

## Information and communication technology in rural areas

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### **Background**

In January 2011 a member of the LinkedIn group “European Union Regional and Development Participants” posted a comment titled “ICT in rural areas” which resulted in an interesting exchange. The context was a proposed INTERREG IVC project that would build a high-speed broadband (HSB) network in rural areas across Europe.<sup>2/</sup> The goal would be to use this towards supporting local economic activities. The project would, among others, help participating countries and regions in preparing and implementing relevant HSB policies. The note argued that this would be a most strategic task for Europe and its rural areas. It went on to outline some of the complexities involved in such an undertaking.

I submitted a comment where I supported such a project, while at the same outlining key problems it would meet with, as seen from my perspective and experience as a social scientist, and based on a long-time concern with the connection between Information and Communication Technology (ICT) and development (sometimes referred to as “ICT4D”). The comment is included below, revised and enlarged.

### **Introduction**

The ideas presented are certainly important and relevant, and the comment presents several key issues and complexities that will have to be addressed. I appreciate, in particular, the approach of opening this up broadly to all categories of stakeholder that have an interest in this, as located in the public sector, the private sector and civil society in the countries concerned. The point of departure is to a large extent determined by my: (1) Training as a social anthropologist and (2) Experience with how the use of ICT in development cooperation plays out at the local level, in countries where I have lived and worked in Africa, Eastern Europe, Middle East and South Asia.<sup>3/</sup> In Eastern Europe I have worked, in particular, in Bulgaria, Romania and Serbia.

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<sup>2/</sup> INTERREG IVC provides funding for interregional cooperation across Europe. It is implemented under the European Community’s territorial co-operation objective and financed through the European Regional Development Fund (ERDF). The Operational Programme for INTERREG IVC was approved in 2007 and will last until 2013. The overall objective is to improve the effectiveness of regional policies and instruments. A project builds on the exchange of experiences among partners who ideally are responsible for development of their local and regional policies (adapted from: [www.i4c.eu](http://www.i4c.eu)).

<sup>3/</sup> The term ICT as used here refers to a wide range of technology-mediated forms of human communication. More specifically, however, the key ICT technologies in terms of diffusion and impact are: the Internet, email and cell phone.

## Issues

My comments are organized in a number of key concerns or issues, all of which are related in a number of ways. Their order of presentation follows a clear logic in that the first group of issues analyze the present situation and lead to formulation of questions that, in turn, are built upon and answered in the second group of issues.

1. *Technology and development.* Development projects and, more generally, investment operations that involve application, use and/or dissemination of advanced and complex technology tend to be driven primarily by a concern with technology. Furthermore, they primarily target the macro-level in recipient countries and relate to stakeholders at this level, including in cases where the end-users or beneficiaries are people in rural areas.

Question: How to structure such projects around broader inter-disciplinary approaches?
2. *Supply vs. demand.* The present idea for a project would appear to be supply driven. That is, it is not clear that there is an actual demand, particularly in the rural areas, and among a majority of people.

Questions: How to identify such demand? How to support or build it? How to build a project around it?
3. *Form vs. content.* There is a tendency in many ICT projects to focus on the form, that is, the mediating technology, and less on the content, namely the flow of knowledge and information that ICT facilitates. A common assumption is that, once information and knowledge is delivered, and is in the public domain, the job is done. Nothing could be further from the truth. Stakeholder analysis (originally developed by the World Bank) and network analysis (originally developed in social anthropology), can say a lot about what happens among the constituent members of networks, as well as in the interaction between networks and the surrounding society, and how to use this insight to streamline and optimize the functioning of networks.

Question: How to connect the form (ICT) and the content (knowledge)?
4. *Culture vs. technology.* I would like to make a plea for situating technology, including ICT, squarely within a cultural context, and since cultures vary the approach and process of applying ICT accordingly will have to vary. Accordingly, ICT should be understood as means for supporting, reconfiguring and reconstituting traditional and basic human communication, including in the form of 1-to-1 or many-to-many. The inherent danger in connecting modern technology, including ICT, and traditional culture is that technology easily changes the form and content of whatever it is that is communicated, and with it the context for interpreting and applying this knowledge. We must not forget that ICT is a product of Western(ized) societies.

