



# WebForce International Federation Global Project Technical applications

Presented by Prof. R. Mellet-Brossard  
President CEO WebForce International

sommet mondial sur  
la société de l'information

信息社会世界高峰会议

القمة العالمية  
لمجتمع المعلومات



world summit  
on the information society

cumbre mundial sobre  
la sociedad de la información

всемирная встреча на  
высшем уровне по вопросам  
информационного общества





# Preamble

## Connecting the unconnected by 2015

***Connect the World*** is a multi-stakeholder platform designed to encourage collaboration and coordination as well as showcase ICT development efforts to achieve the connectivity goals of the [World Summit on the Information Society \(WSIS\)](#), namely to "**connect the unconnected by 2015**".

Through ***Connect the World***, ITU is working with partners to mobilize the human, the financial and the technical resources required to expand the development of ICT infrastructure, connectivity and access.

(source: ITU, full text: <http://www.itu.int/partners/index-fr.html>)



***The following represents WebForce International Federation's participation to International Telecommunications Union's « Connect the World » program.***



# Table of contents

- **Global Project** May 2008 update
- **The Key2Access network**
- **Thin clients**
- **VoIP**
- **Box2Access**
- **World partnership**



# The Global Project

## Research and & Development

- Set of complementary proposals
- Our virtual research center has worked on the compability of various technologies:
  - **Hardware:** network equipments, telephony, computing terminals...
  - **Software:** VoIP servers, softphones, application servers... all based on Opensource licenses.



# The **Key2Access** network

## The ICT access network

- **Bring the connectivity:**
  - When it does not exist
  - When existing means are too expensive
  - Up to **20 Gbits/s capacity**
- **Restore the communications on emergency cases**
- **Implementation of « WebForce Points »**



# The **Key2Access** network

## General principle of a "WebForce Point"

- **Base station: BTS**

- **Connected to the Internet backbone**
- **Backhaul Wi-Fi / Wimax structure**
- **Can manage up to 40 000 users**
- **A BTS covers 360° (low density) or 90° (high density)**
- **Manages the link to the CPEs but also with other BTS**



# The **Key2Access** network

## General principle of a "WebForce Point"

- **Client access point: CPE**
  - **Connection point to the network**
  - **Demarcates the coverage**
  - **Constituted of:**
    - A full duplex Wi-Fi or WiMax antenna for the connection with the BTS, with a preference for the use of ISM frequencies.
    - A router using 2 different realms, channels and ESSID.
    - A UPS case to insure the power supply of the CPE in case of power failure.

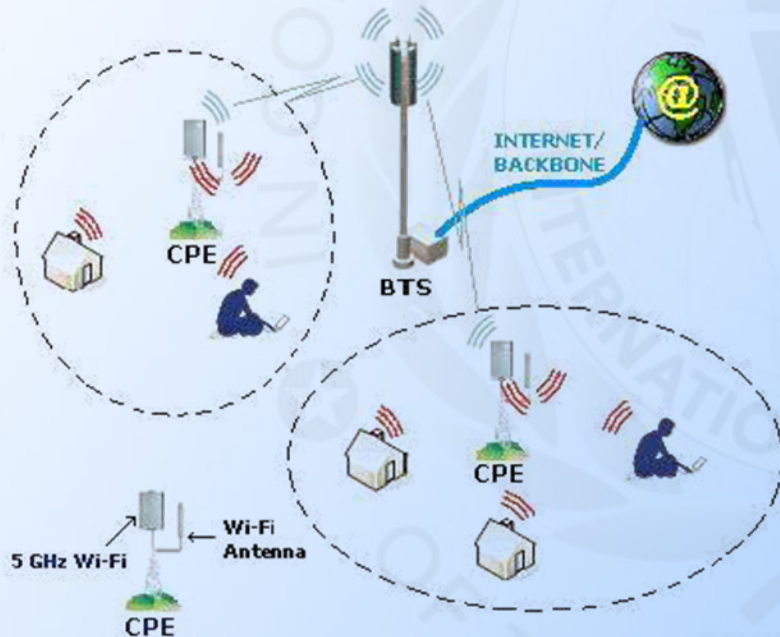


# The Key2Access network

## Connectivity: simple infrastructure

### One BTS

Point to Multipoint network



The Public WebForce Point is limited to an area to cover.

