Achieving empowerment in ICT for Development through community participation

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List of Abbreviations

ICT	Information and Communication Technology
IS	Information Systems
ICTD	ICT for Development
PRA	Participatory Rural Appraisal
NGO	Non-governmental Organisation
CI	Community Informatics

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Abstract

Community participation in ICT for Development is sometimes portrayed as a 'magic bullet', which will inevitably lead to better project outcomes and the empowerment of marginalised participants from the local community.

This research takes a critical approach to this participation, drawing on dual roots of participation in Development Studies and Information Systems, to explore the barriers that, in reality, prevent participation from achieving this potential and identifies factors that might ensure more success.

This work identifies issues and success factors relevant to participatory ICTD and its potentially empowering role for local communities; explores the relevance of these factors to the reality of ICTD projects in developing countries; and investigates the potential for producing an analytical framework or project design approach that could help practitioners in the field to produce more emancipatory and empowering participatory ICTD projects.

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Declaration

No portion of the work referred to in this dissertation has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning.

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1. Outline of research

1.1. Aim and objectives

Community participation in development projects is sometimes portrayed as a 'magic bullet', which will inevitably lead to better project outcomes and the empowerment of marginalised participants from the local community.

The aim of this research is to explore the barriers that, in reality, prevent participation from achieving this potential and to identify indicators that might ensure more consistent success.

Focusing particularly on ICT for Development (ICTD) projects in developing countries, the specific research objectives are:

- **To identify issues and success factors relevant to participatory ICTD and its potentially empowering role for local communities**

- **To explore the relevance of these factors to the reality of ICTD projects in developing countries**

- **To investigate the potential for producing an analytical framework or project design approach that can help practitioners in the field to produce more emancipatory and empowering participatory ICTD projects**

1.2. Use of terms within ICT for Development

Many of the key terms in the research aims above are highly contested and take different meanings in different contexts and with different people:

- ***Development*** can be taken to mean the 'modernising project' of bringing developing countries into the global market, or can apply to virtually any activity undertaken with the aim of improving people's lives.

- ***ICT for Development*** has a similar spectrum of meaning, plus the fact that Technology can be taken to mean provision of access (i.e. PCs/Mobiles), national infrastructure, ICT skills/training, tools to improve people's lives (Information Systems or Mobile Applications in Agriculture, Health and Education), or it can simply refer to ICT *policies*.

- ***Empowerment,*** similarly, has many aspects (personal, political, economic, social), is culturally specific, and covers a wide spectrum of possible meanings.

- ***Participation*** may mean highly political processes of community empowerment, or simply technical methods used to extract better product requirements from users. It has varying connotations of power, control and ownership –participation **in** someone else's project, or participation as control and defining one's own needs and goals.

- **Community** is, perhaps, the most complex and multi-layered term and this concept is discussed in Chapter 3.

  (Day, Khan & Hewetson, 2009; Avgerou, 2010; Gurumurthy & Singh, 2009; Masiero, 2011; Henkel & Stirrat, 2001; Walsham, 2005)

In the context of this research, a specific and practical version of each of these terms is outlined below:

- ***Development***: external development interventions – i.e. fixed-time funded projects or programmes delivered within a specific community or communities, by an external organisation (usually an NGO).

- ***ICT for Development:*** any development project or programme where technology is key (mobile applications, telecentres, ICT skills training etc.).

- ***Empowerment:*** the degree to which the people and institutions of local communities are empowered to take more control over technology-led development work

- ***Participation:*** the role taken by those living in communities where development work is happening, the extent and effectiveness with which they are involved in its planning and delivery.

1.3. Context: the roots of participatory ICT for Development

Participation features in many disciplines – those directly related to ICTD such as Information Systems, Human-Computer Interaction, Communication Studies and Development Studies (Avgerou, 2010) as well as wider areas such as Organisational Development, Interactive Arts, Urban Planning and Product Design. However, the two most prominent roots of ICTD, focused on here, are Development Studies and Information Systems Design.

1.3.1. Participation in Development Studies

The idea of giving local people 'ownership and control' over their own development (Francis, 2001) has its roots in Freire's ideas of conscientisation and the alternative development movements of the 1960s (Francis, 2001), as well as in community development activity of colonial administrations (Hickey & Mohan, 2004). It has had a surge in popularity since the 1980s, primarily due to the emergence of Robert Chambers' work on Participatory Rural Appraisal (PRA), and to its prominence in the body of work relating to gender empowerment.

The recent growth in popularity of PRA has been primarily a response to the perceived problems of 'traditional' development's "top-down, externally-imposed and expert-oriented approaches" (Cooke & Kothari, 2001).

PRA has been criticised on both technical grounds - the use of its methods and techniques, and political grounds - fundamental problems with the nature of group-decisions and its failure to engage with imbalances of power (Kothari, 2001; Cooke & Kothari, 2001). Similar charges have been lain at the door of participation in the developed world, sometimes seen as a way of 'manufacturing consent' of workers to management goals, rather than a way to genuinely empower workers (Janson & Cecez-Kecmanovic, 2003; Taylor, 2001).

1.3.2. Participation in Information Systems Design

In the developed world, participation has a similarly long history, becoming prominent in work around 'human relations' in the 1930s, and becoming a mainstream part of Human Resource Management in the last 20 years. In the ICT/IS sector specifically, Participatory Design emerged primarily out of Scandinavia and the UK in the 1960s.

Participatory Design was originally designed specifically to engage with uneven power structures in the workplace and empower workers and Unions within the context of the introduction of new technologies to the workplace (Bodker, Kensing & Simonsen, 2004; Kensing & Blomberg, 1998; Andy Dearden & Rizvi, 2008), although more recent versions (especially in the US) have adopted a more results-driven and less power-conscious approach (Timpka & Sjoberg, 2010; Kensing & Blomberg, 1998).

This acknowledgement of power relations – and tools/techniques designed with ICT/IS specifically in mind - make Participatory Design a rich source of learning to complement the research from development studies.

Of course, the cultural context of the developing world is very different, so it is important to interpret carefully any lessons learned from this work, but that does not lessen its potential value. There is a growing body of research looking specifically at participatory design in developing country contexts that is especially relevant (Puri, Byrne, Nhampossa & Quraishi, 2004; Byrne & Sahay, 2007; Maunder, Marsden, Gruijters & Blake, 2008; Andy Dearden & Rizvi, 2008).

1.3.3. Participation in ICT for Development

The ICTD sector has a long history of partial or totally failed projects (Heeks, 2002; Bostrom & Heinen, 1977; Heeks, 2008b; Dodson, Sterling & Bennett, 2012; Maail, 2011). There are many, complex reasons for this, but one factor often highlighted is the lack of beneficiary participation (Walton & Heeks, 2011; Heeks, 2002). The majority of ICT4D projects continue to be top-down, externally-driven and technology-centred rather than community-centred (Dodson, Sterling & Bennett, 2012), although this is beginning to change, particularly with the increase in availability of mobile technology, the rise of open source development and a growing recognition that participation is important.

However, experience with participation in other areas of Development, tells us that just 'doing participation' is clearly not enough – there are too many opportunities for it to be delivered badly, be co-opted, have little effect or in some cases do more harm than good (Hildyard, Hegde, Wolvekamp & Reddy, 2001; Mutenda, Mpazanje & Chigona, 2011; Vincent, 2004; Cooke & Kothari, 2001). What is important is to find ways to increase the level of beneficiary involvement and community participation in ICTD projects, in the right way, and to learn from the experiences of work in participatory development and participatory design.

1.4. Structure of research

Methodology: A critical approach (Chapter 2)

Outline of research strategy; projects studied; thoughts on data analysis and research limitations

Critical literature review: theories of participation (Chapter 3)

A critical review of academic literature on participation, drawing lessons from participatory theory in Development Studies, Information Systems and ICTD. Production of preliminary analytical framework based around critical success factors arising from the literature.

Participation in practice: findings and analysis (Chapter 4)

Analysis of projects using framework from Chapter 3, evolving critical success factors through interviews and case-studies from the field.

Discussion of research in wider context (**Chapter 5)**

Discussion of wider context and key learning from the research.

Revised analytical framework for participatory ICTD (**Chapter 6)**

Revised analytical framework proposed as a participatory socio-technical approach to ICTD project development.

Conclusions and recommendations (**Chapter 7)**

Limitations of the research and implications for policy and practice.

2. Methodology: a critical approach

2.1. Research strategy: A critical approach to ICTD research

2.1.1. What is a critical approach to ICTD or Information Systems research

There is a substantial body of literature discussing critical approaches to research in Information Systems (Avgerou, 2008, 2005; Walsham, 2005; Myers & Klein, 2011, 1999), primarily emphasising the critique of socio-political issues, and the combination of theory and practical evidence.

Exactly what constitutes critical research seems to be a subject for debate, although "broad definitions of the nature of being critical" (McGrath, 2005) revolve around offering a social critique, engaging with socio-political issues such as power and freedom, blending subjective and objective viewpoints, being sceptical of established viewpoints, and drawing inspiration from social theories (not just narrow theories of Habermas etc. but any critical tradition such as feminism or Marxism) to create knowledge with emancipatory intentions.

Recent work also suggests that critical research in Information Systems is "not identified with specific critical methods . . . [but] an overall strategy of conceptualising and conducting an inquiry (Cecez-Kecmanovic, 2007).

2.1.2. Why take a critical approach?

There is an emerging view that ICT4D and IS research should engage more directly with social issues and "controversies on 'development'" (Avgerou, 2010), drawing more on socio-economic theories and working more closely with related disciplines, including development studies (Walsham, 2005; Avgerou, 2010). This research takes a critical approach in order to achieve this goal, specifically engaging with controversies over participation within development, and socio-political issues of power and control.

2.1.3. How a critical approach influences the structure of this research

Structurally, the document draws from the three critical research elements of ***Insight***, ***Critique*** and ***Transformative Redefinition*** (more details can be found in *Appendix C*), as demonstrated in the diagram below:

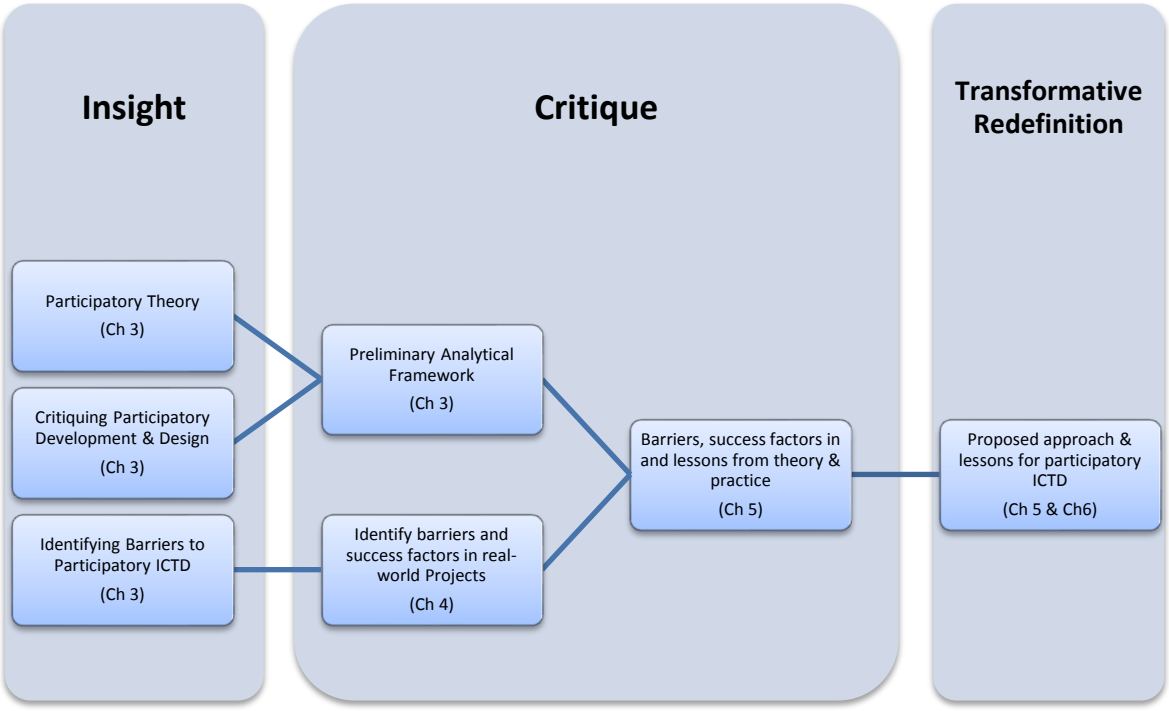

FIGURE 1. CRITICAL APPROACH TO DOCUMENT STRUCTURE

2.1.4. Reflecting the core 'principles' of critical research

Klein and Myers outline some key principles for each element of critical research (see *Appendix C*) - intended as general guidelines, not "bureaucratic codes of conduct" (Myers & Klein, 1999). This research does not rigidly follow these, but is influenced by them in: contrasting theoretical research and empirical evidence, a diverse range of projects and interviewees, taking a moral position that 'participation is a human right', use of social theories of participation, challenging prevailing wisdoms for and against participatory approaches, and in its attempt to create new knowledge (in the form of a proposed approach to participatory ICTD) that may have the potential to help with individual emancipation and societal improvements.

2.2. Analysis of data and evidence

2.2.1. Types of data and evidence

The critical literature review is based on secondary data – wide-ranging views from peer-reviewed academic journals and published books relating to participation.