Question: How to better connect ICT with culture (in particular as available in cultures that lie outside of the Western domain, and are more traditional)?
5. *Digital divides.* The term “digital divide” has broadened to refer to both differential access to computers (and hence the Internet) as well as to differential access to HSB. As such this term applies not only to relations between countries in the West and developing country economies. It is also evident in the relations between countries in the West and transition country economies. Equally important for the purpose of the present argument is a less noted divide, which I refer to as the “domestic digital divide”. In countries – whether developing or transition economies – that have embarked upon the road to modernization through use of ICT, a domestic digital divide is evident, often running along the lines of traditional urban-rural dichotomies. This divide covers also inequalities in the ability to use information technology.

Question: How to ensure that investment in ICT works to minimize the domestic digital divide instead of widen it?

6. *Knowledge is power.* ICT gives access to knowledge, which in turn may be transformed into power, that is, differential reputation and ability to influence. Power in turn lead to control of knowledge. This means there are real possibilities that ICT will lead to increasing differences between those that are informed and have knowledge, on the one hand, and those that are not informed and that do not have the requisite knowledge, on the other hand.  
Question: How to ensure that ICT contributes to a leveling of access to power and knowledge?
7. *Beneficiaries.* Who will the users and beneficiaries of HSB in rural areas be? My guess is that it will probably be rather few, and certainly initially. There is nothing inherently wrong with this. The concern that it raises, however, is who will get access, and whether there will be controls on access (including as caused by high costs together with low-end hardware and software).  
Question: How to ensure that access to HSB will be universal?
8. *Empowerment.* Speaking with reference to rural areas in Eastern Europe, it is not clear to me that the majority of the rural population understand the purpose of such a project, and how it will help and benefit them. This speaks to the need for a major consciousness-raising and empowerment program and agenda, to be delivered and achieved through, among others, training and capacity building.  
Question: How to program, organize and implement relevant capacity building?
9. *Civil society.* A particular characteristic of countries in Eastern Europe is the lack of trust between citizens (the rules), on the one hand, and politicians and bureaucrats (the rules), on the other hand. An equitable and democratic implementation of such a project would depend on high levels of decentralization, participation and transparency, together with ability, capacity and interest – on the part of the citizens – to associate formally. Civil society is incipient throughout most of Eastern Europe, and the above preconditions for a successful implementation of such a project, in terms of reaching its avowed goals, would depend on a better informed and organized civil society. At the same, it is important to consider also the reverse causality, namely that the appearance of projects of this nature can actually contribute to achieving such increased organization and awareness on the part of citizens.  
Question: How to understand the idea and societal category of civil society in Eastern Europe today? How to connect and network civil society and the public sector?
10. *Networks and networking.* I have built and maintained a number of networks, for specific foci and activities, a majority of them with a global coverage. These networks were originally or primarily human-driven and direct interaction in nature. Many subsequently evolved, through use of ICT, into networks based on a combination of virtual and direct interaction, including networks there are completely virtually based. Throughout, the focus has been on individual persons as key nodes that constitute the network (and not, e.g., computers and servers). It is likely that appropriate informal networks, consisting of stakeholders in civil society – ideally with involvement of stakeholders in public sector and private sector – will be formed and become active parties to such a project.
11. *Capacity building.* Capacity building will be crucial, including why this HSB project comes, what it means for each country and its citizens, and how to utilize and benefit from it. Furthermore, such capacity building may also need to address possible social organizational changes in civil society at the local level, as well as in civil society's relations with the public and private sectors. Finally, future beneficiaries or users of HSB will have to understand the why, what and how of ICT as a tool or means in connection with rural development, in order to be able to assess it, accept it and buy into it. How to contextualize, structure and organize relevant capacity building to achieve this should be a key aspect of such a project. Equally important is when to deliver such training in relation to the project cycle, as well as who should be responsible for

delivering it. A key tool or instrument, towards getting to correct messages across, would likely be *social marketing*.

