

Innovating in sectoral governance and development with ICT: Conceptualising the ICT Roundtable process

Nicolaas MOENS

International Institute for Communication and Development
The Hague, The Netherlands

and

Jacqueline BROERSE

Athena Institute, Vrije Universiteit Amsterdam
Amsterdam, The Netherlands

ABSTRACT

Although ICT clearly has the potential to contribute meaningfully to sustainable development and poverty alleviation, appropriate application of this technology is still very limited in many developing countries. However, participatory approaches to ICT development are quite promising for generating more appropriate ICT applications. In this paper we focus on a specific participatory approach, the ICT Roundtable process (RT process). Through the RT process relevant prototypes of ICT applications are generated and embedding of the innovation in the system is enhanced. The aim of this paper is to systemise the experiences of the trial-and-error process of developing the method of the RT process. We identify the structure and crucial principles of the RT process by analysing case studies and intervision sessions. The identified principles include: system thinking; multi-stakeholder involvement; participation; ownership; dialogue; learning; facilitation and organisation; step-wise approach; and networking. The conceptualisation of the process will allow the development of an evaluative framework to test the results and to improve the RT process.

Keywords: Information and Communication Technologies, developing countries, sustainable development, Roundtable process, multi-stakeholder participation

1. INTRODUCTION

It is generally acknowledged that Information and Communication Technologies (ICTs) are relevant for sustainable development and poverty alleviation in developing countries, since they can reduce cost and time of communication, improve management, and increase exposure to knowledge and information [1,2]. Although the influence of ICT starts to develop in developing countries, the capacity of most countries to locally realise the development and application of this technology is very limited. Failure seems to be the dominant theme for ICT use in developing countries, with the exception of a few countries like India [2,3,4,5]. A fear exists that a large number of countries will miss out on the digital age.

This concern and the increased awareness of the importance of ICT as a tool for development have resulted in a more pro-active approach of national governments and donor agencies. The 'Bridging the Digital Divide' initiative and the publication of the UNDP Human Development Report 2001 'Making technologies work for Human Development' have stimulated the debate. In 2002, the 'Building Digital Opportunities' program, funded

jointly by CIDA-Canada, DFID-UK, DGIS-Netherlands, and SDC-Switzerland, has actively advocated for specific attention to ICT for development. Increased attention is also found among other development agencies in the North. The key questions are: what approach to use and what kind of theories and tools are helpful?

Successful implementation of ICT projects in developing countries is far from easy and straight-forward. Linear, top-down approaches to innovation, usually applied by donor supported sector development, have rarely resulted in sustainable development and adoption of ICTs. Bunders *et al* [6] point out that, in a development context, many failures in innovation occur as the fit between technological design, user practises and the socio-economic context is not satisfactory. The continuous and persistent problems with sectoral management information systems for health and education in developing countries are notorious examples [5]. An information system is not only technological, but incorporates social and organisational factors as well. ICT-vendor or aid-donor-driven information system projects tend to transfer attitudes, values, social, political and cultural structures that do not suit local requirements [7]. Various evaluation studies revealed that explicit attention needs to be paid to the socio-cultural, political and institutional context in which the ICT application has to operate, and that users need to become active participants throughout the project [8].

To respond to the above mentioned concerns the question is what approaches are possible to achieve the introduction and use of ICT in a sustainable way and relevant to the local needs? In answering this question, reference is often made to participatory approaches in order to incorporate the knowledge and perspectives of the stakeholders concerned in ICT initiatives. Over the past ten years, various participatory approaches have been developed in Europe and the US, and have been put into practice [9].

However, Putri [9] states that there has been limited research and debates over participatory design approaches and techniques in the context of ICT in developing countries. A scan on participatory approaches to ICT development in Mali and Tanzania learns that these approaches are little practised. Participation is often limited to a one time workshop or a short trajectory. The key challenges that participatory approaches could tackle more effectively include to make information systems and ICT applications in general, operational, reliable, performing and sustainable, to generate local relevant contents and to contribute to poverty reduction [10].

This paper focuses on one of the participatory approaches that have been developed in the field of ICT for development, the so-called ICT Roundtable process. It can be described as a donor facilitated sector-based strategic approach. The RT process is developed by the International Institute for Communication and Development (IICD). It is used to initiate and mainstream ICT at sector level, and is applied in nine countries in Africa and Latin America. Examples include the set-up and sustainable operation of municipal e-Governance, ICT policy development in the field of education and health, locally developed ICT applications and contents generation initiatives like Q&A services, (web-enabled) management and governance systems, as well as the development of community-based rural access points. The results point to a significant departure from the more common disappointing results in development co-operation.

