory
- The *atelier informatique*

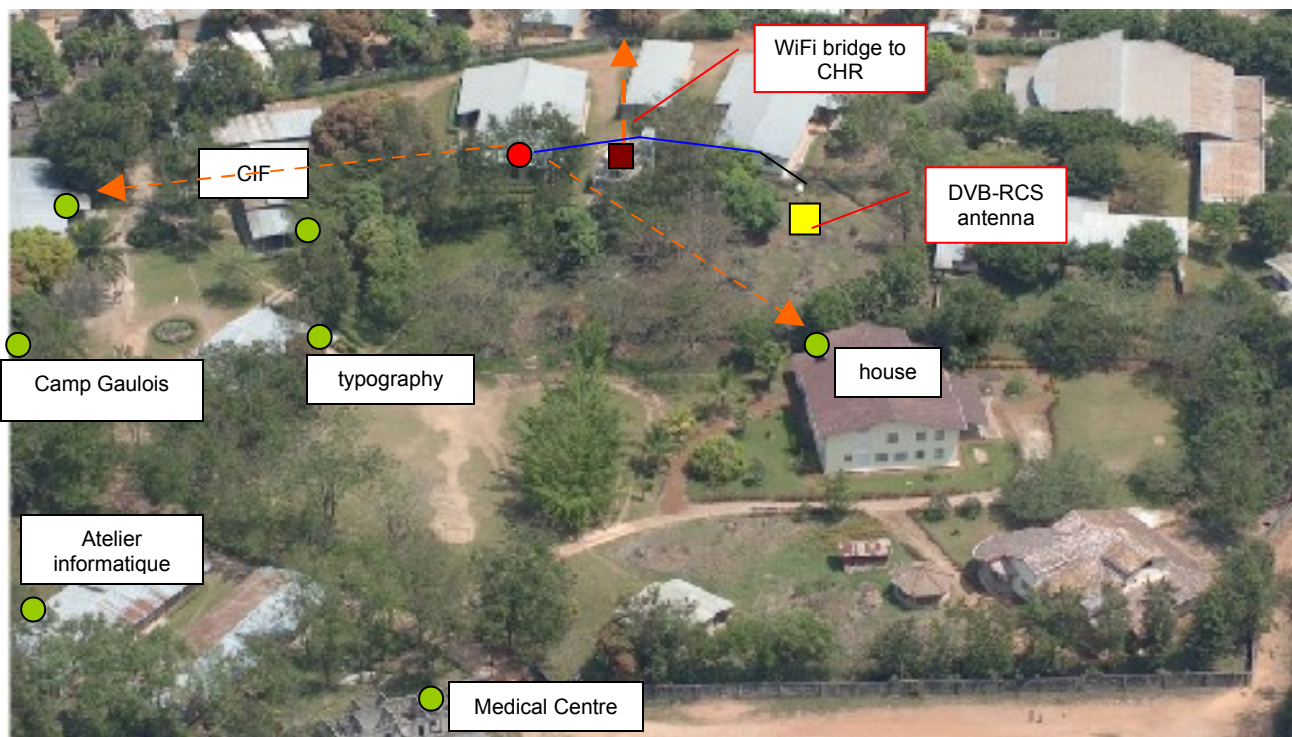


Fig. 15: Victoria Centre aerial photo

- WiFi omnidirectional access point
- WiFi clients
- WiFi connection with Hospital
- Cable connection



Fig. 16: Victoria Center Omnidirectional Access Point



Fig. 17: Centre Informatique Focolari



Fig. 18: French Army building

4. Training and Reference Model assessment

4.1 Technical training

A substantial part of our time have been dedicated to training, either step by step during installation activities than in more formal moments. During 4 technical sessions we presented: the whole system, the architectural design of the infrastructure and the administration manual.



Fig. 19: training session



Fig. 20: training session

We revised also some useful concepts on the TCP/IP protocol (private/public address space, settings of the Lan properties in the Windows environment, routing) and some tools for LAN diagnostics.

From these sessions it came out the need to have some administrative tools and also specific tools needed to set-up and safely run an internet café.

