Free Access to Information for All

(A Vision of the Basic Internet Foundation)

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Executive Summary

Rarely does an opportunity arise to make a huge impact on the lives of billions of people around the world, and Free Access to Information (*Internet light*) squarely falls in this category. It is a win-win for all the stake holders: the service providers, users, national governments, content providers and equipment manufactures.

Today, around 46% of the world's households have access to Internet through either fixed or mobile subscriptions. However, the gap between developed and developing countries is still wide. According to studies conducted by ITU, by the end of 2015, 34% of households in developing countries had Internet access, compared with more than 80% in developed countries. In the least developed countries, only 7% of households have Internet access. Thus, on average, out of the total world population of about 7.5B, about 4B still do not have access to Internet or do not use Internet. There are multiple reasons: lack of access, economic, illiteracy, lack of perceived value, or simply the fear of using technology. As saturation reaches in the developed markets and the urban areas around the world, it is well accepted that growth for the operators must come from these 4B users. Baring illiteracy, the other reasons can be easily addressed by offering service for free, making useful content available that adds value to people's lives, and making interaction with the devices easy and intuitive. It is natural that once a user experiences the value, he or she would become a paid subscriber, thus motivating the service providers to offer Basic Internet for free.

For the users, access to free Basic Internet will improve their quality of life and empower them with information to generate new or additional income, become more productive, and have access to healthcare, financial, educational, hospitality, transportation related content and services. For the national economies, providing services through the traditional "brick and mortar" infrastructure is extremely expensive and time-consuming; thus, digital inclusion through internet is the only viable way to bridge the digital divide and to meet people's aspirations and improve their quality of life. At the global level the United Nations' Human Rights Council unanimously ratified that access to Internet has become a basic human right. The Sustainable Development Goals (SDGs), forming the framework for the UNO's Agenda 2030, has explicitly addressed "*Significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in least developed countries by 2020*" as SDG Target 9C. Our postulate is that *free access to information for all* is viable, and based on a sustainable business model. Furthermore, achieving a large number of SDGs will need the free access to information as a catalyst and enabler.

To achieve the above goals, the Basic Internet Foundation started its activities back in 2010 for developing Internet access in Africa (with a focus on the need for basic internet rather than on complex technology development) with research into how to provide access to basic information for free and non-basic information (such as entertainment and non-impacting content) for a fee, such that the developed solution was least-cost, financially sustainable and attractive for all the stakeholders. This ended up being called *Basic Internet*. The Foundation developed a hybrid business model, where service providers could still generate income from the consumption of the non-basic information through a voucher or prepaid system from users who could pay and who transitioned to consuming full internet. Preliminary estimates suggested a $45 billion opportunity for the service providers at an average cost of ½ a dollar per user per month after 5 five years of deployment of the service. The Basic Internet network contains in its complete form: a local core network with local information, a local network, a centralized core, and the backhaul network/network termination. In areas where no Internet connection is available, the network termination can be achieved through either a radio link or a satellite connection. The solution provides

high capacity access to local content, paid access for Internet services, and free access to Basic Information, and complies with all the telecom regulatory requirements, such as net-neutrality. Facebook and Mozilla have rolled out Free Basics and Free Access Paid by Ads, respectively, but fail to meet regulatory requirements of countries well versed with the drawbacks of restrictive business environment.

The Foundation has successfully piloted its solution at the University of Lisala and 4 other universities in Kinshasa, Democratic Republic of Congo, and is now working with the local ISP to commercializing the service in a financially sustainable manner. In addition, the Foundation is aiming to deploy its solution in other countries, such as Mali and India, and the discussions with the relevant people and organizations are ongoing. It is also exploring the possibility of launching a Global Alliance for Digital Inclusion.

In summary, it is the view and vision of the Basic Internet Foundation that access to free basic internet is a human necessity and transformational for the billions of citizens of the world. It is both technically and commercially feasible at a fraction of a dollar cost per user per month with a path to transitioning them over to paid full internet service with significant revenue opportunities.

1.0 Introduction

The Internet now links several billion devices worldwide together, and consists of a multitude of networks with local or global scope, private or public connected to a broad array of networking technologies [1]. Today, around 46% of the world's households have access to Internet through either fixed or mobile subscriptions. However, the gap between developed and developing countries is still wide. According to studies conducted by ITU [2], by the end of 2015, 34% of households in developing countries had Internet access, compared with more than 80% in developed countries. In the least developed countries, only 7% of households have Internet access. In this same set of countries, 12 of 100 inhabitants have active mobile broadband subscriptions, whereas less than 1 of 100 inhabitants have fixed broadband subscriptions.

