



## **PROCEEDINGS**

# **Engaging with Participation, Activism, and Technologies: Proceedings**

**13th Prato CIRN Conference 2-4 November 2016, Monash Centre, Prato Italy**

### **Publication Data**

Conference Proceedings- CIRN Community Informatics Conference - 2-4 November 2016,  
Privilege, Information, Knowledge and Power: an Endless Dilemma, Monash Centre Prato, Italy.

ISBN 978-0-9874652-5-2

Centre for Community Informatics, Faculty of IT, Monash University

Eds. Larry Stillman, Tom Denison, Misita Anwar

Publication date: 2017

Conference Overview.....	2
Conference Committee.....	3
Reviewing Statement.....	3
Peer Reviewers .....	3
Conference Program.....	5
All Abstracts .....	15
Published Papers and Powerpoints	
Francesco Botto & Maurizio Teli PIE News. A public design project toward commonfare.....	53
Liz Forester & Lev Gonick. Connecting the Unconnected - At-Risk Community Engagement in the Digital Economy in Cleveland, Ohio.....	65
Jabulisiwe Mabila, Marlien Herselman, Judy van Biljon. Digital content and sustained use in integrating tablet technology into teaching in resource constrained environments in South Africa: Educators' views.....	69
Muzi Matyila, Adele Botha, George Sibiya. The facilitation of adoption and use of text intensive mobile services by low-literate users.....	82
Judy van Biljon, Filistéa Naudé Hugo Lotriet. Citation measures for supporting scholarly impact in Community Informatics research.....	98
Linlin Zhao. Inside out: Managing ethical dilemmas with autoethnography in insider participatory research.....	110
Powerpoints follow.	

#### A Note on Abstracts and Papers

- 1) Abstracts of all papers and presentation have been included and if there is a paper in the proceedings, refer to the page number listed in the Abstracts or the list above. PDFs of Powerpoints published in the proceedings are also in the Abstracts.
- 2) A number of authors have not submitted papers or PDFs of PowerPoints for publication in the proceedings or they may appear elsewhere.
- 3) Due to technical issues, PDFs of PPTs or Posters are as is, and not reduced to a common size (use zoom +/- if you have viewing problems).

## Conference Overview

For some years now the CIRN Prato conference has focused on the intersection between Community Informatics (CI), Development Informatics (DI), and Community Archiving (CA).

In particular, the 2015 conference focused on information and knowledge as socially constructed artifacts and the ways in which relations of information and knowledge production can reflect unequal distributions of power and privilege, “whether manifested in gendered activity; the primacy given to formalized expertise or particular language codes; restricted access to information, knowledge and production for those not in positions of institutional control; or the production of particular artifacts”. The 2015 conference also questioned the role of the academy in defining terminology and appropriate technologies of memory, viewing this as a form of epistemological colonization on vulnerable groups. The conference sought ways of engaging more meaningfully with practitioners.

In 2016 the intention was to continue to explore and to expand on such issues, bringing a stronger focus on more meaningful and equal partnerships with community, civil society, and NGO organisations around the world.

The overarching theme of the conference, was the further development of Participatory Action Research (PAR) with regard to both theory and practice, as a means of giving communities a stronger voice and especially women’s and other marginalized voices, despite structural and cultural challenges. This will be explored in a variety of contexts, with particular emphasis on the implications for archival, community and development informatics.

Together, these themes provide a rich environment for re-examining theoretical and methodological approaches to working with community, and the potential to address current concerns as expressed within Community and Development Informatics, such as a lack of theoretical and methodological rigour, and concern about the influence of dominant hegemonies whether they represent powerful sectoral interests, as in Community Informatics, or the Global North, as in Development Informatics. Are their bodies of theory (for example, post-colonial, intersectional or critical theory) and practice that are intrinsically (better for the Global South) (or “more appropriate”), or do such theories and associated practices continue to serve academic, rather than development interests?

Our aim for the conference is for it to be an active community practice in, and not just discussions about, pluralism. We therefore encourage participation from a wide range of cultures, races, ethnicities, religions, socio-economic statuses, gender identities, disabilities, and ages. We also encourage proposals for different ways of knowing and sharing. We especially seek to foster dialogue across difference rather than presentation and preservation of homogeneity, when new ICTs in particular allow the existence and fruitful production of multiverses of information and knowledge.

