Open-Source-Software strategies in development cooperation

Martin Voß\(^a\) and Prof. Dr. Hans E. Jahnke\(^b\)

\(^a\) Humboldt-Universität zu Berlin, Institute of Economic and Social Sciences of Agriculture, Department of Development Planning and Project Management, Philippstr. 13, 10115 Berlin, Germany.
Email martin@mvoss.com.

\(^b\) Humboldt-Universität zu Berlin, Institute of Economic and Social Sciences of Agriculture, Department of Development Planning and Project Management, Philippstr. 13, 10115 Berlin, Germany.
Email HEJahnke@agrar.hu-berlin.de.

Abstract

With the still increasing globalisation and the integration of local markets into the global economy, information is more than ever a key factor for success. While computer based information systems are common practice in more developed countries, they are still an exception in other parts of the world, particularly remote rural areas in developing countries.

Bridging this divide can not be reduced to the mere provision of internet access. Instead effective solutions like business information systems with localized content and specialized databases need to be developed.

Obviously these solutions do not only consist of information and content. A well suited IT infrastructure and strategy is the basis for such systems and necessary for a sustainable development. Coming from a non IT background many actors of development cooperation focus on the content and information part. It is an interesting point to determine how many efforts are spent on the underlying IT strategy and architecture.

On the other hand the UN, especially the United Nations Conference on Trade and Development (UNCTAD) specifically recommends the usage of Free/Libre and Open Source Software (FLOSS) for development.

With this background we are analysing the awareness of different actors and agents in the development communities – including those in rural areas - about the importance of IT strategies in general and, more specifically, about Open-Source-Software strategies.

ICT in development cooperation

Information and Communication Technologies (ICT) have gained increased attention in development cooperation. At the same time FLOSS not only became a widespread subject of international research but also expanded its commercial relevance.\(^1\) Public administrations and private companies intensified the use of this technology and an increasing number of firms are based on Open-Source-Software business models.

\(^1\) ‘Open-Source-Software’ and FLOSS are used as synonyms in this article.
Information and communication technologies have been discussed and researched intensively during the last couple of years as an instrument and enabler within development cooperation. Hard- and software solutions to integrate rural areas have been implemented in many parts of the world. By means of computer technology the increasingly global product chains are becoming more manageable by all participants. E.g. farmers in Sri Lanka are able to gather information about world market demand and prices in local business information centers. This transparency and possibility for active participation enables economic growth and poverty reduction.

Recent models of development theory emphasize the importance of growth and empowerment for sustainable development. Stern et al. suggest a two pillar strategy to realize these objectives (see Fig. 1). Improvement of the investment climate is one cornerstone including the main topics infrastructure, macroeconomic and trade policies as well as governance and institutions. The second pillar emphasizes empowerment, covering internal and external constraints as well as individual capital. Stern defines ‘empowerment’ “at the individual level as having the ability to shape one’s life.” These abilities consist of personal endowment (individual capital), the perceptions of an individual’s role (internal constraints) and the social environment influencing the capabilities to shape one’s life (external constraints). The reasonable use of ICT may support each of the pillars modules which in turn results in enhanced growth and empowerment rates (Fig. 2). This is obvious for the improvement of the investment climate. The appropriate application of ICT can result in a more efficient government as well as in support of transparency and in reduction of corruption. Appropriate use of ICT may also increase empowerment. An often given example for the impact of ICT on the individual capital, especially within rural areas, is through distant learning utilizing web based learning systems. Virtual communities and networks can yield as example for the reduction of internal constraints. External constraints are closely related to the concept of inclusion and ICT measures also include virtual communities and networks.

Weigel et al. summarize the requirements and prerequisites for the successful application of ICT for poverty reduction in development cooperation. The key issue is that the technology has to be applied with the poor at the center of the efforts. The best results are obtained if the ICT usage is

---

Fig. 1: Development Strategy Components (Stern et al.)

Fig. 2: Influence of ICT on Development Strategy Components

---

2 E.g. “Business Information Services Promoting Trade of Information”, www.bis-asia.net
correlated with other policies and resources. Finally the local ownership and networking are key points for effective and sustainable programs.

**FLOSS in development cooperation**
The relevance of FLOSS has been growing in the recent years. Software for all ranges of computing, from embedded systems to grid computing, became available and more user friendly. As one result FLOSS got into the focus of public and private interest. Public administrations all over the world adopted FLOSS technologies. New companies emerged with Open-Source business models while others shifted towards this technology. The amount of research spent on topics around Open-Source-Software can also be seen as evidence for the public and academic interest.

At the same time organizations like the UNCTAD and the World Bank have suggested the application of FLOSS in development cooperation. While it is important to recognize that Open-Source-Software “is but one part of an ICT strategy” (Dravis 2004) it provides the opportunity to benefit not only in a mere technological sense. Software can also be seen as “an enabler for the next phase of economic growth” and applying Open-Source-Software allows transferring decision-making to the developing world. Combined with the freedom to inspect the source code FLOSS usage may result in a reduction of external constraints in terms of Stern et al and as a result increases empowerment.

---

3 E.g. European FLOSS report: “Free/Libre and Open Source Software: Survey and Study” and opensource.mit.edu as a starting point for further references


5 Weber “The Success of Open Source”

---

**Fig. 3: IT-Strategy Map for Developing Countries, (Weerawarana et al.)**
The FLOSS strategy map outlined in Fig. 3 additionally demonstrates the value creation within the economy through the three key drivers: business opportunities, reduction of necessary investments and greater efficiency and effectiveness of government.\(^6\) The successful implementation though depends on collaboration between the government, universities and the private sector. Especially in the early phase it is advantageous if the government promotes and advocates Open-Source-Software application and capacity building is backed by universities and educational institutions. The result however would be the emergence of market driven business opportunities. It has to be stressed that the proposed actions fully support the generic strategy for development suggested by Stern et al.

**Actors and Agencies of development cooperation**

As highlighted by the strategy map an IT policy framework or strategy including FLOSS may benefit a country through increased value creation. Furthermore such a strategy has the potential to increase growth and empowerment rates because all objectives outlined in the map support the development strategy components as they have been suggested by Stern et al.

Many countries at an intermediate state of development, with China and Brazil as prominent examples, have taken these ideas into consideration and introduced IT policies promoting and fostering the application of FLOSS. The Brazilian government has established a policy which promotes Open-Source-Software in federal ministries, agencies and state enterprises as well as in academic education. Like Brazil China is heavily relying on Open-Source-Software and is even developing own, localized Linux distributions.\(^7\) On top of that many African countries, with South Africa among them, are taking the same path.\(^8\)

With this in mind it is becoming increasingly important for actors and agencies of development cooperation to have appropriate skills and strategies. We are analyzing the awareness of the stakeholders about ICT and software in general but also about Open-Source-Software.

**References**


Stern, Nicholas; Dethier, Jean-Jacques and Rogers, F. Halsey “Growth and Empowerment, Making Development Happen”, MIT-Press, Cambridge, 2005


---

\(^6\) Weerawarana “Open Source in Developing Countries”

\(^7\) Grassmuck “Freie Software – Zwischen Privat- und Gemeineigentum”

Weerawarana Sanjiva and Weeratunga, Jivaka “Open Source in Developing Countries”, Swedish International Development Cooperation Agency, Stockholm, 2004, 
http://www.sida.se/content/1/c6/02/39/55/SIDA3460en_Open%20SourceWEB.pdf