Higher penetration of Internet access in these areas is important for three main stakeholders:

(i) For local governments, as digital inclusion is vital for six key sectors: health, education, financial services, retail, government and agriculture.

(ii) For the inhabitants themselves to gain access to information related to education and healthcare, and thus providing a possibility to provide better care for themselves and their families. Furthermore, access to internet and information means more employment, income generation and productivity growth for everyone.

(iii) For companies that realize the market potential behind this vast number of people currently without access to Internet. This may not be in terms of the purchasing power of each inhabitant, but as a result of the mere number of people. Serving such a number of customers - often residing in rural areas - will only be possible through Internet instead of physical presence.

In short, access to information via Internet is becoming a necessity in every part of the world to improve quality of life, similar to the basic necessities of clean water, clean air, education, healthcare, and electricity. United Nations has proclaimed access to Internet as basic human right and fundamental to achieving sustainable business goals. From a national perspective, access to Internet has been hailed as key to accelerating national wealth and wellbeing of its citizens.

Access to mobile networks and feature phones have already increased drastically over the last 15 years, where the proportion of the worldwide population covered by a 2G mobile-cellular network grew from 58% in 2001 to 95% in 2015 [3]. A similar growth in access to mobile Internet access is envisioned, but relies on overcoming the main challenges for adoption:

(i) Pricing of phones. Many in these regions cannot afford to buy smart phones and seldom use their mobile phones for more than the occasional voice call. Companies such as Micromax, Xiami, Google and Mozilla are however trying to meet the challenge of expensive phones by developing low cost handsets targeting these markets' needs. Recent trends, however, confirm that the sales of smartphones are quickly overtaking the sales entry-level and feature phones [3].

(ii) Availability and affordability of data traffic. GSMA has pointed out that by the end of 2014 around 77% of the developing world only had access to no (59%) or narrowband (18%) [4]. Though operators plan for cheaper networks with wider coverage, there will still be a substantial amount of people in the developing world not being able to connect.

(iii) Traffic speed. When connections with less than 2Mbit/s are the normal situation, access to widely used web sites and services, and downloading necessary information becomes cumbersome and sometimes even impossible due to time-outs.

(iv) Lack of local content and/or local services that is relevant for inhabitants in the region, in their local languages, and which also embraces the challenges of traffic speeds in the region.

(v) Inability or unwillingness to pay for Internet access when it's value proposition in unclear for those who have never used any computing device for fear of what it might do to (or for) them. They know the value of television, voice calling on phones, motor bikes, refrigerators, etc., but not of the Internet!

The Basic Internet Foundation (BIF) [5] has been established to provide free Basic Access to Information to inhabitants addressing these challenges. Free access to basic (i.e., low-capacity) information is seen as a minor extra cost for the network operator, being either an ISP or a mobile operator. BIF is a non-commercial, non-political foundation dedicated to improving the quality of life for billions of people through affordable access to Internet. In this paper we address the Basic Internet solution and how it relates to other solutions with similar goals. We also discuss the motivation and business models for the service providers, which should encourage them to offer free access to basic information. The Foundation believes that access to information through Internet is environmentally clean, bridges the digital divide, and empowers the citizens to be self-sufficient by being digitally included. Furthermore, it helps to reduce global warming by getting people and businesses off from the physical bus to the IT bus.

2.0 The Basic Internet Foundation and Its Mission

The Basic Internet Foundation started its activities back in 2010 for developing Internet access in Africa, following the idea that information should be accessible to everyone as a prerequisite for improving people's living standards. The Foundation began research into how to provide access to basic information for free and non-basic information (such as entertainment and non-impacting content) for a fee, such that the developed solution was least-cost, financially sustainable and attractive for all the stakeholders (users, government organizations, greenfield and incumbent service providers and investors). Thus, the mission of the Foundation became how to provide free access to basic information through a low-cost architecture, while being aware of the local access infrastructure and local social context, supporting easy deployment, operations support, and rollout. The Foundation's approach was based on the premise that people lacking the ability to pay for mobile broadband still needed the opportunity to access information and that they would not mind walking short distances (up to a km to next primary school, health centre, community center, etc) to get access. Nevertheless, the solution also supported users within the broadband mobile operator's coverage area to still get free access to basic information since the overall business model provided incentives to the operators to offer such a mix of services (basic + premium).