4.2 Reference Model training and assessment

Another important part of the local training have been the presentation of the CBICT Reference Model, its verification and the gathering of the first feedbacks.

We run three separate roundtable meetings: the first one in plenary with the project manager and the ACIM and CIF representatives, the other two separately with the Library Committee and the CIF each one in their own sites (the project manager was present in both).

All details concerning Reference Model assessment will be provided in proper documentation.



Fig. 21: RM feedback with ACIM team



Fig. 22: RM feedback with CIF team

5. Remote support and maintenance

The remote support is realized by Teamviewer software installed in one of the PC near to the DVB-RCS satellite station.

This software allows the remote desktop sharing passing through the NAT firewalls.

Together with chat tools like Skype, this software is very useful in order to support local technicians during the start-up phase and in case of failure. In this way it will be possible to effectively guide the local technicians on the use of the network administration.

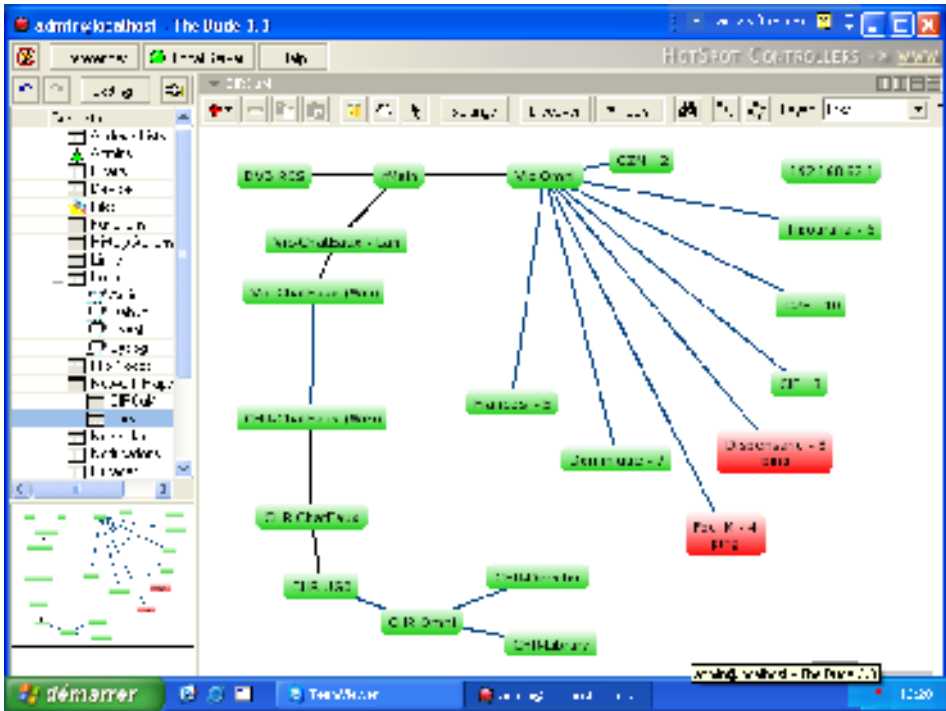


Fig. 23: The software for the Wifi radio control

In the *Victoria Atelier Informatique* the team lefts some spare parts (one LNB and one power supply for the DVB-RCS antenna, four client radios, one Access Point radio, two 23 dBi antennas, some power supply and switches, lightning protections) in order to be prepared to face future devices breakages.

6. Lessons learned

1. Flexibility in the Installation Plan: rescheduling capabilities

The available installation time has been reduced due to the three days delay for Custom Operations in Abidjan harbour, transport of material from Abidjan to Man, and the missing suitcase with technical material at the time of our arrival.

Additional reasons that delayed installation team work - compared to what was initially planned - have been: hot and humid climate (the hottest period of the year) and the poor quality of some tools and material available on the installation site (drill, UTP cable purchased in Abidjan, etc).

7. Thanks



Fig. 24 – The CHR Library committee and Victoria CIF committee: thanks to ESA