DEFINITION OF A DIGITAL HUBS MODEL TO EXTEND INFORMATION AND COMMUNICATION TECHNOLOGIES ACCESS FOR UNIVERSITY COMMUNITY

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Abstract. Human development prioritizes health and sustainable solutions in education, even with the use of technologies to bridging digital divide, impacting on social inclusion. The h@puma habitat program at the National Autonomous University of Mexico (Universidad Nacional Autónoma de México UNAM) invites to create value for users' information and communication technologies (ICT), within extending ICT permanent access, to enable innovations' services for education at digital hubs in the university. ICT access looks forward to provide students with the conditions to enable them to use computers and communications infrastructure. In order to achieve this, it is desirable to establish and maintain the sustainable growth of ICT capabilities, with a focus on high value-added services based on the knowledge economy. The contribution to this innovation has outweighed the common welfare and competitiveness between the various stakeholders in each project. The experience is integrated into best practices and knowledge to the screening, management and operation of ICT services in order to provide access to the Internet, online services, computers and connectivity. From a provisioning value model ICT, for infrastructure and connectivity availability, used in the UNAM, which objective is promoting spaces to endorse the socialization of knowledge from development and training in the use of ICT for teachers and students, this proposal desires to focus on digital hubs. It is desired to highlight the importance of collaboration and cooperation among those actors involved in technology services, to boost growth.

Keywords: digital hubs, human development, information and communication technologies, 2.0 collaboration.

1. INTRODUCTION: HUMANIZING THE DIGITAL AGE VIA THE EDUCATION ON INFORMATION AND COMMUNICATION TECHNOLOGIES USERS' SUPPORT

The information age has a profound impact on human life: there are new horizons for people, as well as opportunities to achieve their human, political, economic, social and spiritual aspirations. This is how people have been placed at the centre of all concerns, so humanizing the new information revolution is our challenge to bridging digital and knowledge divide. The information revolution has provided unprecedented opportunities for both economic and human development to countries, societies and people capable of tapping its potential [1].

Community networks become strategic as the level of integration among, human knowledge, skills, capacities, capabilities, efficiency, effectiveness, competitiveness and decisions are strengthened and supported through new information and communication technologies (ICT).

To achieve human development, the index report is moving forward for a better measure; it has been attending people's health and education, as well as raising income. Nowadays it also uses new tools, introducing three measures: the Inequality-adjusted Human Development Index, the Gender Inequality Index and the Multidimensional Poverty Index. Human development desires to increase life expectancy, literacy, education, standard of living, and GDP per capita for countries worldwide. People are the beneficiaries and drivers of human development, individually and in groups. The year 2000 assumed a new importance when the United Nations and the G8 group of industrialized countries flag ICT for development (ICT4D) as a global development priority. Since then, the understanding of ICT4D as a central problem of development has seen a rapid evolution. ICT is considered as enablers of other development areas such as governance, poverty reduction, environment, health and education [2].

ICT, like all technologies, are tools. How to use those tools depends on the user and context. ICT are basically information handling tools —a varied set of products, applications and services used for producing, storing, processing, distribution and exchange of information.

The revolutionary potential of new ICT is in its ability to instantly connect large networks of individuals and organizations across large geographical distances at very low cost. As such, ICT have been key enablers of globalization, facilitating worldwide flows of information, capital, ideas, people and products. They have transformed business, markets and organizations, have revolutionized learning and sharing knowledge, empowered citizens and communities, and has created significant economic growth in many countries.

The digital divide is called the inability of much of the world population to access and effectively use ICT and the potential benefits they enable. In fact, the digital divide —the disparities between the "connected" and the "unplugged"— is actually a reflection of the old divides of poverty, education, and restricted human choices. Unequal ICT access tools and networks — within countries and between countries— exacerbate existing inequalities.