## Conference Committee

- MB Akhter, Oxfam in Bangladesh
- Tom Denison, Monash University
- Joanne Evans, Monash University
- Anne Gilliland, UCLA
- Kiera Ladner, University of Manitoba
- Sue McKemmish, Monash University (Chair)
- David Nemer, University of Kentucky
- Safiya Noble, UCLA
- Colin Rhinesmith, University of Oklahoma
- Mauro Sarrica, Sapienza University, Rome
- Larry Stillman, Monash University
- Miriam Sweeney, University of Alabama
- Kelvin White, University of Oklahoma
- Martin Wolske, University of Illinois

## Reviewing Statement

- The Conference Proceedings contains refereed, non-refereed and PhD colloquium papers and Powerpoints from the conference.
- All full papers in the refereed category were subject to blind peer review by at least two reviewers, and reviewers' comments returned to the authors. Authors were then required to make changes and if necessary, a further review conducted before final approval.
- This is a publication (E1) for a conference publication for Australian participants.

## Peer Reviewers

Melissa Adler, University of Kentucky  
Misita Anwar, Monash University  
Andrea Copeland, University of Indiana  
Sarah Copeland, Leeds Metropolitan University  
Ron Day, University of Indiana  
Tom Denison, Monash University  
Joanne Evans, Monash University  
Manuela Farinosi, Udine University  
Rebecca French, Monash University  
Jacob Galimberti, Paris Institute of Political Studies, Germany  
Anne Gilliland, UCLA  
Ricardo Gomez, University of Washington  
Hadi Hariyanto, Monash University  
Mario Marais, Meraka Institute, S Africa  
Robin Margolis, UCLA  
Sue McKemmish, Monash University  
David Nemer, University of Kentucky  
Colin Rhinesmith, Simmons College



Greg Rolan, Monash University  
Joanne Mihelcic, Monash University  
Safiya Noble, UCLA  
Amalia Sabiescu, University of Coventry  
Larry Stillman, Monash University  
Judy van Bijon, UNISA, S Africa  
Braam van der Vyver, Monash University, S Africa  
Eduardo Villaneuva, Pontificia Universidad Catolica del Peru



**Endorsed by**



# Conference Program: Engaging with Participation, Activism, and Technologies 13th Prato CIRN Conference November 2 - 4, 2016 · Monash Centre, Prato Italy

**Date: Wednesday, 02/Nov/2016**

9:00am - 9:30am	<p><b>Reg: Registration</b> Location: Sala Veneziana, Monash Centre</p>
9:30am - 10:45am	<p><b>Key-1: Opening and Keynote</b> Location: Sala Veneziana, Monash Centre Chair: <b>Sue McKemmish</b></p> <p>Contested histories, participatory movements: the making of memories in Bangladesh</p> <p><u>Meghna Guhathakurta</u> Research Initiatives, Bangladesh</p>
10:45am - 11:15am	<p><b>Coffee 1</b></p>
11:15am - 12:45pm	<p><b>Panel 1: Society &amp; Citizenship</b> Location: Sala Veneziana, Monash Centre Chair: <b>Andrea Copeland</b></p> <p>"Survivor-developed Community Memory Initiatives Two Decades after Conflict"</p> <p><u>Anne J. Gilliland</u><sup>1</sup>, <u>Hariz Halilovich</u><sup>2</sup>, Tamara Štefanac<sup>3</sup></p> <p>1: UCLA, United States of America; 2: RMIT, Australia; 3: University of Zadar, Croatia</p> <hr/> <p>Reflecting on Building an Activist Archive in Hawaii: Case Study of the Hawaii Peace and Justice Social Movement Archive</p> <p><u>Ellen-Rae Cachola</u></p>

	<p>University of Hawai'i at Manoa</p> <hr/> <p>Connecting the Unconnected - At-Risk Community Engagement in the Digital Economy in Cleveland, Ohio</p> <p><u>Lev Gonick</u>, <u>Liz Forester</u></p> <p>OneCommunity, United States of America</p> <hr/> <p>Collaborative Sensemaking: Bootstrapping a Pattern-Driven Participatory Community Mapping Methodology</p> <p><u>Aldo de Moor</u></p> <p>CommunitySense, Netherlands, The</p>
<p>12:45pm - 1:30pm</p>	<p><b>Lunch 1</b></p>
<p>1:30pm - 3:00pm</p>	<p><b>Panel 2: Education &amp; Self-Reflection</b> Location: Sala Veneziana, Monash Centre Chair: <b>Astrid Elisabeth von Rosen</b></p> <hr/> <p>Inside out: Managing ethical dilemmas with autoethnography in insider participatory research</p> <p><u>Linlin Zhao</u></p> <p>Monash Caulfield School of IT, Australia</p> <hr/> <p>Citation measures for supporting scholarly impact in Community Informatics research.</p> <p><u>Judy van Biljon</u>, <u>Filistea Naude</u>, Lotriet Hugo</p> <p>Unisa, South Africa</p> <hr/> <p>The Critical Insider: Membership, ethics, and trust</p>