The practical evidence is based around examples of participation in projects in the field – primary data in the form of interviews with key informants who were directly involved with these projects, and secondary data in the form of case-studies or other research undertaken on these projects (peer-reviewed journals and other sources such as NGO publications and websites).

The use of case-studies is sometimes criticised, but is appropriate for research such as this which is "at early formative stages . . . where the experiences of the actors are important and the context is critical . . . well suited to capturing the knowledge of practitioners" (Benbasat, Goldstein & Mead, 1987).

2.2.2. Choice of projects to research

Over 30 different types of project/organisation were originally assessed, then narrowed down to five core projects based on the desire for a range of project types and attitudes to participation as well as the quality of the insights offered. The choice was also dictated by the availability of interviewees and case-study research.

The five core projects/organisations are **Fair Tracing** (in Chile and India), **Sarvodaya-Fusion** (in Sri Lanka), **Digital Green** (in India and now globally), **MSSRF** (in India) and **Safe Mothers Safe Babies** (in Uganda). The full list of projects researched and considered is in *Appendix D*.

2.2.3. Semi-structured interviews

Semi-structured interviews were selected in order to give some direction to the questioning but allow the interviewees maximum freedom to express their views and the direction of discussion. The choice of interviewee was based on 'convenience sampling' due to time constraints. This is appropriate for this research as it is often used for this type of early or exploratory work (Biggam, 2011).

In all cases except MSSRF and Safe Mothers Safe Babies, it was possible to find an interview and published research on the same project. MSSRF relies solely on published articles with differing viewpoints, while Safe Mothers Safe Babies research consists solely of an interview with the founder. Some practitioners from other organisations not being studied were also interviewed, and a face-to-face discussion with multi-disciplinary researchers was undertaken at Designing Interactive Systems 2012 conference (DIS'12, 2012). A full list of all interviews can be found in *Appendix A*.

In line with best practice (Myers & Newman, 2007), a minimal script was defined, with an opening introduction, key themes to be discussed (moving from the general to the specific) and outlining the next steps. Beyond this, an empathetic approach was taken to allow for 'development of the plot' (Myers & Newman, 2007) according to the interviewees' interests, and each interview evolved along different lines depending on the interests of the interviewee. All Interviews were held via Skype, recorded and key findings later transcribed. The interview script is in *Appendix B*.

2.2.4. Data Analysis

The empirical evidence is analysed using the framework and factors identified at the end of the critical review of theory and literature in Chapter 3. While this is a highly subjective exercise, building from a range of different theories and critiques, a number of themes arise from the literature and it is, nonetheless, a helpful way to structure analysis of the evidence.

2.3. Limitations of this research

With a longer time-scale, a more thorough critical approach could have been undertaken, and this could have been applied to a wider range of projects, and a wider range of stakeholders within each project.

In particular, all interviewees are either project managers or researchers. The lack of interviews with lower-level staff or *beneficiaries* of any of the projects is a significant gap that was unable to be addressed due to time and access constraints.

Chapters 1 and 2 have set the scene for the research aims, and how the literature and other research will be approached and combined. Chapter 3 starts this research with a critical review of theory and literature relating to participation.

3. Critical literature review: theories of participation

This chapter looks at theory and academic literature from multiple disciplines to identify factors behind success or failure of participation within ICTD projects. Attention is paid to factors preventing participation taking place and factors preventing participation from achieving its empowering and emancipatory potential. The result is a consolidation of success factors from various disciplines and the production of a preliminary analytical framework based on an iterative project lifecycle.

3.1. Why participation matters to ICT for Development

Three arguments are often invoked to justify the need for participation in development.

Firstly, an **appeal to morality** – people have a right to be involved in decisions affecting their lives (Cooke & Kothari, 2001). This argument is the moral stance underpinning this research. Secondly, participation is said to produce **better results, systems or products** (Walker et al., 2008; Carroll & Rosson, 2007; Bodker, Kensing & Simonsen, 2004; Kensing & Blomberg, 1998). Thirdly, participation is argued to lead to **empowerment** of communities and individuals, enabling them to take control of their own development, reduce their dependency on external actors, and increase the sustainability of development activity (Arunchalam, 2002; Day, Khan & Hewetson, 2009; Shroff & Kam, 2011; Clayton, Oakley & Pratt, 1997).

The most widely discussed form of failure is sustainability failure – projects which may or may not be meeting their stated goals, but simply cannot continue. This may be for simple financial reasons, but more often is due to a lack of appropriation of the technology by the local community (Stevens, Wulf, Pipek & Rosson, 2006; Dagron, 2001; Day, Khan & Hewetson, 2009).

The reasons for these failures are, of course, complex, but three factors are drawn out repeatedly in the ICTD literature: lack of beneficiary involvement, a tendency towards

top-down delivery and techno-centrism, and an over-reliance on engineering/blueprint approaches to delivery (Heeks, 2010; M. Thompson, 2008; Schech, 2002; Walton & Heeks, 2011).

Beneficiary involvement / participation

There is a strong suggestion that the local community/beneficiaries should be involved "at all stages of the development process" (Heeks, 2010) – not just to gather better product/system requirements, but to create more bottom-up 'community-centric' projects that are more likely to be sustainable through lending themselves to local appropriation of the technology (Chapman & Slaymaker, 2002).

Top-down techno-centric approaches

Top-down approaches are appropriate to certain types of project (rollout of national infrastructure for example). In most cases, however, this style of delivery fails because it does not understand the real needs of people whom it treats as 'recipients of its services'. This can lead to a misunderstanding of the local context and needs, leading to unsatisfactory results (Hamel, 2010; Dodson, Sterling & Bennett, 2012). Similarly, many ICTD projects start with the technology and seek to make this fit the needs of a community, rather than understanding that "the need of the community needs to be higher priority than the technology" (Dodson, Sterling & Bennett, 2012). Success is not just about technical quality but about whether the technology is appropriate for, and accepted by the community (Rozendal, 2003).

Engineering / blueprint approaches

Traditional approaches to design assume that it is possible to define the project requirements at the start, before delivery has started, whereas experience shows that people's understanding of their own needs evolves throughout the design process. This is easier to accommodate in an evolving / iterative process which allows those involved to learn from early (relatively small) failures (Walton & Heeks, 2011).

There are many examples of iterative approaches to project delivery in development/ICTD (Bond & Hulme, 1999; Walton & Heeks, 2011), and in socio-technical ICT/IS (e.g. RAD / AGILE methodologies). These have an iterative cycle of "Plan→Design→Deliver→Evaluate" that allows continual re-evaluation of goals, plans and environmental influences (Rozendal, 2003) and greater beneficiary involvement, leading to increased likelihood of local appropriation and sustainability.

There are signs that the dominant approach is shifting towards more collaborative bottom-up approaches that value diversity and multiple visions of reality (M. Thompson, 2008) but there are still significant elements of the ICTD sector following traditional approaches with top-down delivery and limited participation. This could be due to the sector's a tendency to avoid engaging with wider development controversies and fails to learn from "the D of ICT4D" (Avgerou, 2010; Heeks, 2010).

TABLE 1. SUCCESS FACTORS IDENTIFIED FROM DISCUSSION OF ICTD FAILURE
• Participation of beneficiaries/community at every stage • Bottom-up community-centric approach • Iterative development lifecycle

Throughout the following sections, various critiques of participation are considered, grouped in terms of the timeline of a typical development project: *Preparation*, *Delivery* and *Sustainability,* including discussion of both technical/operational limitations and fundamental/inherent problems (Kothari, 2001; Heeks, 1999).

3.2. Participatory theories

3.2.1. Social theories - levels of participation

Outside of development and IS, a number of scales of participation have been produced in different fields, from as early as Arnstein's 'ladder of participation' (Arnstein, 1969) through to more recent versions by the likes of the OECD and various government departments. All follow the same premise that participation operates at different levels, with differing 'degrees, extents and types' of participation, from extractive (user consultation) to empowering / capacity developing (control and decision-making) approaches (Mutenda, Mpazanje & Chigona, 2011; Maail, 2011; Heeks, 1999).

For the purposes of this research, these differing levels have been simplified into three: *consultation → involvement → control:*

- ***consultation***: power rests outside of the participants who are simply providing their views on someone else's project
- ***involvement:*** power begins to shift so participants have some degree of control over direction/delivery but the project is still primarily led from the outside
- ***control:*** project goals/direction are set and controlled by participants.

Arnstein's ladder suggests that, morally, participation should always aim to move as high up this ladder as possible. This is clearly supported by the ICTD goal of local appropriation of the technology which also dictates this highest level of participation (Gurumurthy & Singh, 2009; Chapman & Slaymaker, 2002).

TABLE 2. SUCCESS FACTORS IDENTIFIED FROM DISCUSSION OF PARTICIPATORY SOCIAL THEORY
• Maximise 'level' on ladder of participation

3.2.2. Participation in Development Studies

Participation within development has a long history – from colonial community development in the 40s and 50s, through alternative development emerging in the 70s to the recent "inexorable spread" of Participatory Rural Appraisal (more recently termed PLA or Participatory Learning and Action) since the 80s in response to criticism of traditional top-down approaches (Hickey & Mohan, 2004; Cooke & Kothari, 2001). Participatory Development is often conflated with the specific practices of PRA (Cornwall, 2003). All participatory approaches focus on putting people at the centre of their own development in some way (Cooke & Kothari, 2001). Participation has become a "development orthodoxy" with most donors and NGOs emphasising participatory policies of some description (Cornwall, 2003; Henkel & Stirrat, 2001).

Promoting and questioning participation – Participatory Rural Appraisal

PRA is the most common approach to participatory development and is based on the assumption that empowerment of the local community is the core goal, through overturning previous top-down development by 'reversals' of power - privileging local knowledge over external, "lowers" (usually the poor) over "uppers" (those in power), informal over formal etc. This empowering participation is generally to be achieved through public sessions using interactive, visual methods that are said to be more suited to and understood by rural participants (Chambers, 2008, 1997; Mosse, 2001; Francis, 2001). While PRA emphasises the importance of local knowledge over that of the external agent, the centrality of the role of the facilitator raises much debate over to what extent this 'reversal' is genuinely possible using these techniques (Cornwall, 2003; Francis, 2001; Cooke & Kothari, 2001; Kothari, 2001).

Accusations are sometimes made regarding motivation - that the emancipatory goals of participation have been co-opted and used as a 'social technology of control' (Taylor, 2001) to ensure local people buy in to the agenda of the international development agencies, and legitimise their pre-defined decisions (Hildyard, Hegde, Wolvekamp & Reddy, 2001; Taylor, 2001). Clearly, if used in this way, participatory processes can sustain rather than challenge existing power inequities and may end up doing more harm than good (Cornwall, 2003; Hildyard, Hegde, Wolvekamp & Reddy, 2001; Cooke & Kothari, 2001; Henkel & Stirrat, 2001).

Participatory Urban Appraisal (PUA) has emerged more recently from the federation of Slum/Shack Dwellers International, to adapt PRA for the context of urban slums (Mitlin & J. Thompson, 1994). PUA has a more grounded understanding of power issues and seeks to build trust and good governance from the bottom up (Patel, 2004). In contrast to PRA, it is driven from and by the slum community itself, drawing on and building their resources and capacities through a continual learning cycle, learning development skills through successful delivery of local projects. Ultimately PUA aims to strengthen the poor's position in an "antagonistic social order" through mass mobilisation, so their bargaining power is strengthened and they can exert pressure on government and other agencies (Bolnick & Patel, 1994; Patel, 2004; Mitlin & J. Thompson, 1994).

TABLE 3. SUCCESS FACTORS IDENTIFIED FROM DISCUSSION OF PRA / PLA / PUA
• Reversing power – improving bargaining position of the poor • Genuine motivation of external agents to seek to empower/emancipate local community • Understanding of dangers of co-optation • Draw on and build capabilities of community and residents

Critiques of Participatory Development: *Preparation*

In many cases participatory processes are inserted into more conventional development activities within externally defined boundaries – often confined to one stage of a project (Cornwall, 2003; Heeks, 1999). When goals are set in this manner, outside of the participation of the affected communities, participants lose the ability to define their own needs (Williams, 2004; Vincent, 2004; Kelly, 2004).

Even where participants *are* included from the start, claims that it can tackle marginalisation "begin to wobble when questions are asked about who participates" (Cornwall, 2003). In some cases this is simple to avoid (e.g. ensuring women are included even in communities where they may not normally be involved in decision-making). However, assuming that, just because someone is a representative of a specific marginalised group, that they represent all the *issues and concerns* of this group, is not necessarily true and may conceal other divisions (caste, age, race etc.).

Additionally while in small communities it may be practical for 'everyone' to participate, in larger or urban settings this is impractical and the choice of exactly who represents each group can be profoundly political – not least due to the potential for learning and personal development inherent in the very process of participating (Srinivasan, 2006; Cornwall, 2003; Patel, 2004; Arunchalam, 2002).

Equally important is an understanding that simply inviting people to participate is insufficient. People need *motivation* and *opportunity* to participate, they need skills and confidence to have a *voice* and they need a structure that ensures this voice is heard and translates into *influence* – otherwise the process may be seen as a sham.

This is complex as an apparent lack of motivation may be due to complex social pressures forcing them to opt-out (Cleaver, 2001; Cooke & Kothari, 2001); it may be too costly for them to take time away from livelihood-generating activity, childcare concerns etc. (Hickey & Mohan, 2004; Cornwall, 2003); or they may lack skills such as assertiveness, advocacy and conflict resolution which are needed to argue their perspective in group sessions (Cornwall, 2003). Above all, existing power structures may conspire to simply not listen when they make their voices heard - risking disenfranchising them from the whole process (Williams, 2004; Cornwall, 2003).