The aim of this paper is to conceptualise the underlying essential features or qualities of the RT process and to review its consistency, because the RT process is largely developed through practical experience and intuition. A proper conceptualisation will enable to sharpen the approach and to provide a ground for evaluating its achievements.

2. RESEARCH METHODOLOGY

The research approach can be characterized as a multiple case study analysis. Six cases –ICT projects in which the RT process was applied– were selected for in-depth analysis. The six selected cases are situated in comparable African development settings, and include the service sector education and health as well as the market sector. The cases are: (1) education in Tanzania, (2) economic development (especially agriculture and tourism) in Uganda, (3) agricultural marketing in Ghana, (4) education in Zambia, (5) agricultural development (especially marketing) in Burkina Faso, and (6) agricultural development in Mali. The findings of these cases are verified with twenty other cases –as far as possible– at different stages of development and for the different process interventions used.

Main information sources were:

- Internal documents and discussions related to the cases studied
- Field experiences and in-depth interview sessions on the six cases
- Feedback from participants
- Participatory observation as the first author became gradually responsible for the design of key parts of the RT process and from that perspective searched for the main design variables
- External feedback through evaluation reports on the fulfillment of IICD's mandate and the relevance of its approach.

An inductive approach in line with the Grounded Theory [11], was followed to develop propositions on the possible underlying principles. The Grounded Theory approach requires the formation of categories to which incidents can be related. The formation of categories was based on internal documentation, participatory observation and existing theoretical insights. The constant comparison of incidents in the same category builds the theoretical properties of that category [12]. These categories were evaluated by comparing them with case study data and by interview.

The outcomes of the RT process were only assessed roughly as this would go beyond the scope of this paper. The purpose of this research is to develop a framework for evaluation of the RT

process. Data is checked on internal consistency. This inductive approach is concluded by comparing the results to findings from literature.

3. THE ROUNDTABLE PROCESS

In 1997 the IICD was established by the Dutch Ministry for Development Co-operation as an independent non-profit foundation to assist developing countries to realize sustainable development by harnessing the potential of ICTs. In the search for a method to bring about relevant policy and projects in a participatory and locally owned way, IICD contacted Global Business Network (GBN). This group of ex-Shell managers and strategists used scenario development as a tool for strategy development. IICD, GBN and a third sub-contracted group, Whole Systems, developed jointly a workshop called the ICT Roundtable workshop. It consisted roughly of three blocs: scenario development, prioritization of leverage areas for change and project development. This was the beginning of the development of a full RT process.

The aims of the RT process are to stimulate innovation processes, to generate prototypes of ICT applications relevant to the system considered, and to assure embedding of the innovation in the system. To this is added an objective of poverty reduction in view of the mission of IICD. The expected outcomes for the sector concerned include:

- ICT applications molded to local needs
- increased speed of innovation processes
- a conducive environment for the use of ICT
- impact on poverty alleviation.

The outcome of impact on poverty alleviation is searched for by including representatives of the 'poor' in the RT process.

The RT process can be conceived as a string of interventions alternated by individual activities of prototype owners. A prototype is an early and typical example of a new ICT application in the local context. It is the most visible part of the innovation and a way of testing ideas and learning. Each intervention can be conceptualised in terms of the method(s) used and the guidelines for their application. Each method is based on one or more principles. A principle reflects a basic assumption and standard to which a method has to comply. The principles will be described in the next section. The RT process consists of 35 interventions grouped into three cycles:

1. preparation and RT workshop
2. prototype development and implementation, and
3. embedding or integration within the local context

(see table 1). The RT process is adapted to the local situation. Therefore the three cycles and the 35 steps are an ideal-type only, though it seems that the variance is rather limited in practice, especially for the first cycle.

Table 1. Main steps in the ICT Round Table Process

Note: Ideal type as defined on current practises in September 2005
The steps might overlap or run in parallel over a longer period of time

Development Cycle 1: RT multi-stakeholder workshop (in detail):

(a) Preparation:

- 1 Reconnaissance theme
- 2 Initiation of a steering group
- 3 Demarcation theme
- 4 Selection of participating organizations and participants

- 5 Development reference report
- 6 Preparatory workshop/seminar for participants.
- (b) RT workshop
 - 7 Analysis current situation
 - 8 Scenario development
 - 9 Visioning
 - 10 Analysis of sectoral leverage areas for change with ICT
 - 11 Idea generation
 - 12 Setting priorities
 - 13 Prototype identification
 - 14 Diffusion of results of RT workshop

Development Cycle 2 Prototype development and implementation (summary):