ICT4D can be important tools to address global and national inequalities. The focus is shifting to understand ICT as a pure technology for use in the treatment of specific needs —the project approach— towards a holistic approach that considers ICT as a crucial factor for development. This new approach recognizes that the potential of ICT is tied to a complex mix of international, national and local conditions; therefore, political environments are paramount. Policy decisions are essential, as are creative combinations of public and private partnerships [3]. The main lessons learned reflect six key challenges that have affected the design, implementation and outcomes of ICT initiatives for the development so far: consciousness or awareness, policy, access, effective use, sustainability and coordination. Well-designed and implemented pilot projects can help potential beneficiaries find out how ICT can be useful for their own needs. This proposal is an approach for humanizing the digital age via the education on ICT users' support from opportunities for its access at digital hubs.

2. INCREASE KNOWLEDGE AND SKILLS TO OPTIMAL USE INFORMATION AND COMMUNICATIONS TECHNOLOGY AT UNAM

Access to information and communication technology is a main concern for the human development index. In table 1 it is possible to see Mexico al 56 HDI rank, among other countries and their relation with different levels for human development [4].

Table 1. Access to information and communication technology [4]

		TELEPHONES			INTERNET			ACCESSIBILITY AND COST			
		Mobile and fixed-line phone subscriptions		Population covered by mobile phone network	Users		Broadband subscriptions[a]	Personal computers	Mobile phone connection charge	Fixed-line phone connection charge	Price of a 3-minute local fixed-line phone call
HDI rank		(per 100 people) 2008	(% growth, population-based) 2000–2008	(%) 2008	(per 100 people 2008	(% growth, population-based) 2000–2008	(per 100 people) 2008	(per 100 people) 2006–2008[b]	(US$) 2006–2008[b]	(US$) 2006–2008[b]	(US cents) 2006–2008[b]
VERY HIGH HUMAN DEVELOPMENT											
1	Norway	150	27	..	82.5	228	33.3	62.7	17.6	175.5	22
2	Australia	147	66	99	70.8	66	24.4	..	24.3	49.5	25
3	New Zealand	149	87	97	71.4	64	21.6	53.0	24.6	36.6	0 [c]
HIGH HUMAN DEVELOPMENT											
43	Bahamas	145	236	100	31.5	711	10.1	..	50.0	..	..
45	Chile	109	173	100	32.5	113	8.5	..	1.9	92.1	9
46	Argentina	141	291	94	28.1	331	8.0	..	48.4	47.7	2
56	Mexico	90	265	100	22.2	368	7.0	14.1	0.0	116.8	15
MEDIUM HUMAN DEVELOPMENT											
88	Dominican Republic	82	412	..	21.6	556	2.3	..	0.7	28.9	10
89	China	74	329	97	22.5	1,233	6.2	5.6	9.9	..	3
90	El Salvador	131	486	95	10.6	829	2.0	..	0.0	40.0	6
LOW HUMAN DEVELOPMENT											
128	Kenya	43	3,848	83	8.7	3,260	0.0	..	34.7	33.2	12
129	Bangladesh	29	5,870	90	0.3	456	0.0	2.3	2.2	29.2	1
169	Zimbabwe	16	288	75	11.4	2,742	0.1	7.6	..	..	..
OTHER COUNTRIES OR TERRITORIES											
	Antigua and Barbuda	202	190	100	75.0	1,200	14.5	20.7	..	68.5	..
	Bhutan	41	1,869	21	6.6	1,900	0.3	2.5	1.7	13.8	3
	Cuba	13	190	77	12.9	2,317	0.0	5.6	120.0	..	..

Notes

a. Number of subscriptions to digital subscriber lines, cable modems or other fixed broadbands expressed per 100 people. Includes digital subscriber line/analog subscriber line connections with speeds of 56 kilobits per second and higher.

b. Data refer to the most recent year available during the period specified.

c. Locals calls are free.

Sources

Column 1: Calculated based on data on cellular subscribers and telephone lines from World Bank (2010c).
Columns 2 and 5: Calculated-based on data on cellular subscribers and telephone lines from World Bank (2010c) and data on population from UNDESA (2009d).
Columns 3 and 6–10: ITU (2009).
Column 4: World Bank (2010c).