	<p><u>Belinda Battley</u></p> <p>Monash University, Australia</p> <hr/> <p>Critical Incidents Analysis: mismatching expectations and reconciling visions in intercultural encounters</p> <p>Sara Vannini<sup>1</sup>, <u>David Nemer</u><sup>2</sup>, Ammar Halabi<sup>3</sup>, Amalia Georgiana Sabiescu<sup>4</sup>, Salomao David<sup>5</sup></p> <p>1: University of Washington; 2: University of Kentucky; 3: University of Fribourg; 4: RMIT University; 5: Università della Svizzera italiana - NewMinE Lab, Switzerland</p>
<p>3:00pm - 3:30pm</p>	<p><b>Coffee 2</b></p>
<p>3:15pm - 4:45pm</p>	<p><b>Panel 3: Society &amp; Citizenship 2</b></p> <p>Location: Sala Veneziana, Monash Centre</p> <p>Chair: <b>David Nemer</b></p> <p>Collective Digital Citizenship through Local Memory Websites</p> <p><u>Mike Kreek</u></p> <p>Amsterdam University of Applied Science, Netherlands, The</p> <hr/> <p>PIE News. A public design project toward commonfare</p> <p><u>Francesco Botto</u><sup>1</sup>, Maurizio Teli<sup>2</sup></p> <p>1: CREATE-NET, Italy; 2: Madeira Interactive Technologies Institute, Portugal</p> <hr/> <p>Towards a refined model for the recording and preservation of Indigenous Knowledge in South Africa</p> <p><u>Marna Botha</u>, Ronell Alberts, Gugu Khalala, Riette Pretorius, Carol van Wyk</p> <p>CSIR, South Africa</p>

5:15pm	<b>walk</b>
-	
6:30pm	Prato Walk with Silvia

**Date: Thursday, 03/Nov/2016**

9:00am - 10:30am	<b>Workshop: Participatory Action Research</b> Location: Sala Veneziana, Monash Centre  Participatory Action Research in Practice-from Bangladesh to the world.  <u>Larry Stillman</u> <sup>1</sup> , <u>MB Akhter</u> <sup>2</sup> , <u>Tapas Chakraborty</u> <sup>2</sup> , <u>Auvi Priodarshine</u> <sup>2</sup>  1: Monash University, Australia; 2: Oxfam Bangladesh
10:30am - 11:00am	<b>Coffee 3</b>
11:00am - 12:30pm	<b>Panel 4: African Issues</b> Location: Sala Veneziana, Monash Centre Chair: <b>Judy van Biljon</b>  "A scoping review towards the conceptualization of a digital Open Badges ecosystem in South Africa  <u>Preia Motheeram</u> , Adele Botha, Marlien Herselman  CSIR, Meraka, South Africa <hr/> Realising the value of information collected by community health workers  <u>Ronell Alberts</u> , Thomas Fogwill, JP Tolmay  CSIR, South Africa <hr/> Privacy and Confidentiality in Health Care: A Patient's Perspective  <u>Siyolisile Simayi</u> , George Sibiyi, Thomas Fogwill  Council for Scientific and Industrial Research, South Africa
12:30pm - 1:30pm	<b>Lunch 2</b>