TABLE 4. SUCCESS FACTORS RELATING TO PREPARING FOR EFFECTIVE PARTICIPATION
• Participation in initial goal setting is critical • Representation of the needs of all groups, especially the marginalised • Participants need motivation, skill and opportunity to participate

Critiques of Participatory Development: *Delivery*

Even with the best of motivation and preparatory work, there are still a number of issues related to the participatory process itself that have been widely criticised.

Every community has pre-existing power structures. These are sometimes misunderstood and the community treated as a single entity with one set of goals – the "myth of community" (Heeks, 1999; Day, Khan & Hewetson, 2009; Cornwall, 2003; Bailur, 2007, 2008; Mutenda, Mpazanje & Chigona, 2011). In reality, every community is a complex mixture of conflicting goals, interests, social structures and power relationships (Mohan, 2001; Cleaver, 2001; Francis, 2001; Cooke & Kothari, 2001). In this context the PRA approach of seeking consensus may not be possible or even desirable as more powerful groups may dominate, leaving weaker groups unwilling to challenge the status-quo. What appears to be consensus, may simply re-assert the goals of the dominant minority (Khotari,2001; Cornwall, 2003).

A focus on the community also ignores power structures below and above: households, local/national government and global markets/institutions (Mohan, 2001; Francis, 2001), and may overlook the role of the state in creating an environment that supports local participation or actively inhibits it (Mitlin & J. Thompson, 1994; Patel, 2004; Kelly, 2004; Hickey & Mohan, 2004). In some situations this interaction with the state is critical and needs to take precedence as, without the ability to actively and usefully engage in the public domain ("*Political Capital"*), genuine participation may not be achievable (Mohan & Hickey, 2004; Cornwall, 2004; Williams, 2004).

Aside from structural issues, *any* group setting has potential for the "tyranny of the group" (Cooke & Kothari, 2001) – where the act of seeking consensus can obscure divergent interests, narrow potential options, and reflect the views of the loudest voices (Cooke & Kothari, 2001). This can result in consensus being reached on something **nobody** wants, or active coercion of the group by more dominant members (Mosse, 2001; Hailey, 2001; Cooke, 2001).

The role of the external expert also comes under scrutiny. The value of personal criteria such as trust, friendship and respect are pointed to (Hailey, 2001), along with the need for an awareness of the power and influence of their own role, and a wider understanding of human behaviour, political situations and local dynamics (Cooke, 2001; Hailey, 2001; Mohan, 2001; Cornwall, 2003).

The expertise of the external expert is sometimes either considered pre-eminent, or ignored. It should not be overlooked – a recognition of the value of both Western *and* the indigenous knowledge is key (Mohan, 2001).

These different considerations point to the role of the 'intervention agent' (NGO, government department etc.) being critical.

TABLE 5. SUCCESS FACTORS RELATING TO DELIVERING EFFECTIVE PARTICIPATION
• Understand relevance of complex local power structures • Understand the influence of powers above and below the community (household, local/national government, market) • Manage group dynamics to avoid unfair outcomes • Appreciate the appropriate role and value of external experts, and the potential for unintended influence • Build trust between external experts and local community

Critiques of Participatory Development: *Sustainability*

Participatory approaches often develop new decision-making structures, ignoring well-established existing institutions (Cleaver, 2001; Kelly, 2004), potentially usurping legitimate decision-making processes (Hailey, 2001), which could have been utilised.

This is especially important given the often short-term nature of projects – for participation to be an 'on-going transformative process' (Hickey & Mohan, 2004; Williams, 2004) where individuals and communities are empowered and develop capacity to take on the ownership and control of the participatory process directly, long-term institutions are required not short-term 'events'. Developing and evolving existing structures may help ensure the community can direct future developments to be more appropriate to their needs (Vincent, 2004).

TABLE 6. SUCCESS FACTORS RELATING TO SUSTAINING PARTICIPATORY PROJECTS
• Work with and evolve existing structures and processes where possible • Develop capacity of local institutions • Develop skills of local people

3.2.3. Participation in ICT and Information Systems Design

Participation in ICT and Information Systems mostly refers just to involving users in design, to better understand their tasks and requirements (Steen, Kuijt-Evers & Klok, 2007), although it is also used with a more emancipatory meaning in Participatory Design (PD). This originated in Scandinavia in the 1970s and defines participation as "systematic and meaningful", paying attention to unequal power structures seeking to create a more democratic workplace (Andy Dearden & Rizvi, 2008; Janson & Cecez-Kecmanovic, 2003; Kensing & Blomberg, 1998; Muller, Wildman & White, 1993; Puri, Byrne, Nhampossa & Quraishi, 2004; Steen, Kuijt-Evers & Klok, 2007). Debates over participatory design mirror similar discussions in critiques of participatory development, questioning whether it can genuinely resolve power issues (Timpka & Sjoberg, 2010; Kensing & Blomberg, 1998; Janson & Cecez-Kecmanovic, 2003).

Specific lessons from ICT/IS are discussed below in terms of the same three lifecycle stages as in the previous section:

Critiques of Participatory IS Design: *Preparation*

Similar criticisms are levelled at participatory design as at participatory development – are users participating in negotiations over process and outcomes or being co-opted to weaken their resistance to change, inputting into already defined projects (Kensing & Blomberg, 1998; Andy Dearden & Rizvi, 2008; Steen, Kuijt-Evers & Klok, 2007; Janson & Cecez-Kecmanovic, 2003).

In ICT/IS there is also the assumption that users are prepared, skilled and motivated to participate and are aware of their own needs in relation to technology and how it might help them. In reality, this is not always the case even in the West and is even less common in developing countries or rural communities (Beynon-Davies, Carne, Mackay & Tudhope, 1999; Steen, Kuijt-Evers & Klok, 2007; Maunder, Marsden, Gruijters & Blake, 2008).

TABLE 7. SUCCESS FACTORS RELATING TO ICT/IS PREPARATORY WORK
• Participants need sufficient understanding of technology to participate effectively

Critiques of Participatory IS Design: *Delivery*

Participatory design tends to use mainstream ICT methods (workshops, scenarios, mock-ups etc.) but emphasising a gradual development of understanding of users' needs, tasks and goals (Andy Dearden & Rizvi, 2008; Maunder, Marsden, Gruijters & Blake, 2008). These methods are obviously highly suitable for the design of technology (Liyange, July 3rd 2012) but rely on a relatively good understanding of technology.

Participatory design techniques also highlight the importance of identifying different types of stakeholder, and working with them - both separately and together. This has the potential to avoid some of the problems with group dynamics discussed in relation to participatory development methods – especially avoiding over-reliance of "public sessions" sometimes criticised in PRA projects (Williams, 2004; Cornwall, 2004; Cooke & Kothari, 2001).

TABLE 8. SUCCESS FACTORS RELATING TO ICT/IS DELIVERY
• Understand suitability of different methods for different levels of skill, context etc.
• Work with different stakeholders both together and separately

Critiques of Participatory IS Design: *Sustainability*

Sustainability failure is also a common issue in participatory ICT/IS, sometimes blamed on small-scale and isolated work (Kensing & Blomberg, 1998) but also due to the tension between producing a quality product and following a participatory process (Kensing & Blomberg, 1998; Ho, Smyth, Kam & Andrew Dearden, 2009).

In the context of technology there is an added complication - the charge that participation may inhibit innovation, that putting the 'human first' ignores the invention of new products (e.g. the iPhone) where people adapt to technology not the other way round (Norman, 2005). These products are normally driven by one designer with no participatory ethos (Steen, Kuijt-Evers & Klok, 2007). This suggests that deciding whether a project is seeking innovative new products, or capacity development of a local community is vital to understand from the beginning as it may affect the nature and type of participation required.

Community Informatics (CI) is a sub-sector of ICT/IS, with a more focused attitude towards sustainability, which is seen to depend on community members controlling "the means to design, develop and deploy IT solutions", becoming confident "IT planners and designers" – not necessarily skilled programmers, engineers etc. (Ramirez, 2008; Carroll & Rosson, 2007). This distinction is relevant to ICTD which has the same tension between devolving ownership and requiring complex technical skills.

TABLE 9. SUCCESS FACTORS IDENTIFIED FROM RELATING TO ICT/IS SUSTAINABILITY
• Appreciate tensions between product/process and innovation/sustainability • Capacity build locals to become IT *planners/designers*

3.3. Participatory ICTD – combining development and ICT/IS design

The same debates over power, motivation, participation as the "new orthodoxy" etc. (Mutenda, Mpazanje & Chigona, 2011; Maail, 2011; Heeks, 1999) that are present in the wider development literature are clearly evident in discussions of ICTD. Some interesting additional lessons arise from the dual perspectives of development and technology/design that form this discipline, and from the increasing interest in applying Participatory Design approaches to technical projects in developing countries. This literature brings together the two disciplines to construct "socially aware software engineering for the developing world based on principles from participatory design and action research" (Ho, Smyth, Kam & Andrew Dearden, 2009). This combination of disciplines has the potential to go beyond an "ad-hoc combination of methods" (Andy Dearden & Rizvi, 2008) to combine learning from disciplines of both ICT and development, as discussed below.

Combining the ICT/IS conviction that people need a level of technological understanding to participate effectively with the suggestion from development that people should be involved as full participants from day one, creates an interesting tension. At the start of a project, participants may be unable to generate requirements, be prone to misunderstand prototypes, and may have an inability to imagine the impact of a new technology on their daily working lives (Maunder, Marsden, Gruijters & Blake, 2008; Kimaro & Titlestad, 2008). However, in many cases, the external agent can see this connection and may have successfully implemented similar technology solutions in other communities. This concept of '*latent need*' is fundamental to much ICTD work – the idea that technology *can* have a positive effect on a community but the people within that community do not **yet** have the technological understanding to understand this. This dictates a careful phasing of participatory approaches as work progresses - moving from "invited spaces" where the external agent has more control, developing the skills and knowledge of participants to engage with and influence technology projects, moving to "claimed spaces" where the participants have the skills and knowledge to take over control (Gaventa, 2004; Kelly, 2004; Mutenda, Mpazanje & Chigona, 2011).

This may require a much longer-term approach than is common in ICTD, perhaps entailing "pre-projects" with the sole aim of increasing understanding of technology before the real participatory ICTD work begins.

Looking at the issue of external expertise, within ICTD this takes on a special status related to the idea of latent need above. No matter how participatory an approach is taken, as with other technical disciplines such as architecture or engineering, local desires cannot *always* take precedence over technical considerations of what works or what is possible, practical or safe. This tension is especially important at the beginning of ICTD work where the technological understanding of the local community is most likely to be at its weakest.

One area where the more practice-led literature of ICTD seems to take a more useful stance than some of the wider development literature is in understanding these realities of delivery, and taking a more pragmatic approach to participation. There is a strong suggestion of finding the 'optimal level' of participation that matches conditional and contextual factors and takes into account users' willingness to participate (Maail, 2011). There is also a recognition that, where existing structures and power relations exist, this poses an enormous challenge to attempting meaningful participation and this inevitably influences the approach to be taken (Mutenda, Mpazanje & Chigona, 2011). This pragmatism also influences the concept of latent need above, with participatory approaches needing to accommodate different levels of technological awareness of different individuals and communities.

ICTD's ability to draw on participatory methods from two different disciplines also allows for more nuanced use of these methods. Participatory ICT/IS design techniques tend to be formal and written (e.g. requirements workshops), in contrast with visual methods of PRA (e.g. participatory mapping) (Andy Dearden & Rizvi, 2008). The formal techniques of ICT/IS are well suited to the goal of designing an Information System but assume a high level of familiarity with technology and with certain styles of meeting/workshop; whereas PRA methods are better suited to rural, relatively technology-illiterate communities, but do not lend themselves well to producing detailed technical requirements.

Perhaps using the less formal methods at the start of ICTD work to define the goals, migrating to more formal methods as work progresses and systems/products begin to be defined in detail and participants have better technological awareness, could offer a valuable way of combining the two disciplines in more than an 'ad-hoc' manner.

While the previous section identified the possibility that participants may not need to develop advanced technical skills but IT design/management skills, within ICTD this still poses a challenge of identifying, nurturing and training specific people to do this who may have little or no background in technology. This challenge is not always recognised and becomes especially problematic when combined with the impetus from development studies to empower the most marginalised, as these are unlikely to be the existing 'technology champions' with the highest skills levels to start from.

TABLE 10. SUCCESS FACTORS IDENTIFIED FROM MULTI-DISCIPLINARY CONSIDERATION OF ICTD
• Manage *latent need* – phased approach required which builds technological understanding of participants over time • Recognise situations in which technical limitations may take precedence over local needs • Find the optimal level of participation for each phase/cycle of work • Draw on different participatory design/development methods for different phases and contexts • Appreciate tension between identifying technology champions and including the most marginalised

3.4. Summary of success factors from multiple disciplines

This chapter's multi-disciplinary exploration of participation suggests that there are many good reasons to keep the moral goal of ensuring people have more control over projects affecting their own lives (Vincent, 2004). However, the transformative and emancipatory claims for participation also appear to have been over-sold and significant barriers exist to it living up to its potential. This is arguably even truer in ICTD where a lack of participation seems to be one of the key reasons for historically high levels of project failure.

In part this appears to be a case of unrealistic expectations – the current reality is that people and communities do participate in programmes funded and managed by distant governments, donors and NGOs, relying on international funding, and simply adopting participatory approaches will not change this (Williams, 2004; Hickey & Mohan, 2004; Mosse, 2001). What it *may* do is deliver better projects, influence the manner in which development happens, and give the recipients of development more ownership and control than they have had in the past.