In Mexico, the National Development Plan (NDP) highlights the harnessing the use of technology to impact the country's transformation [5]. Internet habits show that in 2007 22% of users accessed their places of study, while in 2009 decreased to 11%. However it shows an increase of 22 percentage points in access from home, and an increase of 20 percentage points at Internet cafes [6]. Besides, ICT access via telecenters in Mexico has challenges for their operation, such as technical barriers, for example, Internet access speed. As well, there is a lack of digital literacy in users among three skills: ability to navigate in nonlinear environments to find information needs; ability to discriminate and summarize the information found; and ability to assess the quality of the information [7].

Meanwhile, between 2006 and 2007, a survey among National Autonomous University of Mexico (Universidad Nacional Autónoma de México UNAM) graduates from different undergraduate courses who completed their studies in 2000 showed they wished to had training aimed at English language proficiency, and management of computer packageon skills.

2.1 UNAM's h@bitat puma program

Given this context and focus on technology, UNAM intends to increase skills in using ICT in university to contribute to the efficiency of the substantive processes of the university: teaching, research and extension and dissemination of culture to impact on expanding UNAM's visibility [9]. In response to the guidelines governing the UNAM published in 2007, the Department of Computing and Information and Communication Technologies (Dirección General de Cómputo y de Tecnologías de Información y Comunicación) before DGSCA (Department of Academic Computing Services; Dirección General de Servicios de Cómputo Académico), through the h@bitat puma program, which supports in reducing the digital divide and social inclusion in the university community; h@bitat puma is aimed at increasing knowledge and skills that college students need to use ICT efficiently, ethically and safely in their academic and professional development. As part of the program a main effort concentrates in extending ICT access for university community.

2.2 Extend information and communication technologies access for university community

ICT access looks forward to provide students with the conditions to enable them to use computers and communications infrastructure. In order to achieve this, it is desirable to establish and maintain the sustainable growth of ICT capabilities, with a focus on high value-added services based on the knowledge economy. The contribution to this innovation has outweighed the common welfare and competitiveness between the various stakeholders in each project. The experience is integrated into best practices and knowledge to the screening, management and operation of ICT services in order to provide access to the Internet, online services, computers and connectivity. From a provisioning value model ICT, for infrastructure and connectivity availability, used in the UNAM, which objective is promoting spaces to endorse the socialization of knowledge from development and training in the use of ICT for teachers and students, this proposal desires to focus on digital hubs.

1. 2.2.1 Scope

The scope of this proposal is to present a design for collaboration on digital hubs, as telecenters in classrooms or thematic ICT spaces for users' service, showing results in the Telmex digital classroom (Aula Digital Telmex) solutions —classrooms with equipment and computer services— and PCpuma —lend laptops at digital service modules.

2. 2.2.2 Purpose

This proposal pretends to invite and exhort academic entities and administrative departments at UNAM to integrate efforts trough collaborations and cooperation among them and with diverse organizations to contribute in ICT4D access for university community.

2.3 Background, problems and opportunities at UNAM's high school

Information society and ICT industry in Mexico has several challenges facing globalization, among them stands the opportunity to promote national human capital development in cooperation with educational institutions in the country.

In the case of UNAM the target population, according to the 2010-2011 school year, consists of 316,356 students and 36,000 academics, with 66,116 network connected computers as part of existing infrastructure through 2009 [10]. In this universe, it is a priority to intervene in the UNAM's high school, according to the guidelines governing the UNAM issued in 2007, as this level holds a lag in updating, and procurement of ICT. The international trend of computers per students is 1:1, with quality in broadband coverage [11]. This, in addition with the lack of technical assistance, and limited access to workspaces for students and teachers with technology tools, led to seek alternatives to benefit the UNAM´s high school with agreements to positively impact the educational process. As a result, in November 2008, the UNAM and Telmex decided to promote the use of technologies for the benefit of university enabling Telmex digital classrooms in each of the 14 UNAM´s high school campuses, five in the CCH and nine in the ENP [12]. Telmex is a Mexican company that provides telecommunications products and services in Mexico and some Latin America countries. This company has a digital culture and education program to contribute en bridging digital and knowledge divide in Mexican society.