- Engage organization to commit to (prototype development) process
- 15 Coaching of prototype owners
- 16 Workshop on project formulation (only in two cases)
- 17 Selective support by experts
- 18 Workshop on basic ICT skills
- 19 Workshop on ICT aspects of prototype development
- 20 Regular meetings on progress, technical issues
- 21 Peer review of project document
- 22 Lobbying for co-financing
- 23 Contract negotiations
- 24 Team progress meetings and coaching
- 25 Awareness raising, training and some experimenting within project and direct environment.
- 26 Networking activities aimed at info exchange and peer learning
- 27 Lessons learnt sessions (focus group meeting)

Development Cycle 3 Integration (also called embedding)(summary):

- 30 Networking to support policy participation
- 31 Sector policy development
- 32 Project review
- 33 Reformulation of project / formulation for up-scaling/replication
- 34 Formal integration into the strategy of an organization and its structure
- 35 Network events for knowledge sharing

The process intervention can be conceptualised as a sequence of cycles as depicted in Figure 1. The first development cycle is characterised by various preparatory activities guided by a steering committee, and a RT workshop with as major parts scenario development [13], definition of leverage areas for change and identification of prototypes. Scenario development is experienced as a ‘strong’ method, as it very well combines a number of principles of the RT approach. The second development cycle focuses on prototype development and is marked by individual coaching, expert advice to prototype owners, and joint sessions for peer exchange and training. Lobbying and awareness raising might also be an important part. In the third development cycle the emphasis is shifted to policy making and organisational and institutional development to enhance up-scaling. The methods of intervention, especially during the first development cycle, are well spelled out. The methods of the second development cycle need further refinement. For the third development cycle we are still experimenting, but on-going interventions seem promising. In Box 1 an example is provided of the RT process on education in Tanzania.

The RT process has been developed through trial and error. For example the first roundtable focused at national level with the intention to generate policy and projects across sectors. It was split into two parts, with a pause of several months in-between. This turned out to be costly and less effective. Working with a champion turned out to become easily too political or too ‘bossy’ or ‘patronage’, thereby reducing ownership. Later on also the need for a proper preparation was recognised and preparatory workshops/sessions were introduced.

The emphasis on national level was less effective and the focus shifted to sector or sub-sector level. Discussions became more focussed and in-depth. Also the prototypes became more a kind of portfolio relevant to the development of the sector. In addition, the passage from scenario thinking to leverage areas and the identification of actions was smoothed. ICT was abolished as an important subject in scenario building and more attention was given to the main constraints and potentials of the sector. ICT was introduced as a means to help to realise the main leverage areas. The RT workshop itself was brought closer to the people by working with a national co-facilitator instead of a team of expatriates only.

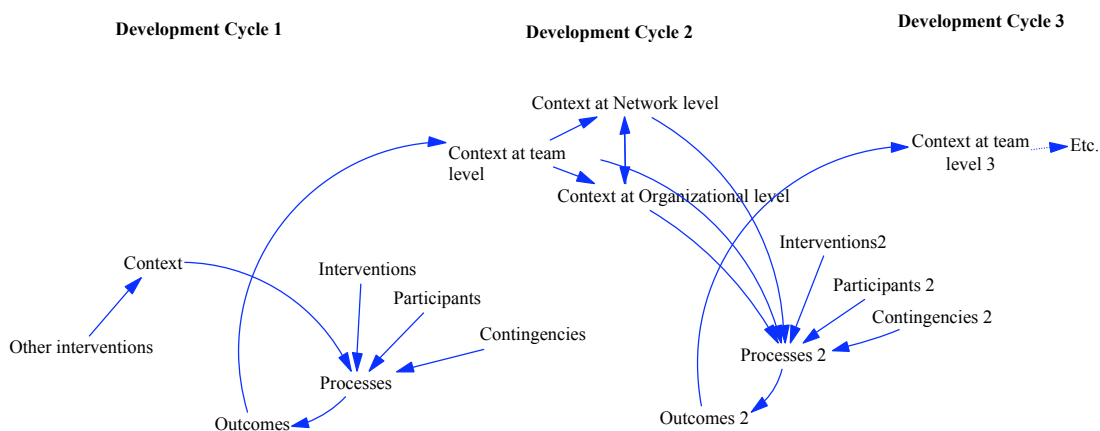


Fig. 1. The three main cycles of the RT process: RT workshop, development of prototypes and integration.

Box 1 The RT process on education in Tanzania

In 2002 the RT process started with a multi-stakeholder event in which students, teachers, headmasters and representatives of educational institutions and the Ministry of Education and Culture came together in the RT workshop for four days. Participants informed one another about developments in the educational sector, and subsequently developed scenarios on the future of the sector. Thereafter leverage areas for change were defined. The participants subsequently generated ideas on useful ICT applications in education. Ideas were discussed and the best were selected. Teams made up of one or two organisations elaborated their ideas and presented them plenary. In total 11 annotated prototype ideas were generated. The process aroused energy and enthusiasm among participants. This was still mentioned by participants one year afterwards.