Experimentation and evaluation of better ways to achieve transformative goals should continue, but towards more achievable goals – not outright revolution but rather "strengthening the bargaining position of the poor within [existing power] relations" (Hickey & Mohan, 2004).

There is a good case to be made that ICTD's dual roots place it in a particularly strong place to explore new ways to achieve more effective participatory approaches. Where participatory *design* has tended to focus on issues of technique, participatory *development* has tended to focus on relationship-building and interpersonal skills (Andy Dearden & Rizvi, 2008). Both acknowledge and ignore different aspects of group and power dynamics. Design methods may offer more in terms of building workable technical solutions, but development's more socio-political perspective offers more in terms of understanding the complex power dynamics of developing country communities.

To summarise all the discussions in this chapter, the table on the following page brings together all the success factors and lessons, grouped by the relevant stage of the project lifecycle:

TABLE 11. COMBINED SUCCESS FACTORS FOR PARTICIPATORY ICTD	
Preparing for participatory ICTD	• ***Motivation (to empower)*** Genuine motivation of external agents to include local community in decision-making with a view to empowerment/emancipation • ***Bottom-up community-centric approach*** Participation of beneficiaries/community at every stage, from initial goal-setting onwards Reversing power – improving bargaining position of the poor Draw on and build capabilities of community and residents • ***Political and Social Awareness of external agents*** Understand relevance of complex local power structures, influence of powers above and below the community (household, local/national government, market), tension between quality of product and process, and between innovation and sustainability, dangers of co-optation • ***Who participates?*** Representation of the needs of all groups, especially the marginalised Appreciate tension between identifying technology champions and including the most marginalised • ***Ability to participate*** Participants need motivation, skill and opportunity to participate
Delivering participatory ICTD	• ***Iterative development lifecycle*** Increasing involvement at each stage, starting small and building • ***Manage power imbalances and group dynamics*** Understand relevance of complex local power structures Understand the influence of powers above and below the community (household, local/national government, market) Manage group dynamics to avoid unfair outcomes • ***Facilitation and the role of the external agent*** Appreciate the appropriate role and value of external experts, and the potential for unintended influence Build trust between external experts and local community Work with different stakeholders both together and separately • ***Choice of methods and techniques*** Understand suitability of different methods for different levels of skill, context etc. Draw on different participatory design/development methods for different phases and contexts • ***Pragmatism*** Find the optimal level of participation for each phase/cycle of work Recognise situations in which technical limitations may take precedence over local needs
Sustaining participatory ICTD	• ***Capacity build local institutions*** Work with and evolve existing structures and processes where possible Develop capacity of local institutions • ***Up-skill local individuals*** Manage *latent need* – phased approach required which builds technological understanding of participants over time to enable them to participate effectively Develop skills of local people Capacity build locals to become IT *planners/designers*
Level of participant control	• ***Increasing level of participant involvement throughout program*** Towards eventual local control as soon as practical

3.5. Preliminary analytical framework for participatory ICTD

A formal analytical theory or framework of participatory ICTD does not exist but the discussions and success factors above show that there is a considerable amount of theory and best practice in both ICTD and related disciplines from which a framework could be drafted.

The diagram below builds from standard iterative / process approaches to ICT/IS (Bodker, Kensing & Simonsen, 2004; K. Laudon & J. Laudon, 2009; Clegg, 2000; Beynon-Davies, Carne, Mackay & Tudhope, 1999; Bell & Wood-Harper, 1998), absorbs the learning and success factors identified here into this structure to represent a project-lifecycle approach to an empowering, emancipatory approach to ICTD:

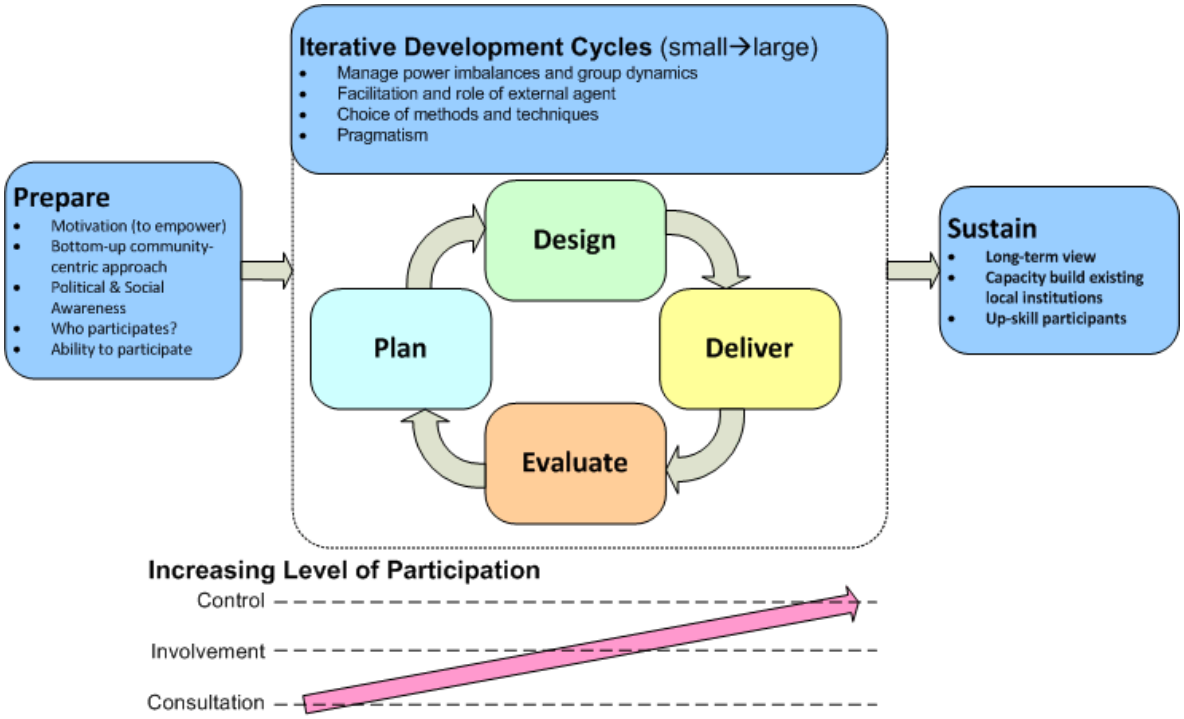

FIGURE 2. PRELIMINARY ANALYTICAL FRAMEWORK FOR PARTICIPATORY ICTD

The framework may prove useful in two ways. Primarily as a guideline to analyse existing participatory ICTD projects to see whether they exhibit the qualities and criteria most likely to make them a success, but also with the potential to be used as a guiding approach to influence the design of a new project ensuring it learns from the lessons and success factors in the wider literature.

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*This chapter has considered participatory approaches to development and to ICT/IS design and combined these with consideration of specific factors relating to participation within ICT for Development. A range of issues have been identified, explored and combined from all these disciplines to produce a common set of success factors and a preliminary analytical framework generic enough to apply across the spectrum of ICTD projects (as defined in section **1.2**). This framework is used in the following chapter as an aid to analysing participatory approaches in a number of real-world ICTD projects.*

4. Participation in practice: findings and analysis

This chapter uses the preliminary analytical framework from chapter 3 to compare five diverse ICTD case-studies through interviews with key informants and published case-studies/research. The projects are considered against the framework and also explored to identify new success factors that the preliminary framework does not cover.

4.1. About the evidence

The five projects examined in this research are:

TABLE 12. SUMMARY OF PROJECTS RESEARCHED

Project	Country	Evidence	Outline
Fair Tracing	Chile & India	Interview with researcher Ann Light, and peer-reviewed journal article about the project (Ann Light, June 26th 2012; Light & Anderson, 2009).	Participatory research project to investigate feasibility of an ICT-enabled tool to demonstrate Fair-trade provenance of coffee and wine, working with the growers and supply chains in each country.
Sarvodaya-Fusion	Sri Lanka	Interview with MD, Harsha Liyange, and published article about their work their project *FarmerNet* (Harsha Liyange, July 3rd 2012, 2009; Liyange & Edge, 2011)	Sri-Lankan NGO that have been working closely with rural agricultural communities since 1996 to develop a range of projects including telecentres, ICT Education curriculum, mobile farming applications, and Smart Village, investigating use of smartphones for communication, education and development.
MSSRF	India	Three journal articles, plus articles on less participatory rival Indian telecentres network *e-Choupal* (Neggehalli & Shankaran, 2008a, 2008b; Arunchalam, 2002; Sreekumar, 2007)	Network of community-managed telecentres across various states in India, delivering ICT access. training and locally produced and managed content.
Digital Green	India, expanding to Africa and South Asia	Interview with Project Manager Shreya Agarwal and peer-reviewed journal article(Shreya Agarwal, June 14th 2012; Gandhi, Veeraraghavan, Toyama & Ramprasad, 2009)	Participatory video-sharing programme for agricultural extension, sharing new agricultural practices through mediated showings of locally produced videos, as well as via YouTube.
Safe Mothers Safe Babies	Uganda	Interview with founder, Jacquie Cutts (Jacquie Cutts, June 27th 2012)	NGO specialising in holistic community work with a focus on maternal and child health, across large regions of Uganda. Recently began including ICT in their work, via community education points and mobile-based storytelling.

Additional interviews were undertaken with practitioners and researchers from various fields for a wider range of perspectives (see Appendix A), and material was examined

relating to other ICTD projects (see Appendix D). Reference is made to these interviews and projects where relevant.

4.2. Project findings in relation to preliminary analytical framework

Top-level findings from the five projects are considered below to see what insights they offer in relation to the key elements of the preliminary analytical framework.

TABLE 13. SUMMARY OF RESEARCH FINDINGS

	Prepare	Development	Sustain	Participant Control
Fair Tracing	9-month preparatory phase	High degree of iteration, improvisation & experimentation	N/A – research project only	High but purely for research
Sarvodaya-Fusion	Long-term pre-existing relationship with communities	Some experimentation with delivery models	High focus on market-led financial sustainability	Generally low, but recruit staff from local communities
MSSRF	Extensive consultation before establishing a new centre	Limited due to network / franchise model of centres	Strong emphasis on local community appropriation of centres	Full control of centre eventually rests with community, but with little control over wider network
Digital Green	3 years preparatory experimentation and research	Continually evolving model, albeit slowly and centrally managed	Emphasis on scalability and international rollout	High control over video production, no control over technology or central program management
Safe Mothers Safe Babies	Spend upwards of six months working with local leaders in each new community, then develop long-term working partnerships	Not explicitly iterative, but work on 3 projects per community in parallel, each evolving naturally over time	Work extensively with both formal and informal institutions, very aware of NGO role and need to encourage self-sufficiency not dependency	Very high from day one, but ICT programs are new so difficult to know if these will need to operate differently

(Ann Light, June 26th 2012; Light & Anderson, 2009; Jacquie Cutts, June 27th 2012; Shreya Agarwal, June 14th 2012; Harsha Liyange, July 3rd 2012, 2009; Liyange & Edge, 2011; Neggehalli & Shankaran, 2008a; Arunchalam, 2002; Sreekumar, 2007; Gandhi, Veeraraghavan, Toyama & Ramprasad, 2009)

The following discussions explore the projects in more detail in relation to the success factors and framework identified in sections **3.4** and **3.5**.

4.2.1. Findings: *Preparation*

The importance of preparatory work is strongly emphasised in all five projects, although different aspects seem more or less important in each:

Motivation to empower / bottom-up community-centric approach

It is difficult for an outsider to judge the difference between badly delivered projects with a genuine goal of empowerment, and a lack of motivation to empower, so these factors are considered together.

All the projects work with local communities from the very beginning, but in different ways. Sarvodaya-Fusion builds upon pre-existing long-term relationships that have evolved into a participatory and collaborative relationship over time, through which new products could be rolled out (Harsha Liyange, July 3rd 2012). MSSRF and Digital Green only agree to work with new communities after extensive consultation with community members, but the nature of their work is pre-defined externally and the community have little say over it (Neggehalli & Shankaran, 2008a; Arunchalam, 2002; Shreya Agarwal, June 14th 2012; Gandhi, Veeraraghavan, Toyama & Ramprasad, 2009). Safe Mothers Safe Babies involve local people in defining their own problem, needs and goals, before a project idea is even established (Jacquie Cutts, June 27th 2012). Fair Tracing approached communities with an idea in mind but then developed the details with them from the start, recognising that in most development projects, the participants may "help to co-design the solution but not the overall aims" (Ann Light, June 26th 2012).

It is difficult to judge the reasons and motivations behind this general lack of early engagement, but it is evident that it limits the potential of the local community to take control of the agenda and limits its involvement to engagement in an externally defined development agenda. As Jacquie Cutts of Safe Mothers Safe Babies states:

> Most projects only want participation after they have an idea and need people to help implement it. We want to understand the problem and solution from the community perspective - their understanding of their problems is far better than mine – no matter how long I've lived or worked there. (Jacquie Cutts, June 27th 2012)

Political and social awareness

Although none of the projects explicitly discuss the relevance of political awareness of practitioners themselves, it is implied in their discussions of the importance of understanding local context, political environments, power struggles etc. A wider discussion would have been interesting, as this awareness impacts on other success factors such as deciding who participates, managing power imbalances and so on.