Later and at opportunities that promote Internet usage habits with themed spaces, comfort and flexibility of digital services such as Internet cafes, and improved mobility that provide online services and convenience to travel to different places, PCpuma project emerged, which for 2011 is hosted by restricted areas but arranged for the interaction of students to conduct their academic activities. PCpuma promotes use of ICT in the university, with access to digital services and notebook computers, at physical spaces that are comfortable and safe for collaborative work, and where they enjoy doing their tasks and research works. The service provides coverage and connectivity to the Internet; provides adequate facilities to use specialized software applications for knowledge's areas of students' training, and physical space to promote digital culture. In this context there are at least three edges to impact for this population: 1) users of ICT specialist areas of knowledge, 2) responsible for providing technical ICT services in each university entity or department, and 3) those who participate in the teaching - learning process in ICT education. The impact of ICT used in Telmex digital

classrooms in UNAM's high school reflects the tendency of Internet usage habits, leading undergraduate innovations to arise in access to academicals digital services of value.

3. A VALUE MODEL FOR INFORMATION AND COMMUNICATIONS TECHNOLOGY AT DIGITAL UNIVERSITY SERVICES

Setting value describes the logic that follows the set of activities that create value for an organization. There are three types: the value chain, the workshop of value and the value network. Stabell and Fjeldstad, in 1998 state that the value chain is well suited for manufacturing, but service industries, they propose two extensions: the workshop of value (professional services) and value network (mediators) [13]. Value creation in the value network, reflects the strategic path that emerges from the simultaneous analysis of the activities essential administrative support to provide solutions in infrastructure facilities in ICT services, as seen in Figure 1.