<p>1:30pm - 3:00pm</p>	<p><b>Panel 5: ICT for Development Issues</b> Location: Sala Veneziana, Monash Centre Chair: <b>Aldo de Moor</b></p> <hr/> <p>A use case for eHealth-enabled integrated and coordinated maternal healthcare <u>Thomas Fogwill</u>, Ronell Alberts CSIR Meraka Institute, South Africa</p> <hr/> <p>The facilitation of adoption and use of text intensive mobile services by low literate users <u>Muzi Matyila</u>, Adele Botha, George Sibiya Centre for Scientific and Industrial Research, Pretoria, South Africa, South Africa</p> <hr/> <p>Developing a sustainability model for tablet technology integration into teaching in resource constrained environments in South Africa: Integrating educators' views on digital content as a component for sustainability <u>Jabulisiwe Mabila</u><sup>1</sup>, Marlien Herselman<sup>2</sup>, Judy Van Biljon<sup>1</sup> 1: University of South Africa (Unisa); 2: Council for Scientific and Industrial Research (CSIR)</p> <hr/> <p>PROTIC: Participatory Action Research and DI <u>Tom Denison</u><sup>1</sup>, Larry Stillman<sup>1</sup>, Mauro Sarrica<sup>2</sup> 1: Monash University, Australia; 2: Sapienza, University of Rome</p>
<p>3:00pm - 3:30pm</p>	<p><b>Coffee 4</b></p>
<p>3:30pm - 5:00pm</p>	<p><b>Panel 6: Feminist &amp; Critical Research</b> Location: Sala Veneziana, Monash Centre Chair: <b>Ellen-Rae Cachola</b></p>

	<p>Love, Money and Power: Archiving the Wages for Housework &amp; Welfare Rights movements</p> <p><u>Arlen William Austin</u><sup>1</sup>, <u>Beth Capper</u><sup>1</sup>, <u>Siwin Sharon Lo</u><sup>2</sup></p> <p>1: Brown University, United States of America; 2: City University of New York Graduate Center, United States of America</p> <hr/> <p>Learning lessons: Implementing indigenist and feminist anti-oppressive methodologies in DAMC community talks/consultations</p> <p><u>Shawna Ferris</u>, <u>Kiera Ladner</u>, <u>Danielle Allard</u></p> <p>University of Manitoba, Canada</p> <hr/> <p>The Traffic in Young Girls: Crisis, Criminality, and Moral Currencies in the Libidinal Economy</p> <p>Cassandra Troyan, <u>Maya Andrea Gonzalez</u></p> <p>N/A, United States of America</p> <hr/> <p>Building Capacity for Inclusiveness through Connections with Community Archives</p> <p><u>Andrea Copeland</u>, Ayoung Yoon</p> <p>Indiana University at Indianapolis, United States of America</p> <hr/> <p>Forging a Feminist Digital Archives</p> <p>Stacy Wood</p> <p>University of California Los Angeles, United States of America</p>
<p>7:15pm - 10:00pm</p>	<p><b>Dinner</b></p>



**Date: Friday, 04/Nov/2016**

9:00am - 9:15am	<b>PO: Opening Remarks</b> Location: Biblioteca San Giorgio  Opening remarks by <b>Stefano Del Grande</b> and the local authority
9:15am - 10:45am	<b>AA-1: Activist Archives 1</b> Location: Biblioteca San Giorgio Chair: <b>Steve Wright</b>  What do records do in people's lives that nothing else does?  <u>Gregory Rolan</u>  Monash University, Australia <hr/> Mausoleums of the past or resource centres for the future? History activism and working-class archives and museums in the UK  <u>Andrew Flinn</u>  UCL, United Kingdom <hr/> Archiving in Counter-Currents: Documentation, Appraisal and Description for Labour Organizing and Community Action  <u>Vladan Vukliš</u> <sup>1</sup> , Anne Gilliland <sup>2</sup>  1: Archives of the Republic of Srpska, Banja Luka (Bosnia and Herzegovina); 2: Graduate School of Education and Information Studies, University of California, Los Angeles (USA) <hr/> Radical recordkeeping for activist communities  <u>Katherine Johanna Jarvie</u>  Monash University, Australia

10:45am - 11:15am	<b>Coffee 5</b>
11:15am - 12:45pm	<p><b>AA-2: Activism/Arts</b> Location: Biblioteca San Giorgio Chair: <b>Anne Gilliland</b></p> <hr/> <p>Artists and Archivists: Activisms in the Archives</p> <p><u>Kathy Michelle Carbone</u> UCLA/CalArts, United States of America</p> <hr/> <p>(Re)Staging Stories of Performance Past at the La MaMa Archives: Mediated Recordkeeping and Archives as a Site of Transmission</p> <p><u>Robin Margolis</u> UCLA MLIS Media Archival Studies, United States of America</p> <hr/> <p>Using Information Visualisation to give voice to a historical community</p> <p><u>Louis Engelbrecht</u><sup>1,2</sup>, Marna Botha<sup>1,2</sup>, Adele Botha<sup>1,2</sup></p> <p>1: CSIR, South Africa; 2: UNISA, South Africa</p> <hr/> <p>Big dreams and impossible archival imaginaries: dance community archiving and the potential of participatory knowledge production in a digital age</p> <p><u>Astrid Elisabeth von Rosen</u> University of Gothenburg, Sweden</p> <hr/> <p>Understanding of Community Participation in Oral History: the Need for Transformative Services in Cultural Institutions.</p> <p><u>Hanis Diyana Kamarudin</u> Monash University, Caulfield Campus, Australia</p>