This area will be under a sole BTS control that will be in charge of a series of cells that contain their own CPE.

Each user can then connect in each cell thanks to his/her Wi-Fi equipment.



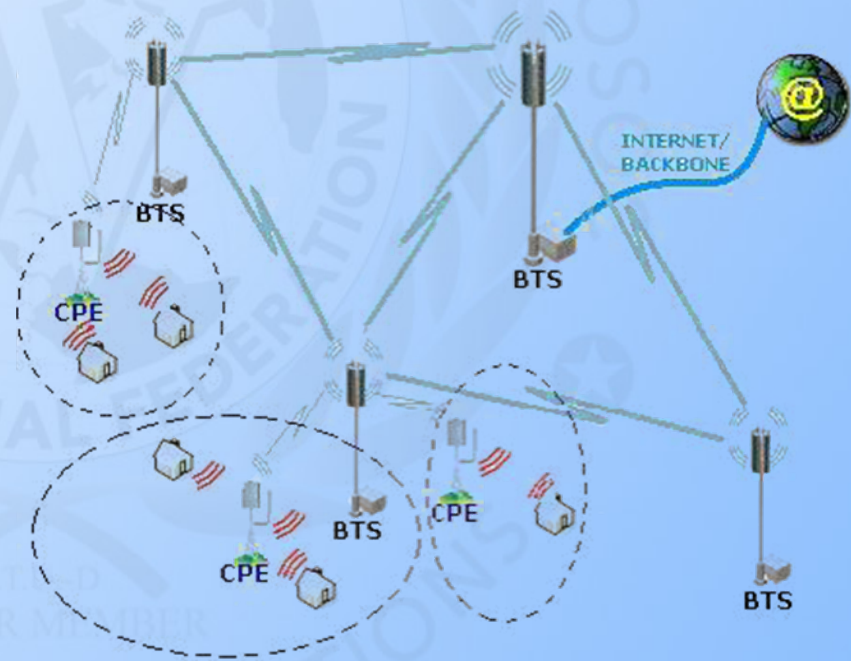


# The Key2Access network

## Connectivity: Extended infrastructure

**High density zone and coverage extension**  
Mesh network with several BTS

A set of BTS forms a mesh network that enables to extend the coverage area over several hundreds of km.





# The Key2Access network

## Attributes

- **For a BTS:**

- Up to 1000 VoIP connections
- Possibility to connect several BTS to the backbone to insure fail safe

- **For a CPE:**

- 20 VoIP user + 20 Internet users
- 30kbps for one VoIP connection, thus 600 kbps per CPE to insure a good quality of service.

- **A BTS can support up to 50 CPE, and thus must have a 30 Mbits/s minimal bandwidth for 1000 simultaneous VoIP connections.**



# The **Key2Access** network

## Assets:

- Fast deployment with low costs
- Large capacity

## Practical applications:

- Internet access
- VoIP
- E-Learning
- Telecommuting...



# The thin clients

## Definition

- **Computing terminal integrating the necessary for a client-server connection:**

- Motherboard
- RAM memory
- Microprocessor
- Flash memory for the storage
- Network interface
- Connectors for the peripherals



- **The applications are hosted on a dedicated server**



# The thin clients

## Assets

- **Low cost due to its conception**
- **Safer:** The applications being executed on the server, **the client does not need any antivirus or firewall.**
- **Data integrity:** These are stored on the server and benefit of regular backups as well as fail safe systems.
- **The clients always have up-to-date software,** these being managed server-side.
  - Thin clients represent **14,5% of the enterprises computers pool** in 2007 (12,1% in 2006), and **the volume of this market should double by 2010** (source: IDC).