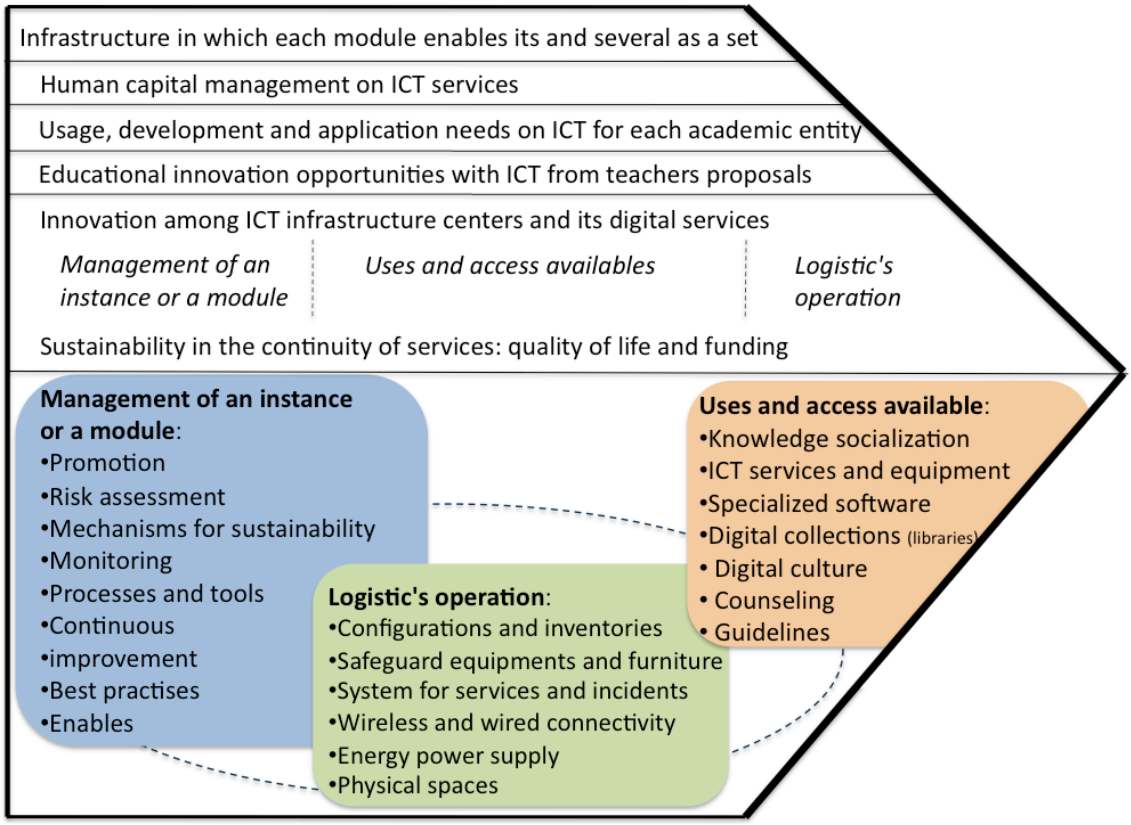

Figure 1. Value network to provide solutions in infrastructure facilities in ICT services

The Telmex digital classroom has been enabled in UNAM's high school; it offers digital services for teachers and students in any given subject, not only computer or computer material. Furthermore, PCpuma modules also provide digital services and laptop (notebook computer) to the university spaces for activities other than classrooms. Administrative activities in the value network are those relating to ICT infrastructure and staff specializes in computer services at each campus. The availability of space and staff to each new module or instance enabled is defined by the position of each academic institution. In another dimension examines the physical layout of each module is enabled, along with the synergy that provides the set of modules from an institutional perspective, while the administration and management of those who provide ICT services, human capital formation as agents of ICT services ¾responsible for Telmex digital classrooms and fellows from DGTIC¾ strengthens the collaboration between different entities. Support activities ¾to identify needs in the use of ICT and recognize opportunities to innovate teachers' proposals¾ are strategic to make sense of the essential activities encompassed in the digital hubs of innovation in ICT services infrastructure: management module or analysis, logistics operation and availability of new features, uses and access. In practice the main activities in UNAM's high school Telmex digital classrooms are

ranging from the empowerment of rooms for each campus, with electricity supply, infrastructure, connectivity for equipment and furniture to monitor and control carried out by the authorities from the CCH (DGCCH, Dirección General del Colegio de Ciencias y Humanidades), ENP (DGENP, Dirección General de la Escuela Nacional Preparatoria), DGTIC, and even the monitoring visits and support from the Telmex digital culture and education program. These activities focus on the implementation of services, continuity of operations and improvements that include formation of human capital (specialized talent in response to users who provide advice and expertise in inducing the use of ICT), which has afford a space with access to various technological tools to serve teachers and students. This has resulted in the user community that requires a digital culture and better digital services. With this best practices and learned lessons are attached to design a lifecycle for digital centers so to ensure continuity operations and improvements.

4. A DESIGN FOR COLLABORATION ON DIGITAL HUBS LIFECYCLE AT THE UNIVERSITY

A value proposition is a promise of value to be delivered and a customer belief of value that will be experienced. A value proposition can apply to an entire organization, or parts thereof, as well as to customer accounts or to products or to services. In this case, this proposal presents elements of a value proposition on digital hubs lifecycle. Kaplan and Norton say "Strategy is based on a differentiated customer value proposition. Satisfying customers is the source of sustainable value creation." [14].

During the implementation and operation of different digital hubs at UNAM there would be many moments of value for final users and for every participant, interested or stakeholder. As this goes on, many value propositions may have been identified and would be integrated in a strategy map so collaboration on digital hubs lifecycle system proposal is design.

A strategy map is a diagram that is used to document the primary strategic goals being pursued by an organization or management team. The first diagrams of this type appeared in the early 1990s, and the idea of using this type of diagram to help document Balanced Scorecard was discussed by Kaplan & Norton in 1996 [15].