A danger for ICTD projects in particular in not having this awareness, is the temptation to see just the technology-needs and miss the wider socio-political elements or (as telecentres are sometimes accused of), to "mis-diagnose complex social problems as simple technical fixes" (Dagron, 2001).

Who participates?

The range of views of who to include as participants varies across the different projects. Digital Green take a hands-off attitude and "leaves participant selection to our local partners" (Shreya Agarwal, June 14th 2012). More pragmatic approaches are adopted by Fair Tracing and Sarvodaya-Fusion who respectively see the choice of participants as "fairly arbitrary . . . who you work with determines what you build, another set of beneficiaries might produce a different problem" (Light & Anderson, 2009) or a case of "working with the most willing" (Harsha Liyange, July 3rd 2012). MSSRF seek to involve marginalised groups in running their centres, especially women and Dalits (Neggehalli & Shankaran, 2008a), although wider participation of women has been poor (Sreekumar, 2007). Safe Mothers Safe Babies specifically seeks to engage with all elements of the community and has a specific process to achieve this:

> First we identify formal and informal leaders – civil society organisations, local change-agents etc. We discuss the community and its challenges with both groups and ask their advice on how best to engage with the community. Over time working with these leaders, marginalised groups are identified and I start to work with 1-2 motivated individuals who understand how best to work with these groups, placing these people in a position of some authority – something they are not used to in an NGO context (Jacquie Cutts, June 27th 2012).

Ability to participate

Although the general concept of ability to participate was not raised in the contexts of these projects, the more technology-specific concept of *latent need* was highlighted. Sarvodaya-Fusion see their role as bridging this gap between local understanding and the capabilities of modern technology (Harsha Liyange, July 3rd 2012) and Safe Mothers Safe Babies see this gap being overcome by "mentioning other successful projects and asking the participants what they think about them – there is space for dialogue and mutual education" (Jacquie Cutts, June 27th 2012).

In order to participate, people need a "clear mental model of how technology works" (Walker et al., 2008). This can be accomplished by phasing successively more complex projects (as is the case with Sarvodaya-Fusion's work) or may need some sort of "pre-project" to develop technological awareness before genuine participation can begin.

4.2.2. Findings: *Delivery*

An iterative approach to delivery is only really demonstrated in the Fair Tracing research (despite it not creating an end-product) although it is implied in the evolving nature of the work of both Sarvodaya-Fusion and Digital Green, neither of which discuss the reasons for or success of this approach (Light & Anderson, 2009; Liyange, 2009; Gandhi, Veeraraghavan, Toyama & Ramprasad, 2009). More specifically:

Manage power imbalances and group dynamics

The more practice-led projects (MSSRF, Digital Green and Sarvodaya-Fusion) did not appear to see issues of power as especially important (although Digital Green and MSSRF do try to address gender and caste issues in their projects), whereas the more research-focused backgrounds of Ann Light (Fair Tracing) and Jacquie Cutts (Safe Mothers Safe Babies) appear to give these issues more weight. They discuss "endless differences, that you just get on and resolve" (Ann Light, June 26th 2012) and the need to "work with informal groups that don't reinforce existing power imbalances . . . be aware of who disruptive/controlling people are . . . work through small groups as its generally unproductive to get an entire community together as the marginalised won't speak up" (Jacquie Cutts, June 27th 2012).

Facilitation and role of external agent

The potential for abuse of power of the external agent was not something that was raised in the discussions. What *did* emerge is the need for multi-disciplinary skills (Ann Light, June 26th 2012), the importance of good facilitation skills (Ann Light, June 26th 2012; Shreya Agarwal, June 14th 2012), and of candour and honesty (Ann Light, June 26th 2012). This is backed up by a discussion of the dishonesty of telecentres - portraying themselves as tackling issues of social exclusion, despite extremely limited actual impact (Sreekumar, 2007).

Choice of methods and techniques

Each project studied appears to make use of those participatory methods and techniques with which the individuals involved are most familiar, whether from PRA or Participatory Design or other disciplines (Jacquie Cutts, June 27th 2012; Ann Light, June 26th 2012; Harsha Liyange, July 3rd 2012; Wyn Griffiths, June 26th 2012; Joanna Saad-Sulonen, June 25th 2012; Shreya Agarwal, June 14th 2012). Although this can be simply "the same technique called by different names" (Ann Light, June 26th 2012), sometimes it betrays a bigger problem of relevance or understanding. Harsha Liyange discusses attempting to use PRA techniques in Sarvodaya-Fusion's work and finding it did not meet their needs and that on a later discussion of this with Robert Chambers, the views simply did not match with the reality of ICTD work, but "took very grandiose approaches to participation and power that just didn't chime with what we experience on the ground . . . the communities didn't have a sufficient understanding of technology for the tools of PRA be used to extract information" (Harsha Liyange, July 3rd 2012).

Most important is "knowing when to use which approach" (Jacquie Cutts, June 27th 2012) and so access to a wider selection of tools, with suitable guidance, would be useful. As Jacquie Cutts states, "I can't comment on whether techniques from a different field would be useful, as I don't know what they are!" (Jacquie Cutts, June 27th 2012).

Pragmatism

A highly pragmatic approach to development is exhibited by Sarvodaya-Fusion, Digital Green and Safe Mothers Safe Babies with a definite feeling of getting on with delivery and seeking to streamline processes (Harsha Liyange, July 3rd 2012; Shreya Agarwal, June 14th 2012; Jacquie Cutts, June 27th 2012). The other programs tend to have wider research or organisational agendas to contend with. Generally, there seems to be a continual tension between pragmatism / delivery on the one hand, and paying sufficient attention to socio-political issues of power and inclusion on the other.

4.2.3. Findings: *Sustainability*

The most interesting thing to emerge in the discussions on sustainability is its diversity of meanings. For Sarvodaya-Fusion, sustainability is primarily around financial security (Harsha Liyange, July 3rd 2012, 2009), whereas for MSSRF and Digital Green, local appropriation, albeit within a controlled framework, is just as important (Shreya Agarwal, June 14th 2012; Neggehalli & Shankaran, 2008a). Safe Mothers Safe Babies take sustainability to its logical conclusion that the role of the external NGO should diminish over time (although not necessarily disappear entirely) as the community takes ownership of its development and encompassing success metrics such as "how the community feels about the process, what they can now accomplish for themselves that they couldn't before etc." (Jacquie Cutts, June 27th 2012). Fair Tracing, being a fixed-term project did not set out to be sustainable (Ann Light, June 26th 2012; Light & Anderson, 2009). Specific findings include:

Capacity-build institutions

Both MSSRF and Safe Mothers Safe Babies have a strong emphasis on social sustainability and community appropriation, looking to hand over full control to the local institutions and committees (Neggehalli & Shankaran, 2008a; Jacquie Cutts, June 27th 2012), and in the case of the latter, paying especial attention to capacity building local civil society groups to enable them to get more involved in outreach and other development activities. The other projects did not appear to see this as part of their remit (for Fair Tracing this is simply not relevant, as they did not build anything that required sustaining).

Up-skill participants

There was more discussion of individual than institutional development. While Sarvodaya-Fusion does not have a formal approach to individual empowerment of participants, it provides ICT training and has a policy of recruiting from the local communities which serves a similar purpose – to the degree that the manager of their Smart Village program was hired after developing sufficient technical skills in their earlier work in his village (Harsha Liyange, July 3rd 2012). Digital Green and MSSRF both have active policies of developing local individuals to operate and manage their programmes (Shreya Agarwal, June 14th 2012; Gandhi, Veeraraghavan, Toyama & Ramprasad, 2009; Neggehalli & Shankaran, 2008a; Arunchalam, 2002). Safe Mothers Safe Babies entire approach revolves around local residents developing the skills to take over all activities (Jacquie Cutts, June 27th 2012)

What is overlooked is the importance of balancing those with the most ability to learn these skills (often the young, middle-class, or more educated) with the need to include the most marginalised (unlikely to be the same people).

4.2.4. Findings: *Increasing participant control*

This element can be seen as a judgement of the success of the factors in the preceding sections - if a genuine motivation to empower the community is delivered with suitable methods and a sufficient awareness of the complex issues, it should be expected that the level of control of the local participants will increase significantly over the duration of the work. This seems to be only partially evident in the projects studied for a variety of reasons.

Sarvodaya-Fusion mostly include local people in consultations over product design so while there may be empowering opportunities for certain individuals to take more control, on the whole control remains firmly with the NGO.

Fair Tracing had high levels of participant control at every stage, with the participants dictating the future direction of work, but its focus as a research project makes it difficult to judge any transformational or empowering potential it could have realised (Ann Light, June 26th 2012; Light & Anderson, 2009).

MSSRF on the surface aims to devolve control entirely to the local community, however, as a network-programme, its structure and aims are already pre-defined. This gives little opportunity for genuine local control outside of these pre-defined boundaries, although its production of local content does achieve this to a degree (Arunchalam, 2002; Sreekumar, 2007; Neggehalli & Shankaran, 2008a) and it certainly offers significantly more control than its less participatory rivals e-Choupal and Gyandyoot (Neggehalli & Shankaran, 2008b; Sreekumar, 2007).

Digital Green seek to involve people in product generation but with virtually no control over the underlying programme and platform which is managed centrally and firmly tied to pre-defined agricultural extension goals (Shreya Agarwal, June 14th 2012).

The potential for local control and empowerment in these last two projects is inevitably restricted by the external imposition of 'development' and the idea, common to these type of ICTD projects that "what the people want and what is perceived to be 'good for them' do not necessarily coincide" (Bailur, 2007).

The only project that appears to aim for full participant control is Safe Mothers Safe Babies which takes this approach from the beginning, rather than building up local control over time. It remains to be seen whether this can be as successful in their ICTD work as it has in their more traditional health work - with the higher levels of understanding and technical knowledge needed to participate effectively in ICTD.

In terms of the three levels of participation, Sarvodaya-Fusion is operating mostly at the level of *Consultation*, MSSRF and Digital Green mostly at *Involvement*, while Safe Mothers Safe Babies at least strive to operate at the highest level of *Control* (as does Fair Tracing, but with caveats due to its research-orientation and fixed-duration).

TABLE 14. *CHANGES* TO IDENTIFIED SUCCESS FACTORS ARISING FROM CASE-STUDY FINDINGS
• People's understanding of their own problems is usually better than an outsiders • Danger of misdiagnosing complex social problems as technical fixes • Work with both formal and informal institutions • Pre-work may be needed to build technological awareness prior to participation • Work in small groups not just community-wide sessions • Candour and honesty are vital • Learn from different disciplines and be aware of when to use which methods/techniques • Be aware of tension between pragmatic delivery and social/power issues • When choosing who to work with, balance existing technical ability with issues of marginalisation

4.3. Match of projects to preliminary framework

Only Safe Mothers Safe Babies seems to exhibit a consistent match with the factors identified in the previous chapter. The other projects demonstrate a few elements strongly, and the remaining factors weakly or not at all. The table below shows the match of each project to the factors identified in the preliminary framework. This is, of course, a subjective analysis, and would be more robust given more evidence to draw from but, nonetheless, is a useful way to compare.

TABLE 15. MATCH OF PROJECTS TO ANALYTICAL FRAMEWORK

	Fair Tracing	Sarvodaya-Fusion	MSSRF	Digital Green	Safe Mothers Safe Babies
Prepare					
Motivation (to empower)					
Bottom-up community-centric approach					
Political & social awareness					
Who participates?					
Ability to participate					
Iterative Development Cycles					
Manage power imbalances and group dynamics					
Facilitation and role of external experts					
Choice of methods and techniques			-		
Pragmatism					
Sustain					
Capacity build existing local institutions					
Up-skill participants					
Level of Participant Control					
Increasing control	-				

(Note. Green = High match, Amber = moderate match, Red = low match)

It is no surprise that Safe Mothers Safe Babies, as the only project with participants operating at the level of *Control*, is also the strongest match to the framework. This suggests that the framework does have validity and could be worth exploring further.

4.4. Additional findings not in preliminary framework

As well as offering insights into the factors underpinning the preliminary framework from Chapter 3, a number of new factors emerge from analysing these case-studies which are either not present or not strongly emphasised in the initial framework. These are discussed below:

4.4.1. *Preparation*: discovery, local context and relationship building

The importance of sufficient preparatory time is mentioned in the wider literature but emphasised far more strongly by the practitioners in the projects studied, all of which emphasise the need for lengthy periods of discovery and preparatory work to understand the local context and build trusting relationships with the local community. Fair Tracing set out to:

> deliberately challenge the perceived short-term nature and lack of preparation the researchers have seen in other projects - many projects still go in and the people involved think they don't need that [discovery] period, then they say 'oh we don't understand the context'. We spent 9 months working with the Chilean communities before even signing a Memorandum of Understanding agreeing to work with them and certainly before any more concrete work was begun" (Ann Light, June 26th 2012)

Safe Mothers Safe Babies similarly spend upwards of six months in discussions with local leaders before working with a new community (Jacquie Cutts, June 27th 2012).

4.4.2. *Delivery*: locally generated content

While the literature in Chapter 3 identified the importance of local context and local involvement, the practical application of ICTD makes it evident that this takes on a more specific form in many ICTD contexts – that of locally produced, generated and managed *content* that "takes account of local people's specific cultures, needs, wants and daily routines" (Dagron, 2001; Arunchalam, 2002).

In Digital Green this is implicit in its purpose of creating participatory video, while MSSRF also seek to create 'local webs' that value local knowledge, encourage local generation of content while also seeking to identify, translate and contextualise useful global knowledge. Safe Mothers Safe Babies also highlights that mobile-stories from other women are treated with more respect and have more effect than content from outside (Jacquie Cutts, June 27th 2012; Shreya Agarwal, June 14th 2012; Arunchalam 2002).