After the RT workshop some training sessions of two to four days were provided for the same participants; firstly on general ICT skills, and secondly on building –small parts of– an ICT prototype (e.g. web sites, databases and multi-media teaching materials). A short course was given on project formulation as well. Project teams further developed the ideas generated during the RT workshop. These ideas took the shape of ICT projects geared at service delivery (e.g. publication of education materials on the web, or websites for information dissemination or data collection). These projects were small scale; this made learning easier and less risky. After some time, up-scaling and revision took place. Some actions identified were related to policy development, such as ICT for secondary schools.

IICD provided assistance to the project owners and their teams through coaching, training and expert advice to develop the project and policy ideas into action plans. Assistance was also provided in finding funds for these usually small projects, referred to as prototypes, ranging generally from US\$ 40 000 to US\$ 120 000. To enhance ownership, co-financing was preferred, although often only time and existing facilities could be offered by the owner. Funding for these prototypes came from external donors or IICD partners and IICD seed funds. IICD monitored and coached during implementation. In conducting this program, IICD collaborated with BDO partners (Bilateral Donor Organizations) and NGOs (Non-Governmental Organizations).

Networking events were organised regularly to exchange experiences on prototype development, to exchange relevant ICT developments, to discuss or develop joint initiatives (promotion, lobbying, etc.), and to provide feedback and lessons learnt extracted from prototype owners and end-users. This networking was completed by more general sessions organised by a local platform, aiming at the exchange of ICT for development in general. During these sessions, ICT projects of all sectors were highlighted.

Out of the 11 annotated prototype ideas, ten were formulated. Political factors and a change in donor policies made that only seven were implemented. Six prototypes were implemented in the course of 2003/early 2004 and all of them are still operational in 2006. Step-by-step they become part of the regular educational system. The seventh prototype deals with an effort to develop an ICT strategy for secondary education interactively. It resulted in a draft white paper accepted by the Education Authorities early 2006. The prototypes represent most of the experience with ICT in education in Tanzania up to now.

Also the process of prototype formulation during and after the RT workshop was streamlined and better integrated with training and network events. Gradually the attention shifted to

ICT policy development and the up-scaling of the prototypes and their integration in the sector. More speed and momentum was built into the process.

4. EMERGING PRINCIPLES

Based on the experience with the different cases, a pattern of underlying principles can be observed. Defining these principles is key to evaluating and improving the RT approach. The case analyses and intervention sessions point to nine principles on which the RT process is based: system thinking; multi-stakeholder involvement; participation; ownership; dialogue; learning; facilitation and organisation; step-wise approach; and networking. These principles are intertwined. Below they are listed and elaborated one-by-one.

System thinking

System thinking is central to the design and implementation of the RT approach. System theory is a general and broad approach [14]. It underlies social-constructive approaches to change management. In these approaches social change is conceived as a complex process and an outcome of the interaction of social, cultural, political, economic and technological influences, with a priori the impossibility of defining a sole driving factor. System theory thus provides a holistic methodology. It enables the various stakeholders involved to make sense of their environments, the events and their actions, and to stimulate learning. It allows the development of individual or shared strategies related to innovation. This is even more important in an environment with stakeholders from strongly different cultural, political and economic backgrounds as is often the case in a low-income setting.

ICT is explicitly perceived in the RT process as a tool and not an end in itself. System thinking helps in finding meaningful applications. It is used in several ways and at different stages. Firstly, it is used in the design of the RT process by considering the system boundaries and the main actors to be invited; the combination of multi-stakeholder and conversation means ‘you bring the whole system into the room’. Secondly, it is used during the workshop through the tool of scenario building and the definition of the leverage areas, which generates the portfolio of prototypes. A nice example of the strength of scenario development as a system simulation was in Ghana as a scenario including elements of poor governance was developed. Someone suddenly realised its meaning clearly and said a bit panicked; “We have seen this before!”. System thinking is also the leading tool in guiding inquiries in the network.

Multi-stakeholder involvement

The multi-stakeholder character is maintained throughout the process. It starts by consulting and inviting the key stakeholder of the system into the RT workshop. Multi-stakeholder involvement is highly appreciated as it provides a better understanding of one another’s role, particularly as some are end users of applications. It also complements knowledge, and decisions are better informed, since all relevant points of view are brought up.