# The thin clients

## An alternative for refurbishing

- **Obsolete machines** allowing only low evolutivity
- **Pollution:** Cathodic screen, notably, can be considered as **polluting bombs** worldwide, and especially in countries that are already used as **computing garbages by developed countries.**
- **Power consumption:** A classic computer consumes more than 200W, against a 5 to 20W consumption for a thin client. This fact is even more real as the computers are old.



*And so WebForce and his partners within the framework of the WebForce network, of the NGO Alliance and of the CODETIC proposes the objective:*

***resolution of the digital divide by 2012.***

*WebForce International Federation dedicates himself to **the use of thin clients as terminals for the users as a big part of the solution.***



# The thin clients

## Comparison: the costs

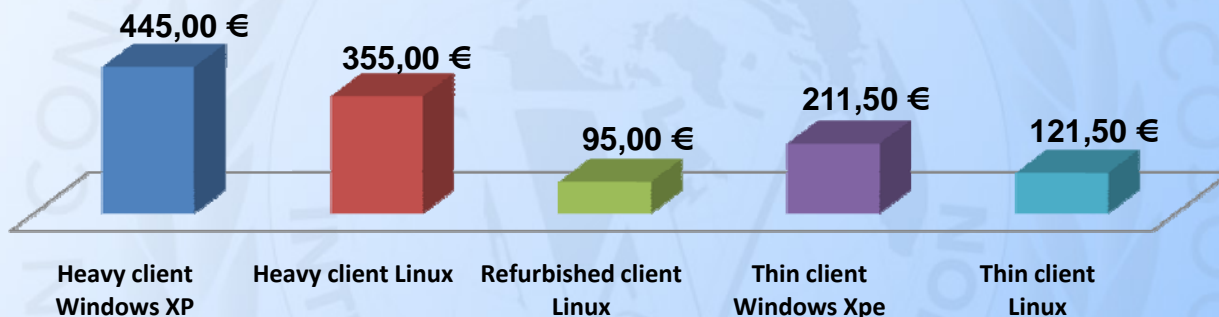
	Heavy client Windows XP	Heavy client Linux	Refurbished client Linux	Thin client Windows XP	Thin client Linux
<b>Costs of acquisition and shipping</b>					
OS Licenses	90,00 €	0,00 €	0,00 €	90,00 €	0,00 €
PC/Thin client cost (screen included)	350,00 €	350,00 €	80,00 €	120,00 €	120,00 €
Shipping	5,00 €	5,00 €	15,00 €	1,50 €	1,50 €
<b>Buying + shipping total</b>	<b>445,00 €</b>	<b>355,00 €</b>	<b>95,00 €</b>	<b>211,50 €</b>	<b>121,50 €</b>
<b>Cost of electric consumption for one year</b>					
Electric power (Watts, screen included)	300	300	400	55	55
Annual consumption (8h / day, 365 days / year)	876 kWh	876 kWh	1168 kWh	160,6 kWh	160,6 kWh
Total electric cost (based on an average kWh cost of 0.09€)	78,84 €	78,84 €	105,12 €	14,45 €	14,45 €
<b>Annual total per client</b>	<b>523,84 €</b>	<b>433,84 €</b>	<b>200,12 €</b>	<b>225,95 €</b>	<b>135,95 €</b>



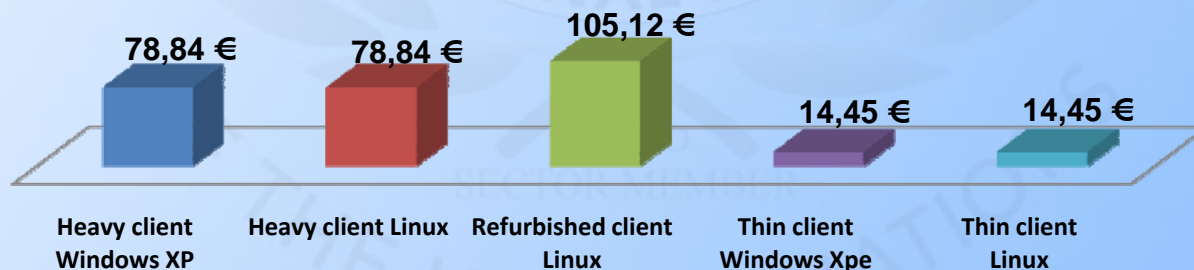
# The thin clients

## Comparison: the costs

Accumulated cost: equipment buying + license + shipping (€)