In less than a year a solution was prototyped at the Basic Internet Foundation (from Kjeller Innovation and UNIK in Norway), and subsequently a series of pilots were established in 2011, amongst others the Internet access for the region and the Universities of Lisala and Kinshasa (DRC). Experiences from these pilots showed that the bandwidth limited and costly satellite link was the biggest hurdle for affordable Internet access. Basic Internet thus introduced compressed text and pictures as the core elements for Basic Information. Information is seen as social, economic, political and cultural content depending on the background of the reader, and its importance will vary accordingly. Hence, non-discriminating access to Basic Information and net neutrality are fundamental for the Basic Internet solution. The solution allows any Internet provider, being it a mobile or an ISP operator, to set up a system where they can provide each user with free access to Basic Information. Voucher sales covers operating costs and allows end users

to buy access to more data traffic. As opposed to the other competing solutions (described in the next section), the Basic Internet solution is not dependent on specific operating systems or apps on the users' phones. After successful experiments in DRC and Norway (at four hospitals), the Foundation is expanding its plans to deploy its solution to other regions of the world (such as India) and develop collaborations with a number of companies, active in this space, with the goal to launch a Global Alliance for Digital Inclusion via Free Basic Internet.

3.0 Business and Social Drivers

As discussed in the Introduction section, there are compelling drivers for supporting Basic Internet access for all the stakeholders involved. In this section, we discuss these in more detail.

A. Service Providers or Operators

Out of the total world population of about 7.5B, over 4B still do not have access to Internet or do not use Internet. There are billions of people who have access to Internet but do not use or subscribe to it because of economic reasons, illiteracy, lack of perceived value, or simply the fear of using technology. It is well recognized that growth in revenue for the operators must come from these 4B users who have not been touched by the Internet revolution. Baring illiteracy, the other reasons can be easily addressed by offering service for free, and making useful content available that adds value to people's lives or livelihoods. It is natural that once a user experiences the value at an affordable cost, he or she would become a paid subscriber for the service provider who signed up the user for Basic Internet. Therefore, it makes business sense for the service providers to create and offer internet service plans that cater to these non-internet users.

In financial terms, let's consider the case of India and then extrapolate it to the rest of the non-Internet users around the globe. In India, 69% of the population lives in rural areas where the Internet penetration is the lowest. Assuming that it is the age group over 30 years most uncomfortable with the Internet adoption and this group constitutes 45% of the rural population. With India's population at 1.29B, the number of potential users likely to be impacted is estimated to be 400 million. Even if 50% of this population subscribes to Basic Internet with occasional use of vouchers worth an average of $5 per month to access non-basic content, it would easily contribute about $2B per month to the revenues of the internet service providers. By extrapolation, at the global level, this could add up to about $4.5B per month or $54B per year. It goes without saying that this is a huge business growth opportunity for the service providers to ignore adopting the tenets of Basic Internet some of whom would also pay for the consumption of the non-basic content and migrate to full service internet plans.

Target customers of the Basic Internet Foundation

There are three potential target customers:

(1) Selling the service to users directly by becoming an ISP with the infrastructure of WiFi hotspots owned and operated by the Foundation or its commercialization service arm

(2) Selling the service to end users through MVNOs, or through bi-lateral agreements with the WiFi hotspot owners

(3) Selling the solution to mobile operators or hotspot owners with revenue sharing agreements (with upfront one-time payment + license fee based on the number of users signing in).

From the cost perspective, it is worth noting that the cost per user per month for providing Basic Internet service is estimated to be ½ dollar only (Figure 1) after 5 years after the rollout of the service, which is a small amount compared to all the advertising and marketing costs to woo new subscribers and the ARPU from the paid internet (data) plans from the traditional internet users and the potential to generate

significant revenues from the Basic Internet users who would also consume non-basic content using the prepaid or voucher model and would potentially migrate to standard internet subscription plans.