The importance to have all relevant actors involved in the process is illustrated well by the following case. During the RT workshop on agricultural marketing in Ghana, the marketing ‘madams’ were absent. These women largely dominate the market as middlemen. Due to some practical problems they could not participate. The facilitator did not insist as he feared that too much conflict might be negative for trust between the participants during the workshop. During the RT workshop the

controversial issues related to the marketing ‘madams’ were raised, but the ‘sparkle of confrontation’ missed out. During another RT workshop the facilitator found himself separating parties (representatives of cooperatives and private traders) ready to start a fight. Multi-stakeholder events bring in the confrontation between different interests. This has to be managed. The facilitator plays a mediating role and maintains transparency.

If the participants of the RT workshop are brought together regularly, a network emerges as demonstrated by education in Tanzania, where prototype owners even tried to join in a consortium.

Participation

The RT workshop and other non-training events are largely participatory. Participants refer to the process as ‘extra-ordinary and extremely participative’, especially the RT workshop¹. Of course the facilitator influences through agenda setting: the choice of the theme and the organizations or persons to invite. However this is done in collaboration with a steering committee that comprises the most important actors related to the theme. Experience learns that the slightest manipulation or imposition and political agendas back fire. Openness on the own agenda as of the beginning is required and this agenda should be limited to the general results expected. During the preparation sessions of the workshop attention is paid to show examples in such a way that no biases are introduced.

Participation is required to elicit tacit knowledge, and to create ownership and networks. A main role of the facilitator is to assure that each participant speaks out and is heard. The right mixture of participants is therefore of utmost importance. It is a prerequisite for a ‘rich’ discussion. Many of the participants are decision-makers in view of their role as leaders, particularly their decision-making power, strategic insights and visionary capacity. Moreover they are capable to guide change. Senior staff brings in knowledge of operations and often are the project managers for the prototypes. IT specialists and subject matter specialists are usually a small minority.

However, the real concept of participation is about sharing power. The usual hierarchy is temporarily broken down and all participants are equal. The facilitator thus influences the status quo of the power distribution, albeit only temporarily. Real power change is caused by structural changes in the system as the relative position of the actors shifts and their inter-linkages increase. The ultimate meaning of the principle of participation is to accelerate institutional change so as to make the environment more conducive to producing generally desired results.

Ownership

Ownership relates to own responsibility and accountability of actors. It implies nobody decides for you. Generally this is considered normal. However the weak position many actors are in, or a ‘culture’ of real or perceived dependency, create strong dependencies. An example is a public school that might not feel free to use ICT on its own initiative without permission from the ministry, or leaves a gift of a box of books unopened for the same reason. This is why donors are not part of the RT workshop, even though participants ask for it.

Ownership often implies empowerment of less dominant actors. Empowerment is provided in the RT process through information, knowledge, coaching and inclusion in events. This

continues throughout the RT process up to the level of sector policy development. The support in working towards the development and implementation of a prototype is based on the fact that the owner and his team have the lead. Respecting ownership might mean that from a technical point of view a ‘less optimal’ solution is developed. This tolerance for the imperfect and the problems that might occur according to the ‘mental map’ of the facilitation team is a permanent tension. Emphasis on the principle of learning eases this tension.

As ownership is with each organisation, it is the facilitator who has to balance. Giving the ownership to one party only (e.g. in the case of Zambia) transforms ownership in dominance. Governance should be done progressively by the network. This means that the facilitator is relatively powerful in the beginning, but yields his/her power gradually to the network.

Dialogue

Another principle is conversation in the form of a dialogue. Dialogue contrasts with monologue (expert advice, lecture, etc.) and with debate, which is more perceived as a game of ‘ping pong’, as well as with imposition through structural measures. In dialogue people become observers of their own thinking, which is a basis for learning [15]. Becoming conscious and being capable are keys in the theory of change to being fully competent [16]. The principle of dialogue is applied throughout the RT workshop and in group meetings thereafter. Expert sessions might occur during formal training sessions, but the tendency is to move to training through hands on problem solving. Dialogue is also the main tool in coaching of the individual owners and their teams by the IICD country team.

The principle of dialogue runs the risk of being disturbed in case of smaller and weaker organisations. Their dependency on the facilitator might be strong, which results in a skewed relationship from a power perspective. However, if not carefully managed by the facilitator, this weakens the sustainability of the prototype. A situation not desired by both parties. A clear point of tension arises around the contract negotiations in case IICD finances the prototype. This is partly solved by clarifying the financing ceilings as of the beginning and urging for a sober style in budgeting. If possible, this is reinforced by seeing other prototypes working along the same guidelines.