Annual electric cost (€)

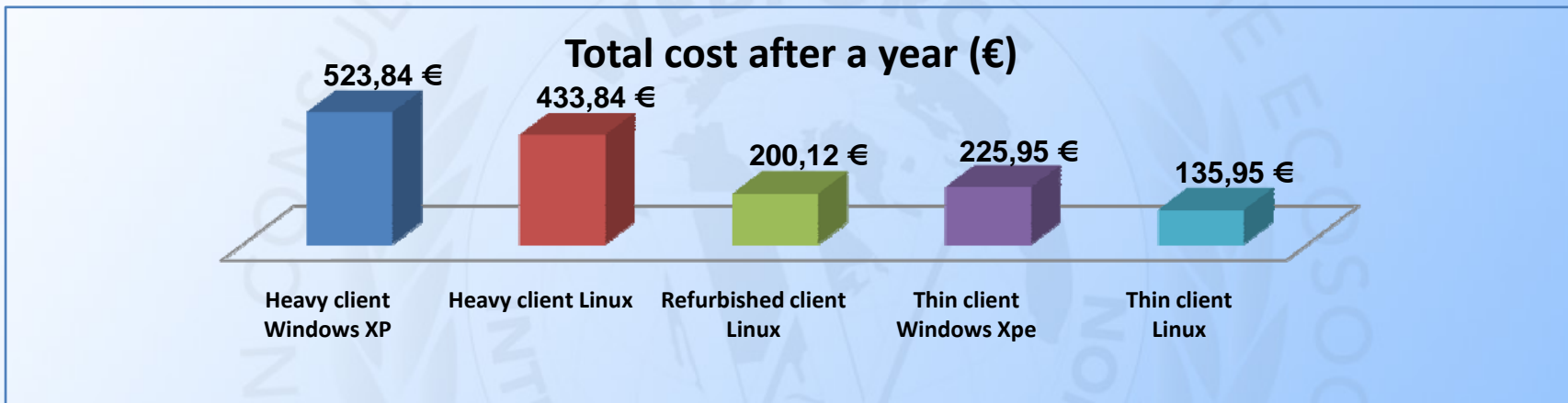






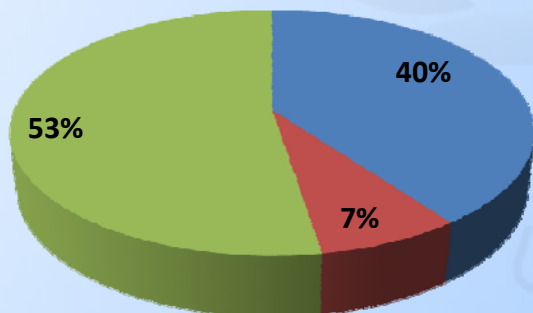
# The thin clients

## Comparison: the costs



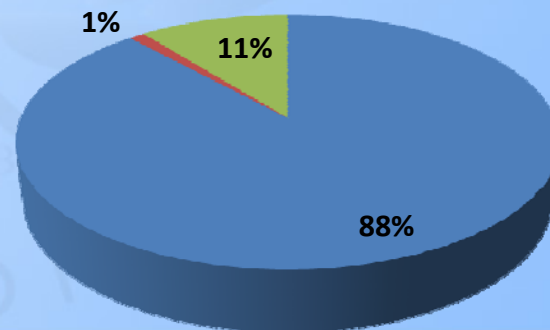
### Cost distribution for a refurbished client

- PC/Thin client cost (screen included)
- Shipping
- Total electric cost (based on an average kWh cost of 0.09€)



### Cost distribution for a thin client

- PC/Thin client cost (screen included)
- Shipping
- Total electric cost (based on an average kWh cost of 0.09€)