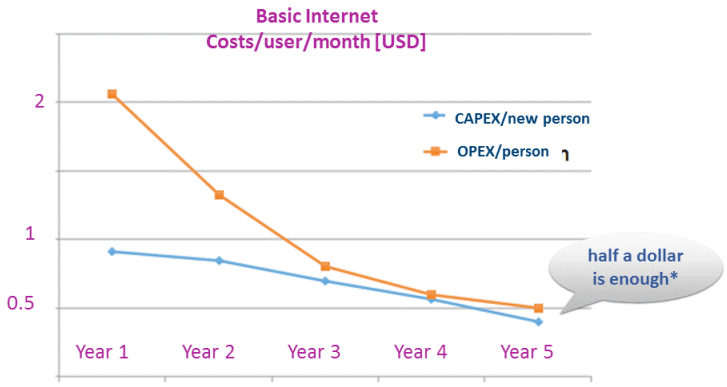

Figure 1. Cost of ICT development per user per month.

B. Users

Access to free Basic Internet will improve the quality of life of the citizens and empower them with information to generate new or additional income, become more productive by saving time, and have access to healthcare, financial, educational, hospitality, transportation related content and services, and eventually pass these benefits on to their families and next generation to bring overall prosperity for everyone.

C. National, Global and Social Impact

Internet is poised to transform the lives of the 50% of the world population who live in poverty or have difficulty to emerge out of it for lack of access to numerous essential services, such as education, healthcare, employment, etc. Providing services through the traditional "brick and mortar" infrastructure is extremely expensive, unaffordable and time-consuming; thus, digital inclusion through internet is the only viable way to meet people's aspirations and improve their wellbeing. At the global level the United Nations' Human Rights Council unanimously backed that access to internet has become a basic human right in a resolution on 5 July2012. All 47 members of the Human Rights Council including China and Cuba signed the resolution. Simultaneously, United Nations has announced 17 sustainable development goals (Figure 2), and Internet plays an important role in achieving them.

Figure 2. United Nations Sustainability Development Goals (SDG)

We feel that target 9.C *Significantly increase access to information and communications technology, and strives to provide universal and affordable access to the Internet in least developed countries by 2020*, is directly addressed through the InfoInternet standard on free access to information for all. Our hypothesis is that "*Internet light for all*" is viable, and based on a sustainable business model. Furthermore, the free access to information, is the catalyst for most of the SDG goals, and especially:

- digital health is basis for SDG 3 *Ensure healthy lives, and promotes well-being for all ages*
- digital information is basis for SDG 4 *Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all*, and will contribute to
- digital inclusion is the basis for digital jobs, and addressing SDG 8 *Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all*
- strong contributions to SDG 10 *Reduce inequality within and among countries*, SDG 11 *Make cities and human settlements inclusive, safe, resilient and sustainable* and thus we
- invite everyone for SDG 17 *Strengthen the means of implementation and revitalize the global partnership* for sustainable development.

At the national level, how to achieve those goals in a phased manner through prioritization depends on the local political and social environment and where a country is in its development process. Furthermore, the impact of the broadband penetration on the growth of national GDP of the countries is well documented and can range anywhere from 0.9% to 3.6% (see Table 1). If this research were to include access to mobile and wireless, the impact on the GDP would be significantly much more.

Table 1 – Research results of broadband Impact on GDP growth

Country	Authors – Institution	Data	Effect
United States	Crandall *et al.* (2007) – Brookings Institution	48 States of US for the period 2003-2005	Not statistically significant results

	Thompson and Garbacz (2008) – Ohio University	46 US States during the period 2001-2005	A 10% increase in broadband penetration is associated with 3.6% increase in efficiency
OECD	Czernich *et al.* (2009) – University of Munich	25 OECD countries between 1996 and 2007	A 10% increase in broadband penetration raises per-capita GDP growth by 0.9-1.5 percentage points
	Koutroumpis (2009) – Imperial College	2002-2007 for 22 OECD countries	An increase in broadband penetration of 10% yields 0.25% increase in GDP growth
High Income Economies	Qiang *et al.* (2009) – World Bank	1980-2002 for 66 high income countries	10% increase in broadband penetration yielded an additional 1.21 percentage points of GDP growth
Low & Middle income economies	Qiang *et al.* (2009) – World Bank	1980-2002 for the remaining 120 countries (low and middle income)	10 % increase in broadband penetration yielded an additional 1.38 in GDP growth

Source: The impact of broadband on the economy: research to date and policy issues, April 2012, ITU, https://www.itu.int/ITU-D/treg/broadband/ITU-BB-Reports_Impact-of-Broadband-on-the-Economy.pdf

4.0 Solution from the Basic Internet Foundation

The Basic Internet solution developed and promoted by the Foundation is an approach to offering present-day and future low capacity information to everyone on this planet without the users subscribing to a paid internet service. As data costs constitute a barrier from accessing mobile data, the main focus of the technical approach relies on getting as much information as possible through a bandwidth-limited link. Some examples of such low-availability links are satellite links and congested mobile networks. Thus the Foundation has implemented a network architecture (see Figure 3) answering the need of a low-cost local infrastructure and rapid deployment for regions where the Internet infrastructure is still in infancy, such as in many countries in the African continent.