12:45pm - 1:45pm	<b>Lunch 3</b>
1:45pm - 3:15pm	<p><b>AA-3: Documentary Forms</b> Location: Biblioteca San Giorgio Chair: <b>Tom Denison</b></p> <p>The nature of ‘document work’, and its implications for radical community archives and their holdings</p> <p><u>Steve Wright</u> Monash University, Australia</p> <hr/> <p>The Agency of an Activist Archive. The Primo Moroni Archive</p> <p><u>Jacopo Galimberti</u> Paris Institute of Political Studies, Germany</p> <hr/> <p>Social movement theory and the Italian radical community archives: A question of valence?</p> <p><u>Mark Andrew Howard</u> Monash University, Australia</p>
3:15pm - 3:45pm	<p><b>Final: Grab a Coffee + Final Plenary</b> Location: Biblioteca San Giorgio Chair: <b>Sue McKemmish</b></p>
4:00pm - 4:45pm	<p><b>Archives: Tour of Centro Documentazione di Pistoia (CDP)</b> Location: Biblioteca San Giorgio</p>

## Abstracts

If a PDF of a paper or PDF of Powerpoints are in these proceedings, this is indicated below and the page in the proceedings indicated.

Otherwise, the paper or presentation is to be published elsewhere or not submitted to the proceedings for publication and indicated as "ABSTRACT ONLY".

Author/s	Affiliation	Title
Alberts, Ronell; Fogwill, Thomas; Tolmay, JP  Referred Paper	CSIR, South Africa	<p>Realising the value of information collected by community health workers</p> <p>The delivery of health services through health facilities such as hospitals and clinics has been found to be inadequate in developing countries. This is due to limited access to facilities by members in communities, especially in the rural context. To address this, community health workers (CHWs) have been utilised in the South African health system to provide basic health services in communities such as home visits, health education, maternal and child health support, communicable disease control, referrals, record-keeping, and collection of data. Various eHealth solutions, in particular mobile technologies, have been developed and deployed to support CHW in their tasks.</p> <p>Since CHWs often are the first line of contact of patients with the health system, they are the first to register individuals, assess their health status and refer them to health facilities if medical attention is required. The data collected by CHWs is currently stored in separate proprietary data stores. There is an opportunity to utilise the information collected by CHWs in the wider health system through interoperability and applicable standards. This will enable the health system to use the registration information captured by CHWs to reduce the need for re-registration on other systems when individuals present themselves at health facilities, enable clinical practitioners</p>

		<p>to view assessment results from home visits and most importantly, track if a patient referred to a health facility, adhered to the referral. Through referral tracking it will be possible to identify individuals who did not comply with referrals and schedule follow-up home visits. It is particularly important to follow up in cases of maternal and child health as well as suspected communicable or non-communicable diseases.</p> <p>There are proprietary health information systems that have the ability to access both assessment information captured in communities as well as clinical information recorded in health facilities. The benefit, however, is limited to users of that specific system only and no referral tracking is possible between different systems. This paper describes an approach to enable heterogeneous CHW applications and patient management systems to interoperate in a broader, national eHealth system through compliance to defined eHealth standards and a shared foundational eHealth interoperability framework in order to realise the described advantages. This allows any compliant patient management system to use the registration information captured in the field and access health assessment results irrespective of which application was used by the CHW, as long as the application is compliant. In addition, referrals and adherence of referrals can be tracked between CHWs and the various levels of healthcare facilities independent on which information system is used. This enables an improved level on continuity of care to patients in communities across the various levels of healthcare and increase the impact of community health workers in the field.</p> <p>ABSTRACT ONLY</p>
--	--	--