# The thin clients

## Comparison: Assets/inconveniences

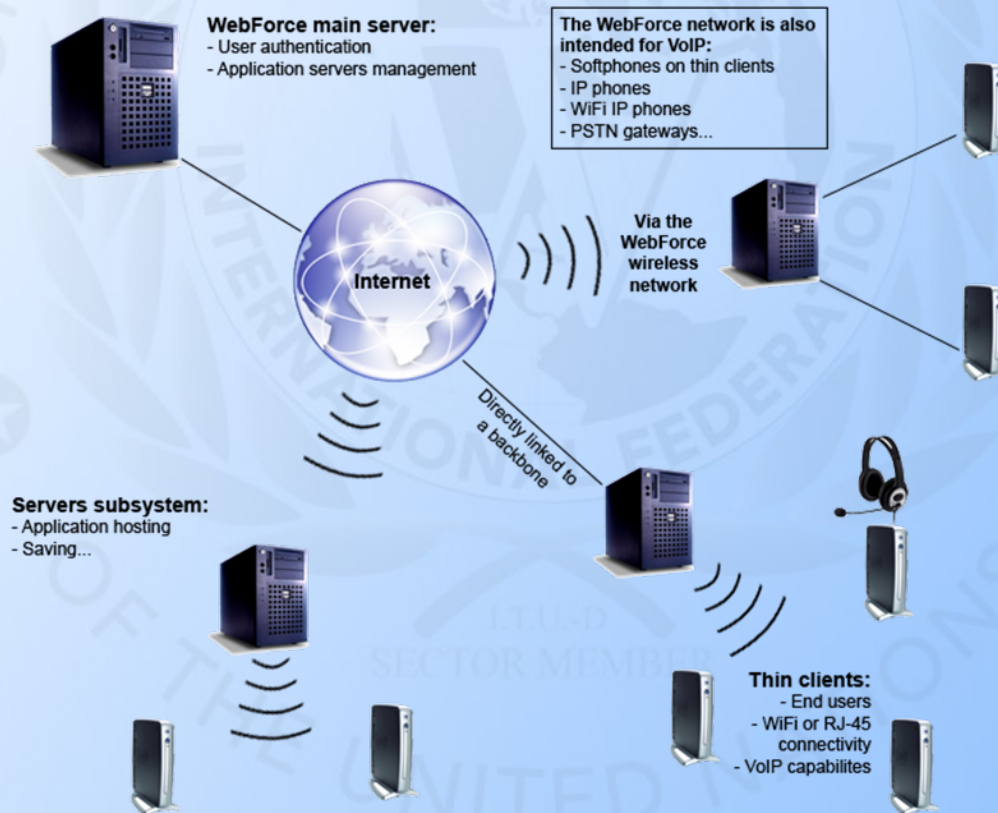
	New computer	Mark / 10	Refurbished computer	Mark / 10	Thin client	Mark / 10
Unitary cost	≥300€	3	Between 50 and 250€	9	Between 100 and 200€	7
Size	Medium	5	Big	2	Very little	9
Licenses cost	<ul style="list-style-type: none"> <li>• Depends on the OS.</li> <li>• Softwares cost.</li> </ul>	5	<ul style="list-style-type: none"> <li>• Quid of the licences transfer ?</li> <li>• Softwares cost.</li> </ul>	5	<ul style="list-style-type: none"> <li>• Linux</li> <li>• Lower cost for the softwares</li> </ul>	8
Consumption	The current processors are less greedy but the consumption remains high.	4	Ancient equipment is often more energy-intensive,	2	Very low consumption processors. Low energy-intensive TFT screens.	9
Sécurité	Local OS : The security depends on the established rules, on the installed security softwares and their updating, as well as on the users	4	Local OS : The security depends on the established rules, on the installed security softwares and their updating, as well as on the users	4	Centralized security: the risks are small.	9
Evolution capacities	Middle term evolutivity, depending on the hardware configuration.	6	Low evolution possibilites for low costs machines.	2	Nearly unlimited : only the heavy applications are to exclude.	8
Reliability	Mobile pieces, sensitivity on heat and dust,	5	Ancient equipment : more possibilities of failures.	3	No mobile pieces, low heat dissipation,	9
Pollution	Low polluting TFT screens but pretty energy-intensive processors.	6	<ul style="list-style-type: none"> <li>• CRT screens.</li> <li>• Old processors: high energy consumption,</li> </ul>	2	<ul style="list-style-type: none"> <li>• TFT screends.</li> <li>• Very low energy consumption.</li> </ul>	9
Others			Heterogeneity of the computers pool.	4	Dependence on the network. Limitations due to the closed environment.	4
Average mark /10		4,75		3,67		8,00