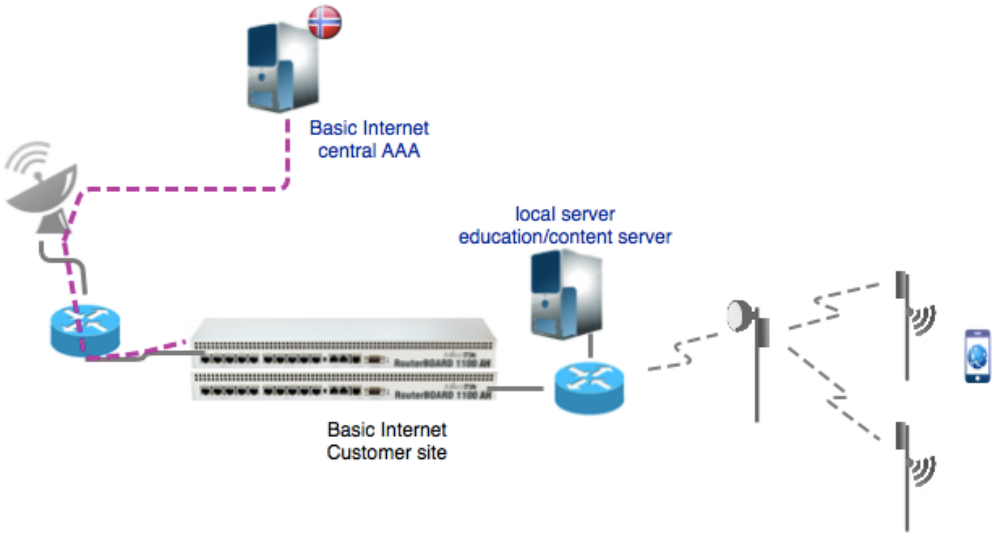

Figure 3. The cost-effective Basic Internet Architecture

The Basic Internet network contains in its complete form: a local core network with local information, a local network, a centralized core, and the backhaul network/network termination. In areas where no

Internet connection is available, the network termination can be achieved through either a radio link or a satellite connection. The solution provides high capacity access to local content, paid access for Internet services, and free access to Basic Information. Further elaborations on the business models are given in section IV.

For countries, where the internet infrastructure is highly developed or is undergoing a significant transformation, such as in India, China, many countries in the Central and South America and APAC, but the actual Internet penetration is still low for the reasons described in Section 1, the Basic Internet Foundation is developing a more advanced solution that will support multiple types of access networks and a distributed central core network (for AAA, operations support, etc.) residing in the country itself (not Oslo).

Some of the key technical characteristics of the solution from the Basic Internet Foundation are as follows:

- Free information to everyone where the text is delivered in compressed mode and the pictures are in low to medium resolution. Web, Facebook, news are delivered for free without subscription and without the hassle of using username and password. Access to full internet enabling consumption of high capacity content (i.e., bandwidth intensive content, such as video, music, TV, downloads) require authentication for payment by vouchers good for 1 hour, 1 week for consuming 20M, 100M, etc., based on the principle of "*I pay for what I need"*
- Information is delivered by filtering it, such as the dynamic content is filtered out
- The browser that is supported is Opera Mini running HTTP/2 standard
- Centralized management through open protocols
- Option to extend the solution to IoT for set-up, configuration of communication, secure (encrypted communication) and ability to update and/or revoke security certificates

5.0 Competitive Landscape

In this section, we provide an overview of existing competing solutions for Internet distribution in areas with economic issues, and discuss some of their limitations. These solutions are Free Basics from Facebook and Mozilla's free access paid by advertising. Initiatives like ConnectTheWorld [6] and Digital Impact Alliance (DIAL) [7] form the political and societal platforms for digital inclusion, but neither offer any technical solutions or working solutions.