12. *Knowledge management*. In a certain ironic twist and an apparent contradiction, the very fact of the role of ICT when it comes to centralization of knowledge and power, at the same time represents a solution to how to address and change this. The answer lies in the idea of Knowledge Management (KM) which, in general terms, can be understood as comprising “a range of strategies and practices used ... to identify, create, represent, distribute and enable adoption of insights and experiences”.<sup>4/</sup> The fact is that throughout the world, as a result of the appearance of more and more groups of people with unique interests and agendas (as based in culture, ethnicity/race and religion), and in part fuelled by population growth, consensus approaches to governance become increasingly complex and hard to achieve. For politicians and the public sector, this means that decision-making and policy work take place in fast changing situations and tend to become less informed and predictable, and furthermore that the decision-making increasingly is taking place elsewhere, including by professional organizations and assorted experts and lobbyists. For citizens, this means that it becomes increasingly difficult to understand what is going on, what their place in society are and, as a consequence, to be able to inform and influence decision-making processes that affect their lives directly as well as indirectly. In this situation, the predicament of these two stakeholder categories, as well as many others, can potentially be addressed and alleviated through use of ICT. In a situation of growing societal complexity together with a rate of information and knowledge production that is growing seemingly exponentially, there appears to be no other approach or tool that can address this. This technology and means of communication would appear to be the ultimate response to finding and using relevant information where and when needed, to find answers, formulate actions and plans, and provide the basis for speaking out and get involved. ICT thus promises to hold the answer of being a powerful leveling mechanism in today’s societies. At the same time, considering that many countries tend to become increasingly fragmented socially, the process of providing such integrating rationales and mechanisms (a process that, like democracy, is a permanent project) can be supported by ICT, through providing an integrating mechanism at a new macro-level. Access to knowledge and management of knowledge becomes ever more important, and this applies to all categories of stakeholders. A basic tenet of the methodology of stakeholder analysis (see issue no. 3) is to identify social groups or categories that have the largest needs while at the same time having the least ability to influence decision-making to their advantage.
13. *Social media*. The emergence of an informed and organized civil society in Eastern Europe will largely take place from below, as connected with the younger generations’ different appreciation and assessment of their countries’ past and present political cultures and value systems, and coupled with a more open and positive approach to the outside world. This is already well under way in the area of environmental protection, due in large measure to lacking public sector and political priorities, coupled with a strong presence of international NGOs. A key factor in this process is Web 2.0 applications, or social media. In transition and developing economies there is an important relationship between social media, on the one hand, and the development of civil society, on the other hand. The new social media in effect takes on the role of connecting like-minded citizens, individuals as well as organized groups, in ways that the relevant nation states often are not able to, or else not interested in. There are also indications that it works the other way around, in that the needs and demands of an emerging civil society inform the usage and development of social media. Social media will without doubt play a key role in KM among

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<sup>4/</sup> Source: Wikipedia at [www.en.wikipedia.org/wiki/Knowledge\\_management](http://www.en.wikipedia.org/wiki/Knowledge_management), accessed on 2. February 2011.

civil society stakeholders in connection with this project, within as well as between countries. Likewise, social media has the potential of addressing the lack of communication and trust between civil society and public sector, and through leading to increased transparency it will hopefully contribute to increased communication and understanding between the two societal sectors.

14. *Social entrepreneurship.* The combination of several of the above issues, including networking, capacity building, KM and social media, may result in interesting cases of social entrepreneurship at local levels. Such individuals would see planned societal change – for example, as resulting from the proposed project – as opportunities to contribute to social change. In a sense, they would act as pivotal persons around local-level activities that would rise to the occasion of this project and contribute to preparing the ground for it through creating relevant social capital. It would be crucial for the project to interact with such social entrepreneurs.
15. *Strategic communication.* Consider the following scenario, which I submit is quite realistic: the proposed project would engage a very large and diverse number of stakeholders, located in public sector, private sector and civil society, in several countries, and that will have conflicting demands, expectations and ideas when it comes to project preparation and implementation. It follows that the project's management would have to be prepared for and engage in often delicate and sensitive discussions on how to address specific and often complex issues. Such strategic management and communication will take place with different stakeholders, including with: (1) Stakeholders on relevant day-to-day matters and achieving acceptable solutions with and for them, while at the same time not losing track of the project's longer-term strategic goals, (2) Project staff towards coordinating actions and (3) The outside world.