# The thin clients

## Implementation

- Application servers the closest possible of the end users
- Low latency: LAN, WLAN (Wi-Fi) or MAN (Wimax) connection





# The Voice over IP

## Problematic

- **Communications are, still today, inaccessible to a large part of the world population.**
  - **Geographic problematic:** difficult implementation of wires, wireless coverage too limited...
  - **Cost problematic:** wiring, satellite links, GSM links... still are too expensive solutions.

Though, the VoIP proposes an alternative allowing very low costs. With the Key2Access network, WebForce wishes to create **an open door to the world making a community network available.**



# The Voice over IP

## Emergency situations

- **Communications are a key element on the prevention and the reaction on emergency situations.**
- **Memorandum of understanding between WebForce and the ITU within the framework of the « Save Lives » program : bring the VoIP on a new field putting the Key2Access network at the disposal of the alarm network driven by the United Nations for the disasters in the world.**
- **So, the NGOs worldwide can dispose of a communications network with very advantageous costs to fulfill their missions.**



# The Voice over IP Implementation

- Proprietary solutions are too expensive for a humanitarian application.

- Use of **opensource solutions**: Asterisk, SIPx...



- Need of supplementary developments to fit the project:
  - Creation of **an opensource workgroup** for the development of a customized solution.



# The Voice over IP

## Purpose

- The VoIP on the Key2Access network can be defined on a simple principle: that of the **minimal cost**.
- Every communication to IP phones inside the network are **free of charges**.
- The communications to analog external phones are cheap thanks to the assets brought by Internet.

**The costs are thus minimal and make telephony available everywhere around the world.**

*And to reduce again the costs of the communications as well as the costs of the data transmission, WebForce wishes, with the help of partners and sponsors, to be able to **install between 10 and 20 new gateways in various countries every year.***



# The **Box2Access** terminal

## An integrated access box

- **An end and a tool** at the same time within the Key2Access network:
  - Computing terminal destined to the users;
  - **Network sharing**: each client can be connected in **open mode** (network redistribution) or **closed mode** (private connection).
    - **Putting the Key2Access network at the disposal of all.**
- **Based on the principle of the thin client**
  - **Price not exceeding \$200**, being possibly funded by **microcredit**.
- Computing solution for all:
  - **Very low energy-intensive;**
  - **Equipped with "standard" peripherals.**

Our virtual research center is currently studying solutions for **solar power supply**.







# The **Box2Access** terminal

## Applications

- Internet access
- VoIP
- Use of various applications: education, health, desktop applications... **the possibilities are almost unlimited.**
- Ideal for public structures: schools, universities, administrations...
- But ideal too for the **SME/SMI on all countries.**





## For a world partnership

- This technologic convergence is the fruit of researches and studies made by WebForce for several years and represents its participation to **the International Telecommunication Union « Connect the World » program.**
- Without the strong support that the ITU can bring, the process of implementation would be very slow.
- **WebForce proposes to the I.T.U. a partnership** so as to be able to attract as well the investments as the donations and the possible contribution of countries, universities, etc.

*We look for all possible partnership as well at the **intergovernmental level** (UNESCO, GAID, PNUD, etc.) that with the **NGOs**, without forgetting the **private sector with socially responsible companies.***





# Contacts

Website: [www.webforce.org](http://www.webforce.org)

E-mail: [key2access@webforce.org](mailto:key2access@webforce.org)

Tel: +33 4 68 324 797

Informations on partnerships: [partner@webforce.org](mailto:partner@webforce.org)

**Thanks for your attention**