The value of a product or a service is to quantify the relationship between what the consumer would receive, in exchange for being willing to give. The value proposition defines the relationship between performance attributes of a product or a service, meeting the needs of target segments through the lifecycle of the product or the service and the total cost perceived by the client. In addition, the proposed value represents the value to deliver one or more target segments, which is supported by one or more capabilities of the company. In turn, the value proposition can be composed of a set of basic value propositions. Each basic value proposition is a specific product or service that contributes to their individual value to the total value of the value proposition. So for this proposal the strategy map shows different moments of the lifecycle ¾to arrange digital hubs start-ups, commissioning, operation, complementary services and products, maintenance, and transfer¾, across critical success factors (CSF). CSF is the term to refer a necessary element for a project, enterprise or organization to achieve its mission. It is a critical factor or activity required for ensuring the success of the organization or mean project. "Critical success factors are those few things that must go well to ensure success for a manager or an organization, and, therefore, they represent those managerial or enterprise area, that must be given special and continual attention to bring about high performance. CSFs include issues vital to an organization's current operating activities and to its future success."[16]. At this time CSF are organized through: productivity, challenges, opportunities and risks; but this order may be different for each singular case, depending on a maturity level or reality for every digital hub. Table 2 shows the set of basic value propositions.

Table 2. Strategy map within basic value propositions as critical success factors

Collaboration UNAM - digital hubs at the university

	To arrange digital hubs start-ups	Deployment	Operation	Complementary services and products	Maintenance	Transfer
Productivity	Technological classrooms or spaces' identification for its adaptation	Adequate UNAM's optimal classroom (or optimal space) Inventories Procedures and guidelines manual Human capital to attend	User visits' registration Internet performance Equipment out of service for incidents or for damage	Ensuring and optimizing Internet connectivity Training • By UNAM or another authorized organization • For teachers, personnel responsible for providing the service, fellows and students	Monitoring visits Guarantees Corrective and preventive maintenance (attention to incidents)	Update equipment Remove equipment (is technological garbage)
Challenges	Identify opportunities to open more digital hubs at the UNAM • By population • By thematic area and its relation on digital services (needs for specialised usages)	Online collaboration and process automation • Systems • Applications • equipment Configuration • Drivers • Software licensed or for free • Connectivity	95% on operation continuity for connectivity Internet consumption and utilization	Learning routes and optimal recognition to academic staff at the UNAM • Personnel responsible for providing the service at digital hubs and teachers • ICT use certifications Digital materials support the teaching - learning • Universal access • Developments within the community of the digital hub • Creations in collaboration and cooperation with other digital hubs	Timely repair of damage Bank consumables	Efficient usage upon with technology intermediate solutions • Reuse of parts and devices • The personnel or users may acquire for personal usage, obsolete but functional equipments
Opportunities	Infrastructure: open, expand and enable permanent spaces as digital hubs For example, a building for thematic uses with ICT	Verify services performance: • Architectural conditioning • Electrical power • Connectivity • Equipment's safety guard • Human capital • Guidelines • Systems • Communicate services to community (promoting) • Quality Assurance (statistics and reports)	Specialized help desk on ICT services as point of contact to attend users needs and solve issues	Focus ethical, efficient and secure ICT usage, through teaching and student life Curricular and extracurricular teaching with ICT use Professors teaching in different digital hubs	Human capital at national level trained for incident handling at digital hubs Training on maintenance for personnel responsible for providing the service at digital hubs	Lifecycle centered on people and in sustainability: technology usage without ecology footprint Digital training for the community
Risks	No physical place or enough space • Dedicated spaces to other activities may be pushed to another place, and there may be not • Classrooms for technical options or for ICT's topics • Use teacher's planning rooms	Power surge in an area not suitable for the digital hub. Space without structured cabling service, which may incur in buying wireless cards. Equipment for home usage and supplies not available at market	Heterogeneous record of visits: • Done only on paper • Do not all visits are recorded Telephone lines or modems or connectivity infrastructure without service Equipment out of service for damaged parts or without supplies	Suspension of classes, events or activities, by unstable Internet service Unstable Internet service because of reuse of obsolete infrastructure. For example, ensure that the Internet service is delivered at 100% on the equipments, deployed by switches and telephone lines to connect computers to modems	Contracts for theft insurance and for maintenance UNAM's equipment, only applies on UNAM's equipment, which might lead to equipments theft without its recovery and to decommissioned equipment	Storage of modems and decommissioned equipment in the same spaces where users are working with ICT services
Benefits	Extend ICT access	ICT availability	ICT's services	Training with ICT usage	services delivery	Bridging divides