### ***Project management***

The overall management context for integrating the above issues – together with other aspects as available in, for example, economics, finance and technology – is project management. In finding the appropriate balance between the technological inputs and specifications, on the one hand, and the social and cultural arenas and concerns, on the other hand (a balance that will have to be continually assessed and possibly negotiated, in a process approach to implementation of the project), a crucial aspect will be *risk assessment*. Whereas technology largely is a known entity, this is not the case with the social and cultural arenas, where complexity of a multitude of known and unknown variables operate and interact, with synergies that often will be very difficult to predict.

### ***In the mean time ...***

In the mean time, what can users of the Internet do? There are a number of actions and that they can undertake and that will relieve the demand on the present internet infrastructure. These actions and activities operate at the level of the individual users. From their point of view the rationale for engaging in this is to ensure that the users and readers of their websites and blogs have timely and fast access. These actions can be formulated in the following guidelines.<sup>5/</sup>

- *No page larger than 25 Kb.* Design pages to load within 10 seconds over 20 kbps connections, which means 25 Kb becomes the maximum page size.
- *Reduce images.* Good design is possible without lots of images. Use Cascading Style Sheets (CSS) for layout and roll-overs instead of images. Make sure the site is usable if images are turned off in the browser. Optimize the images to a fraction of their file size.

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<sup>5/</sup> Adapted from Aptivate's "Web design guidelines for low bandwidth", at: [www.aptivate.org](http://www.aptivate.org).

- *Have good site structure.* Provide easy navigation. Do not make users load unnecessary pages. This is annoying for all users, but really frustrating for users with low bandwidth connections.
- *Use style sheets.* Using CSS for layout is more efficient than using tables. Avoid using JavaScript. Avoid embedding style rules within the page.
- *Minimize hyper-text transfer protocol requests.* All images, CSS files, JavaScript files and HyperText Markup Language (HTML) pages require a separate Hyper-text Transfer Protocol (HTTP) request. Too many requests will add delays to page loading.
- *Use compression.* By enabling compression on the web server pages can shrink by as much as 50 percent.
- *Be cache-able.* Allows browser to keep a local copy, that is, a “cache”, of the pages.
- *Portable document format.* Portable Document Format (PDF) files should be optimized for low bandwidth. Such files can be optimized through using vector -based graphics and minimizing the number of fonts. The Adobe Acrobat program has an option for reducing files sizes.
- *Put useful items first.* Put main navigation items at the top of the page so they load and display first. Make your pages useful even before they finish loading.
- *Show link sizes.* Do not force the user to download large files. Always link to them, and if they are over 75 Kb state how large they are.

## **Conclusions**

These comments and ideas are intended as a contribution to identifying the complexities – as well as their interactions and resulting synergies – that need to be addressed, in an inter-disciplinary and cross-cultural manner, in order to realize a project like this with a sustainable outcome.

The increasing use of the Internet, especially when it comes to social media, is a bottoms-up groundswell that will necessitate increases in HSB and that will drive investment in such technology (this will in turn lead to further increase in the use and role of social media). Importantly, for a successful out-come this process should be understood in large measure as being demand driven.

More generally, I submit that the above, in particular the list of issues, have a general applicability when it comes to the relationship between technology and culture that goes well beyond the proposed project.<sup>6/</sup> They are applicable to any ICT project that aims to provide or contribute to goals of achieving real and lasting development for local people. Engineering approaches to achieve development will of necessity have implications for fundamental aspects of the overall organization of society at both local and macro-levels. Beneficiaries and other project stakeholders will, to a larger or smaller extent, need time to assess and adjust, at individual as well as at collective levels. In a sense then, technical engineering of this type and at this scale will often have to be accompanied by concomitant social change, sometimes approaching what is referred to as social engineering.

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<sup>6/</sup> Suitably operationalized, this list of issues can be understood as inputs into a general decision-making approach or model. Also, suitably operationalized, they can possibly be understood as inputs into a rational choice theory.