4.4.3. *Sustainability*: Types and meanings

Following on from the findings in 4.2.3, different concepts of sustainability arise from these projects, with different drivers and goals relating to them. For Digital Green and MSSRF, sustainability is primarily around the ability of the programme to continue rolling out to wider areas. Sarvodaya-Fusion sees sustainability is mostly around the financial ability to continue delivery, self-sufficiently, through generating 'commercial' income. Safe Mothers Safe Babies takes a view of sustainability as empowerment of the local community to continue its own self-development (Shreya Agarwal, June 14th 2012; Ann Light, June 26th 2012; Light & Anderson, 2009; Harsha Liyange, July 3rd 2012, 2009; Neggehalli & Shankaran, 2008a; Jacquie Cutts, June 27th 2012).

This may seem inconsistent at first, but a deeper look throws up some interesting tensions. In Digital Green and MSSRF, local communities have little influence over the direction of the overall program or the technology platform itself. However, both these projects have a model that is very clearly around scaling and/or replicating nationally and internationally (Gandhi, Veeraraghavan, Toyama & Ramprasad, 2009; Arunchalam, 2002; Neggehalli & Shankaran, 2008a) and, in this context, a centralised technology platform and delivery through local partners is essential for practical management and economies of scale. While this raises questions over the degree of transformation and empowerment that is possible, it also demonstrates that the requirements for sustainability - seen as Scalability or Replication - are clearly very different from the requirements for sustainability when seen as social embedding leading to local appropriation and control.

Another key conceptual difference is financial vs. social sustainability. There is a definite potential for conflict between a desire to self-generate income and a desire to embed technology in a community where it can be appropriated by local people.

Comparing the telecentre model of MSSRF with those of rival networks, e-Choupal and Gyandyoot, demonstrates this tension. The latter have centrally controlled technology to keep costs down, while dictating a self-sufficient model of operation that requires paid-for services to be offered from a very early stage, opposed to the community-mediated model of MSSRF (Neggehalli & Shankaran, 2008a; Arunchalam, 2002; Sreekumar, 2007; Neggehalli & Shankaran, 2008b). This may lead to situations where the product/services can be skewed to reflect the needs of those who can pay for them – unlikely to be the most marginalised – as well as shifting the project focus away from the simple provision of a social good (Liyange & Edge, 2011; Dagron, 2001; Bailur, 2007). This in turn can make the social embedding more difficult as the project (especially in the case of services such as a telecentre) becomes a local business with a profit motive, not a community-owned resource, a "cyber café by another label" (Michael Gurstein, June 19th 2012).

While there is a common-sense argument that financial sustainability is a must-have, there is a strong counter-argument that becoming financially sustainable without providing any social value is as big, if not a greater danger (Michael Gurstein, June 19th 2012; Dagron, 2001).

The idea that sustainability has different meanings in different contexts is critical to understanding the success and failure of participation in ICTD projects – the implications of this will be revisited section **5.5**.

4.4.4. *Cross-cutting theme*: technological vs. developmental empowerment

A final factor is hinted at in the discussions around delivery and sustainability, but explicitly spelled out in research on another project (e-Krishi in India, a web-based e-commerce platform for social inclusion) - the idea of technological empowerment . That is, the difference between empowering people *developmentally* (i.e. in terms of learning, health, governance etc.) and empowering people to manage and control the underlying technology and platforms used to deliver this developmental impact.

In the case of e-Krishi, while the site offers 'developmentally empowering' information, the control of this information and the system is monopolised by the Kerala government:

> Farmers are empowered on the developmental side – participatory arrangements for them to fulfil their own objectives on web-based platforms… but disempowered in terms of control of the technology, as the closed structure makes them entirely subjected to the technology owners [the government] which monopolises control of its mechanics and provisions (Masiero, 2011)

This distinction may at first appear arbitrary, but it is crucial and underpins many of the previous discussions around motivation, ownership, sustainability etc.

ICT is not simply "another tool" as it may seem, but is a powerful "agent of change" (Yeo, Hazis, Zaman, Songan, et al., 2011), and a "regulator of social practice . . . inviting human action to be conducted along specific paths" (Masiero, 2011). Even something as seemingly innocent and simple as defining what data an Information System will measure/display, influences processes, and thereby can change ways of working, ways of seeing the world, and priorities for action. Seen in this context, it is important that local individuals and the community are empowered with respect to technology itself – something which happens "if they are capable of manipulating it" (Masiero, 2011).

Reconsidering MSSRF, Sarvodaya-Fusion and Digital Green in this light – while they may well achieve significant developmentally empowering outcomes, none of them make significant attempts to empower the local communities to take on control of the underlying technology itself; that remains controlled by the external NGO.

This argument was also visited in the discussions at DIS2012 with the suggestion that – "the process is the product" (Wyn Griffiths, June 26th 2012) – i.e. the participants must come away able to continue and replicate the technical, developmental and participatory processes on their own.

In terms of capacity building and learning goals, this poses a challenge as, in addition to building 'developmental capacity' (e.g. management, finances, dealing with donors etc.) the local institutions need to develop 'technological capacity' also – the ability to control and manage ICT (and in some circumstances the skills and ability to actually build, maintain and develop the technology itself) and an understanding of how to continue development in a genuinely participatory manner. The same is true of the skills individuals need to develop – not just management/development skills, but technical and facilitation skills as well.

It does not seem practical to expect people with little or no technology grounding to develop these skills hence the suggestions earlier in this research that they develop the skills to "plan and manage ICT, not build it" (Ramirez, 2008; Carroll & Rosson, 2007).

However, learners can sometimes develop ICT skills far quicker and to a far higher level than anticipated, as in MSSRF where some volunteers learned to code in HTML and design web pages 'taking to technology as a fish to water' (Arunchalam, 2002), so these preconceptions of individual technical capabilities should perhaps be challenged.

TABLE 16. *NEW* SUCCESS FACTORS ARISING FROM CASE-STUDY FINDINGS
• Need lengthy discovery phase prior to delivery, to understand context and build trusted relationships • Locally produced and generated content is vital in addition to access to existing global content • Sustainability is a complex issue and needs unpacking and agreeing on at the start of a project • Empowerment needs to apply to both development and technology

4.5. Summary of analysis and best practice

On the whole, it seems that the evidence from the ICTD projects studied and from the wider interviews and case-studies supports the factors identified in the theoretical literature in Chapter 3, albeit, in some cases, ICTD research has a tendency to ignore or overlook some of the more subtle issues of power and politics. Additionally, a number of factors emerge that are either specific to the context of ICT for Development, or offer additional insight into the factors already identified, from an ICT for Development perspective.

In terms of what the research has to say about the benefit of a participatory approach – one argument states that there is "scant evidence of any causality between participation and greater impact" and most evidence to support it is "anecdotal" (Bailur, 2008). However, this is based on the assumption that participation creates better *project results*. What comes out far more strongly in is that the benefits of participation have less to do with the immediate project impact or production of better quality products (although in some cases this is evident), but much more to do with longer-term processes of individual and community empowerment, learning and capacity building that allows the external imposition of technological solutions to be phased out in favour of a 'self-development' model where people can take charge of their own use of technology – in effect the development of sustainable technological empowerment .

While this may be difficult to measure quantitatively, it is a useful guideline by which ICTD project success could be judged beyond simple delivery of stated, funded, short-term goals.

This chapter has demonstrated the potential application of the preliminary analytical framework developed in Chapter 3, by applying it to a diverse set of case-studies. This process has led to an elaboration of some success factors and the addition of others. These results are discussed in a wider context in the following chapter along with a reconsideration of the analytical framework in light of these findings.

5. Discussion of research in wider context

This chapter discusses the results of the critical review and analysis in Chapters 3 and 4, in a wider socio-technical context, drawing attention to factors affecting how participatory ICTD is approached.

5.1. Technological empowerment: a global socio-political perspective

Technological empowerment, as outlined in the previous chapter, is a laudable aim for ICT for Development. However, realistically – technology and ICT are Western constructs, driven primarily from large Western multi-nationals and US/European governments. In this context, no matter how participatory an approach is taken to an individual project, the factors shaping how a developing community is included in 'the digital world' are primarily external political forces.

This makes ICTD inherently part of a modernising project; bringing technology from richer countries to help improve the lives of people in poorer countries. This is not necessarily a problem –despite raging debates over modernising, very few people realistically advocate "the abandonment of modernity in favour of a potentially romanticised view of pristine, bounded islands of alternatives" (Mohan & Hickey, 2004) and recognise that – at its best – the modernising project is about improving people's material well-being.

However, it gives rise to two schools of thought on **how** this modernisation should occur. On the one hand - "transfer and diffusion", implying technology simply needs to be transferred and adapted to local needs; on the other hand - "social embedding" that proposes the construction of local socio-technical institutions to appropriate control of the technology (Avgerou, 2010; Day, Khan & Hewetson, 2009; Maail, 2011).

Debates have generally been polarised between the two, with 'techno optimists' (modernisers) underestimating the importance of local context and the complexity of development practice, and 'techno-pessimists' under-estimating the flexible nature of modern technology (Chapman & Slaymaker, 2002).

A realistic goal for technological empowerment may be a ***reduction*** in technological dependency rather than naïvely attempting to eliminate dependency on external/Western support entirely. Given the increasing prevalence of mobile-telephony, where the infrastructure and hardware are invariably controlled by private (usually Western) companies, this seems unlikely to change. An ICT equivalent of the idea of 'dependent development' is a helpful construct to consider development of a local community within a wider structure of dependency, seeking to lessen this dependency but not ignoring its inevitability (Cardoso & Faletto, 1979; Hills, 1994; Vernengo, 2006). In an "unprecedentedly connected world" (Gurumurthy & Singh, 2009), it may be that taking this ethos, while using participatory approaches to seek ways to appropriate and control the technology locally as far as is possible, is the best that can be expected.

5.2. Level of receptiveness – optimal match to level of participation

This research suggests that participatory ICTD projects should always seek to operate at the highest level of participation. However this is contradicted by the findings around *latent need*, and limited *ability to participate*, which show that giving control without the knowledge, skills and abilities to exercise it effectively may be ineffective and potentially damaging.

Therefore, plans are required to help people/institutions develop the skills, attitude and confidence in technology, development and participation in order that they are able to participate effectively at the highest level of participation - *Control*.

An interesting piece of research on HCI and marginalised women in India suggests a 5-stage model for how these women's ability to participate increases over a 3-5 year period: from two passive stages (powerlessness, initiation) through three active stages (participation, adoption, independence). Movement up this 'ladder' allows the NGO to reduce its role and become more passive over time (Shroff & Kam, 2011).

This chimes with the findings of this research and there is nothing to suggest this should not apply equally to other marginalised groups. The model has been simplified here to mirror the three levels of participation outlined in Chapter 3, and reflect the findings relating to motivation/ability to participate, giving **three** stages: *Reluctant* to participate, *Willing* to participate (but with limited ability) and *Able* to participate (and able to take on control/ownership).

In terms of the iterative approach to ICTD suggested here, it is important to seek an optimal match between the level of receptiveness of those involved, and the level of participation being undertaken, while at the same time seeking to increase both these levels in each iteration of the project.

5.3. Differing attitudes to participation

Looking at ICTD more widely, there appears to be a range of approaches and attitudes to participation evident:

Technology -focused participation: emphasises consultation with 'users' to gather better requirements and produce better quality systems/products.

Market-oriented participation: presents 'consumer choice' as a valid form of participation and informs much private-sector development and 'Bottom of the Pyramid' thinking. It is debatable whether this is a genuine form of participation, as beneficiaries have **no** control over the project design, but supposedly exert control through their buying preferences (Liyange & Edge, 2011; Bailur, 2008; Tschang & Montes, 2011).

Development-led participation: seeking to achieve development outcomes (e.g. the MDGs), using participatory 'techniques', yet being extremely vulnerable to the issues identified in Chapter 3 around power, control, motivation etc. (Ferrero & Zepeda, 2006; Drinkwater, 1994; Chambers, 1997).

Capacity-building participation: emphasises giving control/ownership to equitable local institutions - this approach is strongly supported by the findings of this research (McNeil & Woolcock, 2004; Hickey & Mohan, 2004; Masiero, 2011; Shroff & Kam, 2011; Cornwall, 2003). Differing aspects of these approaches are shown below:

TABLE 17. DIFFERING ATTITUDES TOWARDS PARTICIPATION

Type of Participation	Communities seen as…	Level of Participation	Technological Empowerment
Technology / Product Focused	Users/Recipients	Consultation	**Low**
Market Oriented	Consumers	N/A	**Low**
Development Led	Collaborators	Involvement	**Medium**
Capacity Building	Owners	Control	**High**

A capacity-building approach to participation is clearly the option with the most potential impact on technological empowerment, where ICTD projects may be able to:

> stop thinking solely about needs . . . and also think about wants, what the poor demand and how their communities would use digital devices if left to their own devices" (Heeks, 2008a).

In other words, capacity building to achieve technological empowerment may enable the poor to produce and control digital content and services directly, not simply receive external technology to meet what others perceive as their needs. This research suggests that this type of participation should be the goal of participatory ICTD projects wherever possible.

5.4. Planning for different types of sustainability

In the findings in Chapter 4, three different types of sustainable outcome were identified – the continuation of activity after the end of a 'project', scaling up or replicating a project into new areas, and a natural end of a project with an intended fixed-term duration, along with the distinction between financial and social sustainability.