5.1 Free Basics from Facebook

Internet.org is a partnership between Facebook and several companies to bring affordable access to Internet services. The initiative targets both areas where access is non-existent and areas that have a mobile infrastructure. Non-existent access is provided through local Internet Service Providers (ISPs) using Express Wifi. In areas with mobile coverage, zero-rated content is offered to mobile operators. Zero-rated content are web pages and apps, which are provided free-of-charge to the end customer. Free Basics by Facebook is launched in 39 countries, and provides an open platform for providers of apps, websites or services an open platform. These can be added to Free Basics as long as they abide by Facebook's participation guidelines that shall ensure acceptable performance on older phones and slower network connections. The idea is that the free access will help people understand what Internet is and what it can be used for, and thus accept that paying for further access to the broader internet is worth the cost. Internet.org estimates that 50% of people who use Free Basics will pay for data and access the broader internet within 30 days.

A similar platform, Airtel Zero, offers free access to certain mobile applications and services [8]. Developers and service providers who pay Airtel a fixed fee for the cost of data transfer can offer their apps free to end customers.

Both Free Basics and Airtel Zero has been criticized for violating net neutrality [9] as their approach creates a walled garden around information their users can access. Lately Free Basics has published technical guidelines for efficiency and size [10], and has thus transferred the evaluation of apps and web sites to objective measures, but it continues to be under Facebook control with no transparency. Many countries that understand the value of net neutrality and the potential risk of Facebook and Airtel collecting the network and usage analytics and using them to their financial benefits and thwarting competition are afraid to grant regulatory approvals.

5.2 Mozilla's Free Access

Mozilla has targeted the challenge of high prices on handsets by developing a low-cost handset with their own Firefox OS. In Bangladesh and several African countries they have teamed up with local mobile operators such as Grameenphone and Orange. In Bangladesh, Grameenphone offers the users 20MB of free data per day given that they visit the phones marketplace where users are exposed to advertisements that fund the access. Orange offers buyers of Mozilla's smart phone unlimited free Internet for a set period of time in several African countries. Many countries view the Mozilla approach as captive and forcing the users to certain behaviors dictated by the operators in collusion with Mozilla resulting in stifling competition.

6.0 Technical Challenges

Aside from the challenges of scaling and performance if the Basic Internet service were to become popular, there are two main challenges related to capacity optimization and traffic shaping: (i) the notification of information, and (ii) traffic recommendation.

The *first challenge* is related to information provisioning and the way information is best presented in bandwidth-limited systems. Thus, we try to characterize information content related to the amount of bits being used in the communication, which also refers to number of bytes associated with that content. Instead of restricting content, we suggest to restrict content types, e.g., to allow text and pictures, but dismiss videos for Basic Internet but allow them for paid (voucher) segment of the plan. This approach ensures net neutrality as it does not restrict content to its owners or the operators' infrastructure.

The *second challenge* is related to providing a better foundation for app developers to make their apps adhere to changing network conditions and the users' limited data plans by providing a traffic recommender. Basic Internet will be delivered to end users via WiFi hot spots or mobile broadband. Most smart phones allow the users to limit the apps from transferring large amounts of data when using mobile data. However, when WiFi is available, these apps usually do not consider the amount of data transferred, the end-to-end throughput, or allow for limited traffic profiles. This easily results in high bandwidth usage and poor user experience. The needs for better capacity usage in Basic Internet access networks is one application area. Addressing the bandwidth limitations is a second application area for the traffic recommender.

Other technical challenges relate to implementing machine driven algorithms for classifying which content is basic or low-capacity based on its type and size and possibly subject matter, the rest falling under the non-basic category. To ensure the trust of the regulatory bodies and of the service and content providers these algorithms should operate out of a neutral organization which should either offer a gateway

function in real-time or a cloud-based service to content providers to label their content as basic or non-basic. Furthermore, the definition of what is basic or not is very much a cultural and national issue, and, therefore, and is better left to be decided by the national guidelines or regulations.