Learning

Participants often mention learning as an important aspect of the RT process. Different types of learning occur. Most important seems to be experiential learning. The development and implementation of the prototypes are key in this respect. Networking, dialogue and feedback foster social learning. Learning based on lecturing seems less effective. An important distinction in learning for innovation is between single loop learning to improve current practise, and double loop learning in which new insights are developed [17] and mental models² are changed. It are these mental models that influence –consciously or unconsciously– decision-making and hence the processes undertaken by an actor. In double loop learning the assumptions, insights behind current practises are put in question. Double loop learning is about change and innovation and it is this type of learning that is stimulated in the RT process –firstly affecting the individual mental model, and through the

¹ IICD internal evaluation report 2003.

² Mental models “include our beliefs about the networks of causes and effects that describe how a system operates, along with the boundary of the model (which variables are included and which are excluded) and the time horizon we consider relevant- our framing or articulation of a problem” [18].

individual the team, the organisation and ultimately the network. Scenario building is an important tool to this end.

Facilitation and organisation

Facilitation of the process is essential. It helps to focus attention, and allows participation and dialogue to be effective. The usefulness and quality of facilitation is clearly acknowledged in questionnaires after the RT workshop. Facilitation is needed to provide a 'neutral setting' in which the different actors can meet. The facilitator –being a 'neutral' outsider, yet knowledgeable in the field of ICT innovation– receives somehow naturally a mandate to bring parties together, to facilitate, and even to mediate between them. A personal impression is that actors appreciate to have a trusted party who bridges between them, because trust is often low in a development setting.

The RT process is organised by one and the same group as a core. People understand it is an organised string of interventions. This gives a sense of purpose and helps to get attention. People are often 'overloaded' with all kinds of operational concerns and activities, both in work and private. An organised string of events means attention to the innovation and the realisation of prototypes. Owners are used to a one time 'great workshop'. Their reflex is to go back to the usual, the so-called Hawthorn effect [19]. An effective way to break this natural scepticism or passivity, is to show prototypes that resulted from other RT processes; after all "Seeing is believing".

Step-wise approach

The RT process is a step-wise approach, reflecting a view on how to manage change. The RT is a gradual process. An idea might be large, but what it means and how it works develops gradually. Designing a large program as of the beginning has not occurred yet. This is only partly a consequence of the budget ceiling; it is mainly due to the way people are learning and develop a vision. Only when ideas/innovations are more mature –tried out successfully and can count on sufficient support– a large-scale program might be envisaged. At organisational level this is reflected by the need to incorporate it into the strategy and operations of the organisation. Similarly at sector level the innovation has to become part of the policies and current practises. For example after seeing a number of prototypes functioning, hearing the positive experiences of other countries, and having a few people working on this consistently, the Government of Tanzania is designing a large-scale program, with support of the Swedish Development Cooperation.

Networking

Networking as a principle means permanent interaction. It is required as innovations take place in networks [14,20]. Networking allows social learning and hence accelerates innovation. This clearly happens during the various workshops and meetings. In the annual evaluative session, participants indicate their appreciation of exchanging with other stakeholders, working together and 'staying in touch'.

Another aspect of networking is political agenda building. It is a balancing act not to end up in advocacy. This occurs easily as change will always hurt some people. A position of 'activism' and transparency based on national objectives, seems the clearest stance for the facilitator, especially if a cross-sectoral reputation is built up. The best way to manage agenda building seems to be to create special multi-stakeholder sessions on ICT policy development in which more organisations can participate than the network members only.

A third aspect is governance, by which the network becomes the main facilitator of further innovations. Within the network

leaders emerge. Driving forces for innovation are embodied in the actors who take the role of leaders and co-opt others in collaboration.

5. DISCUSSION

In this section, we compare our experiences to those found in literature on similar approaches. An important source for the reflection on ICT in developing countries is the development and implementation of large information systems such as health management systems, which involves multiple organisational layers, a great variety of actors, and a wide range of organizational activities [21]. Braa et al [22], who have done substantial work in the field of health management systems in developing countries, emphasize the network character and the need for an action research approach. The actor network theory, as articulated in their 'Networks for Action' approach, is promising as it highlights both coupled learning and the political dimension of information systems. As Braa et al [22] summarize "the notion of networks of action is intended to capture the dynamics of translating, aligning heterogeneous networks of routines, technology, and learning within politically contested terrains of opposing projects and ideologies in an effort to promote sustainable, replicable changes". (p.342)

The approach largely shares the same principles, though the emphasis of the 'Network for Action' is more on sustainability, scaling up and the creation of a political conducive environment for health management systems. This is a more narrow focus than stimulating ICT based innovation processes that respond to local needs and impact on poverty alleviation. Hence the principles of system based, ownership and dialogue are less articulated in the 'Network for Action' approach as compared to the RT process.

