

## ICT ECOSYSTEM AND COMMUNITY NETWORKS

### **Basic Understanding**

Our quarterly report is devoted to the vision to establishing an effective and efficient ICT ecosystem that supports community networks (CNs). It is to be understood that an ICT ecosystem encompasses the policies, strategies, processes, information, technologies, applications and stakeholders that together make up a technology environment for a country, government or an enterprise/organisation. Most importantly, an ICT ecosystem includes people—diverse individuals—who create, buy, sell, regulate, manage and use technology. This approach argues that information and communication technologies should not be viewed in isolation and as part of a closed technical system. Instead, the notion of an ecosystem seeks to embed ICT and its application in a wider conceptual framework that takes account of socio-economic, political, spatial, and other dynamics. The manner in which this system is constructed and operates is an aspect of emerging paradigms that consider the interplay between ICT multi-level usage by various players within systems of governance, citizenship, communication, knowledge, and innovation.

### **Opportunities for Sustainable Development**

The Internet can open up a world of opportunities. With half the world's population unconnected, it's urgent that we shape a tomorrow that benefits everyone. Closing the digital divide is critical and community networks offer a solution. Over the past decade, cybernet networking has been springing up in both developing and developed countries, becoming a credible solution to bring people online. These are “do it yourself” networks built by people for people. The reason the Internet has been so transformative is that it gives us the ability to ignore the “between” and focus on the task at hand or problem we are trying to solve. To use a website, all you need to do is open the browser and type the URL (or, often, use an app), and it “just works”. We take this for granted now. But when the web first burst onto the scene, it seemed like magic. And, amazingly, the web is effectively free-to-use because you pay for the connectivity totally apart from each website or connection.

In order to understand the value of community networks and their constructive potential, it is essential to understand that the traditional way of providing Internet access, based on the existence of (large) access providers and individual access subscriber, is not the only way to foster Internet connectivity. Furthermore, such “traditional” model should not be necessarily considered as the most efficient, given that, at present, 4 out of 7.5 billion people still lack access to the Internet. Although consensus has crystallised with regard to the benefits of connectivity (McKinsey 2011; OECD 2012; Guerriero 2015), it seems obvious that such benefits are still distributed in an uneven fashion and the majority of the world population, especially in least-developed countries—*and communal lands in particular*—is still off-line (ITU 2015). The current situation, together with the recent inclusion of “universal and affordable access to the Internet in the least developed countries” amongst the UN Sustainable Development Goals, leads us to ponder whether alternative approaches to those experimented so far are available and what are the conditions that may facilitate such alternatives.

### **Thrust of the Internet**

The Internet was conceived as a networking technique able to foster an open and distributed communication environment, in which multiple approaches could and should be experimented in order to achieve universal connectivity. Therefore, it seems desirable not to limit our comprehension of connectivity to the “traditional” model but rather to explore the existence of

suitable alternatives. Today, one can connect to the web as one travel by having a cellular account and cadging connectivity here and there after manually signing up to websites and working past Wi-Fi security perimeters. And we accept that oftentimes we are blocked. Today the seeds of change can be found in every home and corporation where we have common connectivity. Devices may share common facilities. This was not always the case. For example, back in 1995 the future of home networking was going to be the residential gateway and each time you added a computer you would get an additional recurring fee, just like adding another phone line or another set top box.

We take home networks for granted today and yet we still pay a separate monthly charge for each smart phone and other connected devices. We accept this model because few people understand the genius of the Internet and presume that we still need phone companies despite the success of Skype, WeChat, WhatsApp, Zoom and the many other offerings—now emerging because of the deadly Coronavirus.

There is one Internet, so why do we need multiple broadband infrastructures? Today’s policies are akin to having Nyangani Renewable Energy build a separate electric grid to compete with ZESA. In practice we get competition by using a common grid and choosing which electric power company we want to buy from. Unlike electricity, we do not really “consume” data. The Internet does not act like water pipes. You do not need twice the capacity for two computers. During the 100 seconds you are looking at a web page, 100 other people download other pages without slowing you down. Carriers know this and benefit by reselling the same connections to 100 other people. Why can we—at Fortune Development Centre—not get that same benefit by sharing with our friends and neighbours (schools and clinics)? The good news is that we already have essentially unlimited capacity in place. Today’s limitations on capacity are the result of policy and not technology. A single USB-C cable with very thin wires has 20 gigabits of capacity! With packets, it does not matter if the signal is helped along by a wire or if we use wireless for a given segment. This allows benefit from the synergy across all technologies. We get a hint of this in the vast abundance of Wi-Fi compared with the limits of the cellular approach.

Fortune DC has targeted two schools for the development of the community networks as a basis for the envisaged application of the CNs. Samaringa High and St Columbus have been chosen for their strategic location in Honde Valley. A project to establish databases for the educational institutions is at a formative stage. We are in the process of identifying variables for the proposed database. Using hypothetical data, it is our intention to build a project management simulation for training and interactive learning activity. The purpose of the simulation is to impart to students the competencies (i.e. knowledge, skills, and attitudes) that will ultimately improve their performance. It would confront trainees with the situations and problems that arise in real world projects.

### **Innovative Ideas**

The seeds of change exist. Today’s home networks are DIY (Do It Yourself). Most companies and universities do their own networking. The Internet shows the power of DIO (Do It Ourselves). This is why Fortune DC is striving to take community networking in Honde Valley to the next level and turn educational and health complexes and other spaces into connected

communities. That would provide examples for localities such as supermarkets, offices, churches and small businesses.

The Internet demonstrates the abundance and opportunity inherent in the existing infrastructure. Once we achieve recognition that the Internet is our new infrastructure, we are then ready to reap the benefits of millions of dollars in direct innovation. We get the benefits of connected health care, better hydro-metrological and environment monitoring, water resources management and so much more.

### **Concluding Remarks**

Attempting to solve problems in an ICT ecosystem framework reveals that true participation in this space can be hampered by historical and structural legacies, affordability, and poor perceptions of ICT. The effectiveness of ICT needs to be immediate and demonstrate improvement of the systems in order to be accepted by the community, and targeted programs are an effective way to ensure inequities are addressed. Those at the margins or fringes of society are certainly participating in this space, but from what Fortune Development Centre has observed, this interaction can be at a truly limited capacity. Yet, a wide variety of structural and internal elements from the ICT ecosystem contribute to the improvement or deprivation of a person's quality of life.

This implies creating new technology platforms. Basically, the term 'technology platforms' is an approach focused on how to systematically leverage technologies across different applications. Thus, our efforts at Fortune DC should seek to answer three research questions:

- 1) What barriers exist to effective technology/ICT reuse?
- 2) How should we reorganize and apply technological knowledge? and
- 3) How should we assess feasibility of a planned case of technology reuse?

The pursuit of excellence and quality has always been an important goal. Therefore, the answers to these questions should help businesses to create new services, ranging from data processing to online decision making, agricultural activities to buying of inputs, from marketing to selling of products.