Looking at the wider set of projects, and drawing on a multi-disciplinary discussion of sustainability at Designing Interactive Systems 2012 (DIS'12, 2012), this has been extended.

In addition to the outcomes defined above are concepts of a project *evolving* (i.e. continuing but with on-going changes or enhancements), a *repeatable process* (i.e. the participants now have the skills to repeat the participatory ICTD process again, perhaps for a different local need/issue), along with the recognition of the importance of other factors such as the handing over of effective management processes (DIS'12, 2012).

There is also a difference between *scaling* (expanding an existing project to cover a broader area or larger number of people), *replicating* (using a project as a model to be re-implemented in a similar fashion in a different place), and *'franchising'* – as epitomised by both MSSRF and Digital Green (expansion to new communities with local control, but within a centrally controlled framework). These differences are important as they provide a basis for planning what needs to be in place before 'sustainability' is possible.

For example, if a project is to evolve after the design team leave, this requires end-user appropriation of the technology and design processes – in order to develop "environments, not solutions, allowing problem owners to create solutions themselves" (Light & Anderson, 2009). On the other hand, if a project is required to replicate and/or scale then clearly the most crucial element of sustainability is "facilitating the necessary learning processes to enable the *process* to continue and develop" (Byrne & Sahay, 2007, my emphasis).

It is vital to ensure the vision of sustainability matches the plans, within the reality of the local community and the capacity-building/learning implemented during the project – or there is a danger of devolving responsibility to a group which is under-resourced or lacks the infrastructure to take on the role required of it (Bailur, 2008).

A matrix for planning sustainability

In order that the requirements to achieve sustainable outcomes are in place at the end of a project, they must be planned in from the beginning. This dictates a level of understanding of the type of sustainability being aimed for from day one, accompanied by appropriate planning of how to achieve it – in terms of funding, technology, institutional capacity, individual learning and so on.

A tool such as the simple matrix below could serve as an aid to defining these requirements and monitoring progress against them and to evaluate readiness of the local community to take over full control. It may assist practitioners in clearly thinking through the differing requirements for each factor (finances, skills etc.) depending on the type of sustainability required. For example, the exact nature of institutional capacity required will be very different for a project that is expected to scale, from a project that is expected to simply continue as-is on a local basis.

TABLE 18. EXAMPLE OF TEMPLATE FOR PLANNING FOR SUSTAINABILITY

Type of Sustainability	Finances	Social Embedding	Skills & Learning	Institutions	Management Processes	Other
Natural End						
Continuation						
Evolution						
Scaling						
Replication						
Franchising						
Repeating the Process						

Used in a similar manner to the ITPOSMO framework – i.e. as a guideline for thinking rather than a rigidly defined framework – it could help to plan sustainability from the start, increasing the likelihood of it being achieved successfully.

5.5. Summary of wider discussions

In addition to the new and amended success factors emerging from the case-studies in Chapter 4, other factors arise from this wider discussion which, while they emerge less directly from the research and are more hypothetical in nature, offer useful insights and mechanisms for delivering participatory ICTD:

TABLE 19. NEW SUCCESS FACTORS ARISING FROM WIDER DISCUSSION OF RESEARCH
• Empowerment should seek to reduce not eliminate technological dependency • Match level of participant control to level of receptiveness of participants • Identify the type of sustainability sought early-on, and plan around its specific requirements

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This chapter highlighted some important wider factors that emerge from considering this research from socio-technical and global political contexts. The following chapter goes on to re-consider the preliminary analytical framework in light of the results of this chapter and the findings from chapter 4.

6. Revised analytical framework for participatory ICTD

In Chapter 3 a preliminary analytical framework for participatory ICTD was developed that has shown some value and relevance through analysis of a series of case-studies in Chapter 4, though additional factors have emerged from analysis and discussion in Chapters 4-5. This chapter revisits the framework in light of these findings and proposes an evolved version that takes into account these additional factors.

6.1. Summary of new and amended factors

The table on the following page combines the new factors identified during the analysis of the case-studies and subsequent discussion in Chapters 4 and 5, with the original table of success factors from Chapter 3, with the same degree of subjective re-grouping where required. This new table now illustrates all the lessons and success factors identified throughout this research.

These success factors are then combined in **6.2** into a revised version of the preliminary analytic framework from Chapter 3. This revised version now separates pre-requisites (without which an empowering participatory model is simply not possible), from preparatory activities to be undertaken near the start of a project, and includes a 'feedback loop' to represent the concept of Planning for Sustainability, showing this before delivery commences, at the evaluation of each cycle of development, and at the end before realisation of a sustainable outcome such as handing over of control to the community.

TABLE 20. REVISED SUCCESS FACTORS FOR PARTICIPATORY ICTD	
Pre-requisites	• ***Motivation to empower (developmentally and technologically)*** Genuine motivation of external agents to include local community in decision-making with a view to empowerment/emancipation • ***Political and Social Awareness of external agents*** Understand relevance of local power structures (individual, household, community, local/national government and global markets), tension between quality of product/process & innovation/sustainability, dangers of co-optation; and difference between simple technical fixes and complex social problems
Preparing for participatory ICTD	• ***Discovery Phase*** 3-6 months min. to develop trust & relationships and understand local context • ***Bottom-up community-centric approach*** Participation of beneficiaries from initial goal-setting, improve bargaining position of the poor, recognise people's understanding of their own situation • ***Who participates?*** Representation of the needs of all groups, especially the marginalised; appreciate tension between identifying potential technology champions (those with existing technological ability) and including the most marginalised • ***Ability to participate*** Participants need motivation, skill and opportunity to participate; consider pre-work/pre-projects to build technological skills and awareness
Planning for and Achieving sustainability	• ***Long-term view of empowerment - reducing technological dependency*** Technological empowerment may mean taking broader view than a single project; consider tension between type of project and type of sustainability/empowerment • ***Capacity build formal and informal local institutions*** Work with and evolve existing structures and processes where possible; develop capacity of local institutions • ***Up-skill local individuals /participants*** Manage *latent need* – phased approach required which builds technological understanding of participants over time to enable them to participate effectively; develop skills of local people to become IT *planners/designers*
Delivering participatory ICTD	• ***Iterative development lifecycle*** Increasing involvement at each stage, starting small and building • ***Facilitation and management of power imbalances and group dynamics*** Understand how to work within power imbalances fairly yet practically; manage group dynamics to avoid unfair outcomes; work with different stakeholders together & separately – in small groups as well as community-wide sessions • ***Role of the external and technical experts*** Appreciate role and value of external and technical experts, but be aware of potential for unintended influence; build trust between external experts and local community - candour and honesty are vital • ***Choice of methods and techniques*** Understand suitability of different methods for different levels of skill, context etc.; draw on different participatory design/development methods (and wider disciplines) for different phases and contexts, be aware of what contexts suit what methods • ***Pragmatism*** Find the optimal level of participation for each phase/cycle of work; recognise situations in which technical limitations may take precedence over local needs; be aware of tension between pragmatism and overcoming power imbalances • ***Local context, Local content*** Locally produced content is vital in addition to access to existing global content
Level of Participant Control & Receptiveness to Participation	• ***Seek pragmatic optimal match*** Between participants receptiveness and appropriate level of participation • ***Increase level of participant involvement throughout program***

6.2. Revised analytical framework

The diagram below represents the full list of success factors, illustrated as a project lifecycle:

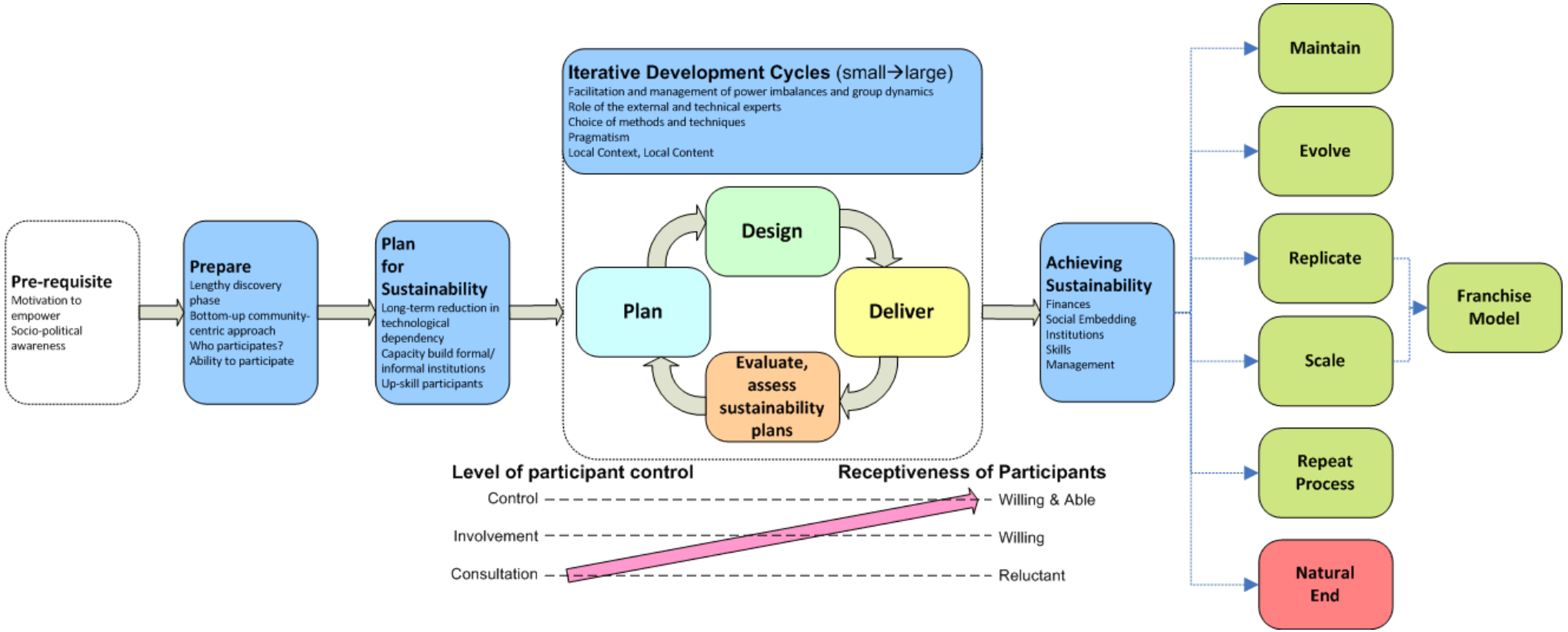

FIGURE 3. REVISED ANALYTICAL FRAMEWORK / PROPOSED APPROACH FOR PARTICIPATORY ICTD

This revised framework, although it represents a more robust approach that incorporates a wider set of influences, especially practice-led factors, still has the same caveats as the original framework around its subjectivity and requirement for more extended research to validate. The table below demonstrates how the five projects studied fare under the revised framework:

TABLE 21. PROJECT MATCH TO REVISED FRAMEWORK

	Fair Tracing	Sarvodaya-Fusion	MSSRF	Digital Green	Safe Mothers Safe Babies
Pre-requisites					
Motivation (to empower developmentally and technologically)					
Political & social awareness					
Discovery Phase					
Bottom-up community-centric approach					
Who participates?					
Ability to participate					
Planning for and Achieving sustainability					
Sustainability planned for?	**n/a**				
Long-term view – reducing technological dependency	**n/a**				
Capacity build existing formal *and informal* local institutions					
Up-skill participants					
Iterative Development Cycles					
Iterative approach?					
Facilitation and managing power imbalances and group dynamics					
Role of external and technical experts					
Choice of methods and techniques			-		
Pragmatism					
Local context, local content					
Level of Participant Control & Receptiveness to Participation					
Optimal match sought					
Increasing participant control	-				

Most of the projects fare slightly worse, which fits with a common-sense judgement as none take a radically progressive approach to technological empowerment (which is what would evidently be required to score highly in every factor). However, the developmentally-driven Safe Mothers Safe Babies still scores significantly better than the other projects, as would be expected given its more community-led approach.

It seems, therefore, that, despite a need for additional robust research, this framework has validity as a tool for analysing and evaluating the approach of ICTD projects to participation and the potential impact on technological empowerment.

It follows then, that it is also a potentially useful guiding framework to use when planning and developing new projects. In this context it is not intended as a blueprint to be followed rigidly, but as an evolving set of principles and guidance. Ideally it would be supplemented by a toolkit of potentially relevant methods that practitioners could draw on to develop specific and context specific project-plans.

This chapter has revisited the preliminary analytical framework from Chapter 3, evolved it in line with the findings and discussions from Chapters 4 and 5, and posited that it has value as both an analytical tool and a guiding framework for planning participatory ICTD projects. The final chapter considers the wider implications on policy and practice of taking this approach.

7. Conclusions and recommendations

In the body of this research, out of a consideration of the barriers that have historically impeded effective community participation in ICTD projects, a new approach or framework for considering participatory ICTD projects has been proposed. This final chapter discusses the limitations of the findings and implications of the new approach proposed on policy and practice.

7.1. Limitations of this research

In addition to the intrinsic limitations outlined in Chapter 2, the results show that the reliance on a small number of projects for analysis is an issue. For a piece of work seeking results relevant to the whole discipline of ICT, analysis of a wider range of projects would be desirable. This is particularly problematic for some of the more nuanced political factors such as understanding local power structures, or the role of the local/national governments, which did not arise in discussions of the projects studied. For a more robust test of the proposed framework from Chapter 6 – it would need to be applied across a wider range of projects, regions and cultures. The research is also limited by the subjectivity of the interpretation of the results and their adaptation into an analytical framework. Again, a wider set of projects with input from different types of stakeholder could mitigate this somewhat.