Looking outside the field of ICT for development more literature can be found on the conceptualisation of interactive and participatory approaches. Swaans et al [23] conducted, amongst others, a literature survey on participatory approaches to agricultural innovation and found that they show remarkable similarity in what they consider as crucial principles for success.³ These include the central role of farmers; commitment to a shared vision; enhancing trust relationships; facilitating social and experiential learning; knowledge integration; enhancing coalition building; capacity building; and scaling up, scaling up and institutionalisation. Several of these principles largely coincide with the principles identified for the RT process, particularly those related to system thinking, ownership and participation, dialogue as a way of 'knowledge integration', a step-wise approach, and learning.

Differences occur with respect to the following principles: coalition building, enhancing trust relationships and commitment to a shared vision. This seems to be due to the nature of the RT process and the pronounced multi-stakeholder character of the RT process. The RT process is geared to mobilise the initial energy of the stakeholders by developing prototypes that are relevant within the system. Consensus is searched for, but not at the expense of individual initiative. The underlying assumption is that for an effective innovation to take place, prototypes are required and knowledge internalised before a meaningful planning can take place that assures sufficiently national ownership. This is partly contradictory to the paradigm that only through planning and co-ordination beforehand,

³ Approaches may however differ in their emphasis and interpretation of the different principles.

effective development can result. Paradoxically it seems the other way around; initiatives taken by participants should reflect their own interests. An innovation means value creation; in general the lesser the number of people who share in it, the more value can be appropriated and the easier the development of the prototype is. Linkages with other actors, such as end users, regulators and suppliers, are required. Coalition building generally occurs in sub groups, but it depends on the specific sectoral and cultural setting. Also trust might be more difficult to enhance over time. Trust is helpful, but above a minimum level not essential. It turns out that the extent to which the interests of the actors are served, is more important. On this basis (temporary) coalitions emerge. Similarly shared vision is perceived as less important. In one RT workshop the shared vision was replaced by selecting common themes arising from the scenarios and to examine the possible role of ICT in it. People do not refer much to a shared vision. Mostly mentioned is the positioning of their own ideas and having the possibility to pursue it. The multi-stakeholder character is required for elicitation of knowledge, effective coalition building and optimising win-win possibilities, setting the stage for embedding and legitimating.

The RT process also has similarities with other 'system-based' approaches, such as Future Search [24]. Future Search also emphasises having the 'whole system' in the room, dialogue, learning, etc. However it puts more emphasis on searching common ground and personal networking, and seems to be weaker in experiential learning and developing ownership. The RT approach is also more explicit in the follow through.

In analysing the experiences also some principles were rejected. A point in question is 'resource provision', as IICD often provides its partners with some seed funds. Although it stimulates the RT process, it is not considered a principle, because in some cases owners search their own resources. Even without receiving IICD financing the RT process is appreciated by owners. As one participant said:

"It does not matter whether the project is realised, this learning experience is very important; doing something on our own".

Providing only some seed funds has the advantage that participating just for the sake of having resources is not interesting, as the own contribution –mostly in time and hence income opportunities foregone– is too large. However much less prototypes have been realised as scarcity of resources is a constraint. But the main constraint is institutional blockage as national and donor funds are only available for larger programs and embedded in the standing policies. Small and innovative prototypes do not easily fit that category. But ideally the RT process should lead to the re-allocation of resources.

6. CONCLUSION

We identified the general structure of, and nine principles underpinning, the RT process, which seem to be essential for its success. A particular characteristic of the RT process is the string of interventions structured in three development cycles that take place over a number of years. The whole process of building prototypes, capacitating staff, inducing organisational and management changes eventually result in institutionalisation. Policy development, as a means to assure integration at sector level and a more conducive environment, is a particular point of the RT process. As experience with the RT process grows there is a tendency to initiate and boost the integration process earlier and in parallel to prototype

development, depending on the experience in the sector with the ICT innovation.

Reviewing the principles, they can be grouped in two broad categories related to: (1) power and positions, and (2) learning and understanding the present and future context. These categories reflect the main processes involved in innovation [20]. We postulate that people pursue the RT process driven by differences in interests, and their tolerance or coping with uncertainty in the tension between the present situation and possible changes in future. Facilitation enhances and focuses these processes, and also provides the needed mediation, not only to limit negative aspects of conflict, but more importantly to avoid deadlocks. In conclusion, the RT process is instrumental in accelerating the ICT innovation process through idea generation, experiential and social learning, mediation and the creation of a structure, while the support through dialogue, system thinking and networking allows participants to make 'sense' of the new emerging reality, to integrate it in their strategies and enables institutionalisation and hence sustainability.

The nine principles largely correspond to other participatory approaches practised for agricultural innovation. Also change management approaches, like Future Search, are based on principles that largely correspond. It confirms the validity of the RT process. However the RT process has distinct features making it a separate approach. Provoking simultaneously innovation at organisational and sector level, using not a blueprint but a highly participatory approach enhancing local ownership, could be a highly valuable instrument in ICT innovation for development.