4.1 Digital hubs lifecycle at PCpuma and Telmex digital classroom

Now, there will be shown some aspects, as critical success factors, through the different moments of the lifecycle, presenting reality at UNAM.

3. 4.1.1 To arrange digital hubs start-ups

Enabling Telmex digital classrooms in UNAM's high school has expanded the availability of computers with Internet access at each campus.

PCpuma project invites university institutions to join the digital UNAM strategy, to strength connectivity and digital services providing Internet access. As thematic areas, the libraries are emerging as conducive workspaces for a digital hub star-up. A space where students can post questions to digital collections, interact and socialize knowledge. Aragón's Faculty of Higher Education (FES Aragón, Facultad de Estudios Superiores Aragón) expanded and diversified the services already offered in the library "Jesús Reyes Heroles" with the UNAM's Foundation Laboratories. The Faculty of Medicine lives a digital transformation, where PCpuma, in its library system, adds to the Faculty's various efforts to ensure that students have more and better technological tools to support the access to electronic information sources and biomedical sciences health programs in benefit for decision-making and professional development [17].

4. 4.1.2 Deployment

To support the h@abitat puma program, Telmex provided to UNAM's high school with 1,120 equipments (80 for each campus of CCH and the ENP) personal computers and laptops, as well as projectors, scanners, printers and equipment for Internet connection, which represents 67.200 computer-hours weekly available for the community. Users of these classrooms have received 19.500 hours of technical assistance from the h@bitat puma's fellows assigned at each digital classroom [18]. From whom the impact in the community promotes the efficient, ethical, secure, relevant and meaningful ICT in their academic activities. Within PCpuma, FES Aragon and the Faculty of Medicine are leading laptops, which provides 1,800 computer-hours per week, available to the community of each Faculty [18]. There are also currently working efforts on commissioning at the Faculty of Law, Faculty of Architecture, UNAM's High School and Libraries Department.

5. 4.1.2 Operation

Some services in Telmex digital classroom are: desktops and laptops for users to conduct their academic activities with use of the Internet and special software, access to peripheral devices used to scan images, in addition to advice on the use ICT. Besides, personnel responsible for the service are working on administrative tasks to identify visitors, users' main activities, as well as ensuring connectivity service for Internet access and integrate efforts on solving equipment incidents.

6. 4.1.3 Complementary services and products

The h@bitat puma program, at Telmex digital classrooms, has deployed a vast supply of education in ICT usage for teachers, who replicate and multiply the use of technology on academic purposes for students. The use of those digital classrooms includes its usage for diagnostic procedures, training and evaluation in collaboration with h@bitat puma and the academic activities from each campus. The scope of these achievements has sparked innovation in collegiate academic practices; the impact of teachers and students promotes the development of activities embedded in a digital culture itself, relevant and meaningful for the campus academic activity.

Training was provided on the uses of the Telmex digital classrooms for personnel responsible at the CCH's campuses in May 2009. In 2010 it also provided training for CCH and ENP to configuring modems. During 2010 and 2011 DGENP and h@bitat puma from the ENP's e-institutional applications, Google Apps, with each campus to promote the ENP online 2.0 collaboration aimed at exchanging experiences and best practices.

7. 4.1.4 Maintenance

While the equipment still had guaranty the providers used to solve incidents, besides the support from an educational Telmex help desk. As well, the company uses to visit each campus within to ensure functional continuity and to promote best practices they use around the country at others digitals solutions.