7.2. Implications: practitioner skills

The research has identified the need for ICTD practitioners to have wide-ranging skills covering technical areas, development management, participatory methods, facilitation and an awareness of power structures, socio-cultural situations and politics. These skills have been highlighted as pre-requisites that should be present before the project commences, to ensure all preparatory work is handled fairly and inclusively.

This may require a change in the way ICTD project staff are trained, recruited and developed or more thoughtful use of multi-disciplinary teams which bring this range of skills together.

7.3. Implications: time and resources

One of the criticisms of Participatory Development and Participatory Design is that it requires more time and/or resources than a traditional approach, especially at the start of a new community engagement (Cornwall, 2003; Light & Anderson, 2009; Jacquie Cutts, June 27th 2012; Steen, Kuijt-Evers & Klok, 2007). The approach proposed in this research, with its added skill requirements on the part of practitioners, its more complex understanding of the social and technical environments and, in particular, its suggestion for processes around Planning for Sustainability throughout the lifecycle of development, add even more to these time and resource requirements.

This may necessitate longer and/or more expensive projects but, given the current political climate it should not be assumed that this will be a realistic possibility. Therefore, the approach may need adapting with a more pragmatic attitude towards scoping and requirements. It is to be expected that there will be some kind of prioritisation at the beginning of each iteration anyway (in line with all iterative approaches to development such as RAD/AGILE), but given the additional time and resource requirements, this may become more important, more contested, and harder to manage.

This also dictates a higher-level view of “projects” where they are considered in their full local context as simply the latest in an on-going series of interventions, rather than as a standalone piece of work – only in this way can a holistic view of empowerment and increasing levels of participant control over time emerge.

7.4. Implications: donor policy and funding

In addition to requiring longer-term and less project-focused funding – something that has been demanded of donors for a long time already (Maria Zaghi, June 15th 2012), the iterative process in this approach also requires an attitude where experimentation is embraced and failure acknowledged and learned from, rather than a focus on specific measurable objectives defined at the start of a project. This is a difficult transition for funders whose focus is normally on measuring the direct and immediate impact of their budgets.

The need to involve local communities as early as possible in the process (i.e. when establishing the needs and goals, not just in the design of a solution) may dictate a very different model of funding altogether – perhaps a model where a participatory and exploratory relationship is built with a community initially to identify their needs, and only then is further funding made available for specific development activities, and a suitable NGO or other organisation identified who can deliver this. This could potentially reverse the power-relationship between the community and the external partner. The Zapatistas in Mexico already operate in this manner, "interviewing" NGOs who want to work in their area to ensure their work is a match with the community's own goals (Muñoz, 2006). Safe Mothers Safe Babies embodies this to an extent also, with the community defining the projects to be undertaken - although their general focus is pre-determined by their mission of maternal and child health (Jacquie Cutts, June 27th 2012).

Taking this to its logical conclusion would require some sort of "matchmaking" organisation that is embedded in the community but with strong links with various funders and other delivery organisations, NGOs etc. so that it can build partnerships capable of delivering what the community identifies as its core need. This intermediary organisation could also take a much stronger responsibility for ensuring the complex areas of political/power issues, inclusion, planning for sustainability and learning/capacity-building are fully planned and delivered, reducing the need for already existing large NGOs to adapt to an entirely new way of working. This would be an interesting area to explore further.

7.5. Implications: methods and techniques

It is apparent from both the theoretical research and the case-studies/interviews that different participatory ICTD projects draw on different methodologies and techniques – from Participatory Urban Appraisal, from Participatory Design but there are also techniques to draw on from wider disciplines such as participatory geography, interactive arts, urban planning etc. These disciplines could be complementary if brought together in a thoughtful manner (not just as an arbitrary collection of different techniques), with the different schools of thought seeming to apply more appropriately at different stages of technological awareness.

If ICTD practitioners were able to draw on these different techniques in a knowledgeable manner, it is likely this would have a positive impact on the success of their delivery. A consolidated 'toolkit' drawing together these different techniques, with some guidance on where they are most useful would be invaluable.

7.6. Further research: testing the proposed approach / framework

The key need to come out of this research is that, while the proposed approach *seems* to offer a way to overcome or reduce many of the problems faced by ICTD and participatory ICTD in particular, it is largely untested, although Safe Mothers Safe Babies emerges as a reasonably close match and some of the new concepts were well received by cross-disciplinary practitioners at DIS 2012 (DIS'12, 2012).

However, this is not robust validation and the proposed approach is effectively a 'straw man' that needs to be tested more comprehensively against both theory and in the field against a wider range of projects or, better still, be applied to a long-term participatory ICTD project as a planning tool and its effectiveness in this role analysed.

7.7. Summary and closing comments

The critical review in this research suggests that increased participation is required for project results, sustainability and empowerment. However, both the theory and the case-studies highlight how critical it is to get this participation right, and not overlook complex technical and socio-political issues such as power structures, people's ability to participate, and the concepts of latent need and technological empowerment.

The proposed approach deduced from this research would seem to have value in regards to overcoming these problems, based on both a critical review of literature and theory and its applicability to real-world projects.

In particular, with its high focus on sustainability and planning for this from the start, it is hoped that it may help to counter the "high failure rate of ICTD projects in terms of uptake, even when a functional application is developed" (Light & Anderson, 2009).

It is clear that, from a long history of partial or total failure, ICTD remains a long way away from achieving its empowering and emancipatory potential, and many of the claims of the game-changing nature of modern technology remain unfulfilled. Yet, in today's increasingly globalised and inter-connected world, where technology plays such a major role and to some extent shapes the rules of the game, remaining outside of and not in control of this technology limits the freedoms available to developing communities. It is hoped that, taking wider socio-technical views of the problems, as has been done in this research, may help to move discussion and practice forward to the point where ICT can begin to be taken control of by communities in developing countries, and where they can begin to realise its transformational potential.

Appendix A: List of interviews

All interviewees saw a copy of the script/description in Appendix B and have signed and returned consent forms.

Interviewees from the five core projects being researched:

Project	Role	Name	Organisation/Employer	Date/Time of Skype Interview
Fair Tracing	Research Director	Ann Light	University of Northumbria	26/06/2012 09:30 GMT
Sarvodaya-Fusion	Project Director	Harsha Liyange	eNovation 4D	03/07/2012 14:00 GMT
Digital Green	Project Manager	Shreya Agarwal	Digital Green	14/06/2012 10:00 GMT
Safe Mothers Safe Babies	Founder	Jacquie Cutts	Safe Mothers Safe Babies	27/06/2012 15:00 GMT
MSSRF	No interviewee available			

Interviewees from other projects:

Project	Name	Date/Time of Skype Interview
Charcoal Briquette Network	Wyn Griffiths	26/06/2012, 14:00 GMT
ICTD Incubator Centre	Maria Zaghi	15/06/2012, 15:00 GMT
n/a (expert on telecentres and Community Informatics)	Dr Michael Gurstein	19/06/2012, 17:00 GMT
The Urban Mediator	Joanna Saad-Sulonen	25/06/2012, 15:30 GMT

Participants in the face-to-face group discussions at DIS2012 (all-day 11th June 2012):

Name	Organisation
Ann Light	University of Northumbria (UK)
John Vines	University of Newcastle (UK)
Jane Dudman	University of Newcastle (UK)
Peter Wright	University of Newcastle (UK)
Wyn Griffiths	University of Middlesex (UK)
Keir Williams	Queen Mary University (UK)
Joanna Saad-Sulonen	Aalto University (Finland)
Christian Dindler	Aarhus University (Denmark)

Appendix B: Interview script

Copy of interview preparation and question outline send to each participant is below:

About Me

My background is primarily working in ICT/Web Strategy in the voluntary, public and private sector in the UK – most often exploring how to utilise technology with disadvantaged groups to combat issues of social exclusion. I am now studying to move into International Development, retaining a focus on the most suitable and appropriate way to use technology to help people improve their lives.

Introduction to my research

My research is focused around understanding the barriers preventing participation being undertaken more often, and more effectively within ICT4D work, and proposing some principles which may help mitigate the problems common to participatory ICT4D across the board. I am specifically interested in understanding:

- Why there appears to be less participation within ICT4D than in more mainstream development work
- What the barriers to participation are - from the donors/agencies, from the local community/participants, from managers/practitioners
- Whether there is a lack of desire or a lack of suitable and appropriate methods and techniques that work for the context of ICT4D
- What problems have been encountered during the participatory processes in ICT4D work, and what lessons have been learned during the same work
- What we can learn from participatory activity in other areas – development studies, participatory ISD, participatory arts, mainstream ICT development etc.

Purpose of the Interview

I will be looking at a range of case-studies of participatory ICTD projects, and drawing on theoretical critiques of participatory development in general, and looking at how participation is approached in different disciplines. However, I want to supplement this with some first-hand accounts of people who have been directly involved and understand the challenges on-the-ground, and may also shed some insight into the differences or specific challenges that are unique to ICT4D because of its cross-disciplinary nature.

Questions/Themes of discussion

Context (5-10mins)

1. Please briefly explain the project, your role, and in what way it was participatory?
2. Which phases of the project were the participants involved in (e.g. planning, design, delivery, evaluation); how were the specific participants selected? Was any work undertaken with them before the project to build trust/relationships?

Motivation and Barriers (5-10mins)

3. Were there any barriers or resistance to taking this approach from any of the stakeholders or participants?

Results (5-10mins)

4. What do you feel was the benefit to taking this approach (either in terms of better/worse project results, or 'incidental' (capacity/learning) benefits of the participatory process itself, for the community as a whole and/or for the individuals actively participating) - were there any specific successes, or any problem with the process itself?
5. How did the project/participation end – was there a sustainable outcome, a handover, a natural end or..?

Reflections (15-30mins)

6. Which participatory methods, tools and techniques were used, and why were they chosen? Do you feel they were appropriate for ICT4D or could you have benefitted from using different methods, and are you aware of others?
7. What processes were used for making decisions; were there any tensions between new and existing decision-making processes, issues with group dynamics etc..?
8. What attitude did you take towards achieving consensus while also listening to dissenting voices?
9. Did you encounter any issues relating to power – between different groups within the participants, or between them and external stakeholders?
10. Are there any other interesting reflections or lessons-learned that you'd like to share that we haven't covered? Especially any recommendations on what you think would enable you/someone else to overcome barriers to successful participation more effectively?

What Next?

I will write up certain quotations and/or summarise extracts of the interview which may be included as part of my final dissertation.

- Would you like an opportunity to see any quotes from yourself and correct any facts before I use them?
- Would you interested in seeing a final version of the dissertation once it is completed?

Appendix C: Critical approaches to IS research

The key elements and principles of Critical Research in IS are outlined below (Cecez-Kecmanovic, 2007; Myers & Klein, 1999, 2011):

Insight : An in-depth examination of the local environment and issues affecting real people, providing a broad understanding of the current situation

Principles of Insight	
Fundamental principle of the hermeneutic cycle	Iterate between consideration of independent parts, and the whole and the relation between them
Principle of contextualization	Critically reflect on wider social/historical context
Principle of interaction between researchers and subjects	Reflect on possible social construction of data through interaction between researchers and subjects
Principle of abstraction and generalisation	Relate empirical data to abstract theoretical concepts of wider human/social understanding
Principle of dialogical reasoning	Be sensitive to tensions between theoretical preconceptions and actual findings
Principle of multiple interpretations	Remain aware of different interpretations of the same situation by different participants
Principle of suspicion	Be sensitive to possible biases and distortions from narratives of participants and researchers

Critique : A critical explanation of the situation, relating it to wider conditions of power, social asymmetries etc. and seeking to understand people's participation and contribution to ICT4D/IS development; challenging normative ideas that privilege certain perspectives

Principles of Critique	
Principle of using core concepts from critical social theorists	Organise data collection around core concepts and ideas from one or more critical theorists)
Principle of taking a value position	Researchers should advocate progressive values and integrate this into their research
Principle of revealing and challenging prevailing beliefs and social practices	Direct attention to complex relationships between human interests, knowledge, power and social control, including 'traditional' habits, customs and conventions

Transformative Redefinition : Developing relevant knowledge and understanding that have the potential to enable change and new ways of working in the future

Principles of Transformative Redefinition	
Principle of individual emancipation	Orient towards facilitating the realisation of human needs and potential, enabling critical self-reflection and self-transformation and help enlighten people as to their real situation
Principle of improvements in society	Suggest ways in which unwarranted uses of power might be overcome, and how organisations, institutions and society might be improved
Principle of improvements in social theories	Seek to improve or extend socio-technical theories while subjecting one's own research to self-critique

Appendix D: List of projects considered for this research

Before the five core projects were selected, a range of research, case studies was read and some informal discussions undertaken with a wide range of other projects. The full list of projects considered is below. Some of the non-core projects are still mentioned in the research.

Project / Organisation	Country
Fair Tracing	Chile & India
Sarvodaya-Fusion	Sri Lanka
Digital Green	India (and globally)
MSSRF	India
Safe Mothers Safe Babies	Uganda
Map Kibera	Kenya
Cidade de Deus	Brazil
e-Choupal	India
Gyandyoot	India
e-Sagu	India
VeSEL	VeSEL
TDSCP (UThukela District Child Survival Project)	South Africa
NABUUR	Global (based in Netherlands)
The Urban Mediator	Finland
Charcoal Briquette Network	Kenya (and London)
ICT Incubator Centre	Guatemala

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