The conceptualisation of the RT process in this paper, allows the development of an evaluative framework to test the results and to further improve the RT process. First results of the RT process are promising, but it requires in-depth follow-up research.

7. REFERENCES

- [1] R. Mansell & U. When (eds). **Knowledge Societies; Information Technology for Sustainable Development**. For the United Nations Commission on Science and Technology for Development, Oxford University Press, 1998.
- [2] G. Walsham & S. Sahay, "Research on Information Systems in Developing Countries: Current Landscape and Future prospects", **Information Technology for Development**, Vol. 12, No 1, 2005, pp 7 – 24.
- [3] R. Heeks, **Failure, Successes and Improvisation of Information Systems projects in Developing Countries**, Manchester: University of Manchester, 2002.
- [4] S. Kirshna, S. & G. Walsham, "Implementing public information systems in developing countries: Learning from a success story", **Information Technology for Development**, Vol. 11, No. 2, 2005, pp.123-140.
- [5] H.C. Kimaro & J.L. Nhampossa, "Analyzing the problem of unsustainable health information systems in less-developed economies: Case studies from Tanzania and Mozambique", **Information Technology for Development**, Vol.11, No. 3, 2005, pp. 273 -298.
- [6] J.F.G. Bunders, J.E.W. Broerse & B.M. Zweekhorst, "The Triple Helix enriched with the user perspective: A view from Bangladesh", **Journal of Technology Transfer**, No. 24, 1999, pp.235-246.

- [7] R. Heeks, **Reinventing government in the information age, International practice in IT-enabled public sector reform**, London: Routledge, 1999.
- [8] M.J.L.J. Hagenaars, **ICT applications for farmers in developing countries, From technological project to social practise**, University of Maastricht, (Research plan for Dissertation), 2001.
- [9] S.K.Putri & E. Byrne & J.L.Nhampossa & Z.B.Quiraishi, "Contextuality of participation in IS design: a developing country perspective", **Proceedings of the eighth conference on Participatory design: Artful Integration Interweaving media, materials and practices**, New York: ACM Press Vol. 1, 2004, pp. 42-52.
- [10] UN Millennium Project, **Innovation: Applying Knowledge in Development**, Task Force on Science, Technology and Innovation, London: Earthscan, 2005.
- [11] A. Strauss & J. Corbin, **Basis of Qualitative Research: Grounded Theory Procedures and Techniques**, Newbury Park California: Sage Publications, 1990.
- [12] B.G. Glaser & A.L. Strauss, **The discovery of grounded theory: Strategies for qualitative research**, Chicago: Aldine Publishing Company, 1967.
- [13] K. van der Heijden, **Scenarios: The Art of Strategic Conversation**, Chichester: John Wiley & Sons, 1996.
- [14] P.G.H. Engel and M.L. Solomons, **Facilitating innovation for development, A RAAKS resource book**, Amsterdam: Royal Tropical Institute, 1997.
- [15] P.M. Senge, **The Fifth Discipline: The art and practise of the learning organization**, New York: Doubleday, 1990.
- [16] P. Hersey and K.H. Blanchard, **Management of Organisational Behavior**, Englewood-Cliffs: Prentice Hall, 1988.
- [17] Ch. Argyris and D.A. Schön, **Organizational learning; a theory of action perspective**, Reading: Addison-Wesley, 1978.
- [18] J.D.Sterman, **Business Dynamics, Systems Thinking and Modeling for a Complex World**, Boston: Irwin McGraw-Hill, 2000.
- [19] A. van Nistelrooij, **Werken met conferenties, Het collectief organiseren van team-based organisaties** (Working with conferences, Organising team-based organisations collectively), Utrecht: Lemma, 2000.
- [20] F.Janszen, **The Age of Innovation, Making business creativity a competence, not a coincidence**, London: Prentice Hall, 2000.
- [21] A.J. Salazar Alvarez, "Towards an interpretative integrative framework to conceptualise social processes in large information systems implementations", **Information Technology for Development** 10, 2003, pp.233-247.
- [22] J. Braa & E. Monteiro, & S. Sahay, Networks Of Action "Sustainable Health Information Systems Across Developing Countries", **MIS Quarterly**, (28:3) 2004, pp 337-362.
- [23] K.Swaans, J.E.W. Broerse and J.F.G. Bunders, Agricultural Innovation in Response to HIV/AIDS: A challenge for integrated and interactive approaches, **Journal of Agricultural Extension and Education**, 12/4, 2006.
- [24] M.R. Weisbrod, **Productive Workplaces Revisited**, San Francisco, Jossey-Bass, 2004.