8. 4.1.5 Transfer

Nowadays the same equipment that arrived at the digital classroom stills at service, but there are conversations about getting it out when it is obsolete. At this point there are many opportunities to achieve a significant optimal end of usage for the equipment and processes to deal with technological garbage.

4.2 Critical success factors as benefits

At each moment there is a main benefit: extend ICT access; ICT availability; ICT's services; training with ICT usage; skills for ICT's services delivery; bridging divides (digital, knowledge, and even sustainability divide). At Telmex digital classrooms simultaneously start-ups extended ICT access at UNAM's High School; gathering optimal conditions and people to attend for commissioning made up ICT availability among computers with access to Internet. In continuity, PCpuma want to collaborate with the libraries of the University to: a) expanding the use of libraries as places to socialize the knowledge, skills and strengthen attitudes in a digital culture, b) innovate with various actors in secure ICT solutions, productive and energy efficient, to provide access to the management of digital applications and digital collections specializing in the areas where students perform their activities, c) exploit the trends in ICT to provide lightweight devices that promote the use of the cloud, so promote security of computer equipment to carry in open spaces.

9. 4.2.1 Benefit convergence

As well, benefit convergence can be seen at 2.0 collaboration within ICT's services, training with ICT usage and skills for ICT's services delivery: for monitoring and control it is being established a model on 2.0 collaboration that facilitates communication and exchange of experiences between high school campuses, its main administration and DGTIC. This solution includes online communication and service management, as service's schedules, service's notifications

and incidents' tracking for each campus; this facilitates collaboration with educational Telmex help desk.

5. CONCLUSIONS AND FUTURE LINES

Extended and sustained information and communication technologies access is aimed at strengthening the social inclusion for the university community to enjoy from the information society within the h@bitat puma program through ICT services solutions. This seeks to be achieved, by providing high value-added services to the university community with sustainable growth on ICT skills in terms of the knowledge economy.

The value model is a reference to deploy ICT procurement solutions to provide availability of IT infrastructure and connectivity, its implementation will require the adaptation of its attributes according to different environments, within strengthen the current collaboration it is desired to move up to establish collaborative schemes with beneficiaries to raise in infrastructure, maintenance and operation for Internet access in high school, undergraduate and graduate students. This may demand for more expansion and modernization of infrastructure and telecommunications services for the university. As well as for online services to impact the quality of life of the university, the UNAM's visibility and its academic productivity, such as the Portal of the community, personal website, personal web pages and communication and collaboration bidirectional, among others.

Digital hubs at UNAM might be an opportunity to promote social responsibility in Mexico and quality of life for excellence in education, with the development and establishment of ICT access opportunities in collaboration with various organizations in the country, UNAM's academic institutions and educational institutions in the country, so a committed culture with Mexico's human development may emerge. Thus, establish actions lines for social responsibility in Mexico; to provide meaningful solutions on ICT infrastructure and operations to strengthen the quality of teaching - learning process, as those backlog the relief on face to face and distance public education; which impact may result in energy solutions, intelligent buildings, ICT provisioning, human capital, trade and institutional and national programs.

The main challenge is converging efforts from many actors, besides its technical support within new information and communication technologies as are now with 2.0 collaboration. As well as digital hubs will promote to develop as centres of excellence for knowledge, innovation and creativity for university community.

Finally, it is important to notice that the convergence of value proposition units for ICT's usage is generating a knowledge market to emerge; which exhorts to solve inequalities and exclusion. This, calls to ask and think about the ethical implications facing advanced technologies such as genetics, biotechnology and nanotechnology, and invites reflection on opportunities for a strategic way to positively impact human development, as the analysis of the 2010 Human Development Report [4] suggests that one of the indispensable factors of progress in the dimensions —justice, freedom of opportunity and processes— is the international transmission of ideas and technologies.

Acknowledgements. We thank those involved in the creation of value in ICT services in collaboration with UNAM in h@bitat puma and everyone who enrich this proposal with your comments and reviews.

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