7.0 Implementation/pilot activities related to Basic Internet from Basic Internet Foundation

The Foundation has piloted its solution at the University of Lisala and 4 other universities in Kinshasa, DRC. Three different variants of the product were piloted. These differed in how the access to client devices was provided and what type of backhaul network was used. These were: satellite link, public WiFi access points, and satellite based public WiFi access points. These pilots provided free access to Wikipedia and other educational sites from Cedesurk [11]. The customer infrastructure included a local server, adding free-of-charge educational videos and content. The pilot had 5 phases (I-V) (see Figure 4), where phases I to III had the focus on integration of the centralized and the local core, the access to local information, and the provision of vouchers for the paid Internet access, and phases IV and V were devoted to commercialization. The major goal of the pilot was to bring the students to become Internet users (see Figure 4), allowing them to use their own devices to search and use relevant content. The final goal was to leverage 90% of the students to be able to use the local content. An additional goal was to get students become creator of digital content, and digital services providers. At the present time, the first phases have been concluded, and the discussions on how to make these trials commercially self-sustainable network operations is ongoing. This self-sustainable network operation consists of (i) voucher sales for access to Internet, and (ii) the provision of free access to Basic Information. This free access is financed by license fees, where a certain percentage of the sold Internet capacity is used for ordering bandwidth for Basic Internet.

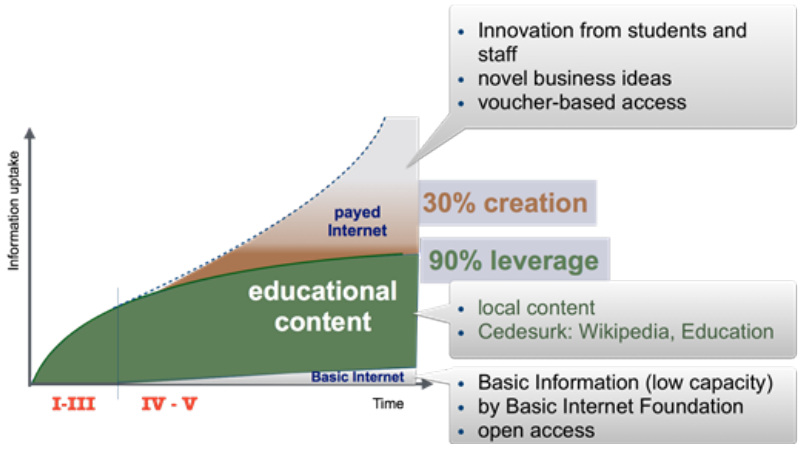

Figure 4. Phases to internet adoption by students.

The results of the pilot implementations confirm that

- A cost-effective Internet distribution is possible, providing a local core for roughly 400 US$, and of-the-shelf access points
- The deployment leveraging students using their own devices for free access to (local) educational content is feasible

- Through the Basic Internet Infrastructure students can become creators of digital content, and become digital service providers
- The service is complementary to conventional telecom services, providing services to people who cannot afford access to the basic information.

Moving forward, the Foundation is aiming to deploy its solution in other countries, such as Mali and India, and the discussions with the relevant people and organizations are ongoing.

8.0 Conclusions

In this paper, we addressed the needs for digital inclusion through free access to Internet for everyone, both in the developing and developed economies. Findings related to digital societies indicate that developing economies need to address digitization as the driver of economic growth and wellbeing of its citizens. What is common in both approaches is the need for an information infrastructure that is technically feasible, meets all the regulatory requirements, and is financially sustainable. Such an information infrastructure consists of low capacity (LC) services as a basic service for free for everyone, as well as network-aware applications high capacity (HC) services that are paid for through subscription by vouchers and/or the existing pre-paid model. An LC-service offer can be provided as part of a public digital infrastructure or by an operator through wireless as well as mobile networks. They will provide an always on-line experience, and thus reduce the digital gap. The LC-infrastructure is accompanied with a pro-active recommender, using the mobile device as a decision maker.

We discussed the technical challenges associated with classifying a given content by basic (LC) or non-basic (HC) and the bandwidth requirements of the different types of web pages followed by traffic recommendations, and their implications on user experiences. We also discussed the benefits to all the stakeholders and the estimated cost of offering the basic internet service. Finally, the paper presented the results from the pilot implementation of Basic Internet (LC) service in the Democratic Republic of Congo (DRC). The pilot proved the technical viability of LC-service provisioning, and is being transitioned into commercial operation with a sustainable business model. All things considered, it is the view and vision of the Basic Internet Foundation that access to free basic internet is a human necessity to be digitally included and it is technically and commercially feasible to offer this service at fraction of a dollar with a path to transitioning them over to full internet access once they have experienced the value of it.

Going forward, the Basic Internet Foundation calls out for the need to launch a Global Alliance for Digital Inclusion that will develop consensus on the specifications for an affordable Low Capacity Internet (LCI) for access by all the citizens of the world and thus bridge the digital divide and meet the sustainability goals of the United Nations.

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