<p>Battley, Belinda</p> <p>Graduate Paper</p> <p><b>* Proceedings PDF of Poster</b></p>	<p>Monash University, Australia</p>	<p>The Critical Insider: Membership, ethics, and trust</p> <p>Critical research involves three basic elements: Insight, critique, and transformation (Klein &amp; Myers 1999). When the researcher is a member of the community in which the research is based, there are both benefits and challenges with all of these elements. My research into the use of records in maintaining collective memory involves a partnership between three communities, and I am a member of all of them. My aim is that all three communities are equal partners in the research, with their different interests and skills valued. The research aims relate to the differing but intersecting needs of each of the communities, and the research process and outcomes are to be owned and validated by all of the participants. The differing values, interests and skills of the communities can assist with the three elements of critical research, but also lead to challenges, including risk to the communities due to the trust they place in me as a member, as well as my own biases and expectations I feel as a community member. Critiquing my own communities is a challenge in itself, as although the right to challenge can be a privilege of membership, it must be balanced with the importance of maintaining good relationships, meeting community-specific ethical requirements and keeping the trust of fellow-members. This presentation will consider the concept of membership, discuss the implications of being a critical insider, and briefly introduce my developing understanding of the significance of place both in the community's collective-memory maintenance, and in carrying out research within a community.</p> <p>PROCEEDINGS – PDF of Poster</p>
---	-------------------------------------	--

<p>Botha, Marna; Alberts, Ronell; Khalala, Gugu; Pretorius, Riette; van Wyk, Carol</p> <p>Refereed Paper</p>	<p>CSIR, South Africa</p>	<p>Towards a refined model for the recording and preservation of Indigenous Knowledge in South Africa</p> <p>The National Recordal System (NRS) is an information technology system implemented in South Africa to record and preserve Indigenous Knowledge (IK). The system is based and built on a conceptual model, stipulating the processes followed to collect, record and preserve IK of community members across South Africa. The model is developed to preserve IK within the original communities and to enable communities to own, record and manage their IK.</p> <p>The recording and preservation of IK is of high value in communities where knowledge is mainly indigenous and has never been recorded. There is potential to use IK in scientific research and development. The holders of IK could also benefit financially from the recording, preservation and promotion of their knowledge.</p> <p>Although the NRS has been implemented in various communities across South Africa, many challenges have surfaced with regard to the current model. Challenges experienced regarding the model include: recorders do not understand the relevant processes; there is a lack of trust between IK holders and recorders; governance challenges such as a lack of involvement from the steering committees and processes which are too rigid.</p> <p>Therefore, the purpose of the paper is to propose a new model for the recording and preservation of IK in South Africa, in order to mitigate the challenges and risks currently experienced within the existing NRS model.</p> <p>The proposed model is developed by following a Design Science methodology and improving on the original model by applying lessons learned and evaluation during the design cycle of the methodology. Design Science is an appropriate methodology for the development of the proposed NRS model, as the</p>
--	---------------------------	--

		<p>methodology allows for rigour and improvements to designs in order to provide additions to a knowledge base.</p> <p>The model proposed in this paper will be implemented in various communities to improve the recording and preservation of IK in South Africa. This model could also be used as a guideline for the implementation of similar Indigenous Knowledge Systems in communities across the globe.</p> <p>ABSTRACT ONLY</p>
<p>Botto, Francesco (1); Teli, Maurizio (2)</p> <p>Refereed Paper</p> <p><b>* Proceedings, p. 53.</b></p>	<p>1: CREATE-NET, Italy; 2: Madeira Interactive Technologies Institute, Portugal</p>	<p>PIE News. A public design project toward commonfare</p> <p>The new poor are a group of people composed by precarious workers, working poor, NEETs and people left behind by the safety nets, accounting for approximately 25% of the European population. Commonfare is a new collaborative form of welfare provision based on equitable governance and grassroots democracy, entailing the involvement of diverse stakeholders to facilitate the bottom-up arousal of collective practices tackling the needs of the new poor. The paper describes the concepts and building blocks of the PIE News project, a public design project which started in July 2016 with the aim to foster the emergence of commonfare as an alternative model to satisfy the needs of the new poor. PIE news leverages on 3 pilots (Italy, Croatia,</p>



		<p>Netherlands) with grassroots organizations in order to create a commonfare model through the development of a Collective Awareness Platform and a Digital Currency tool. The network supporting the project is constituted by organizations that account for approximately one-hundred thousand social media contacts. These organizations include ethical banking, networks of associations, activists for basic income, and many others.</p> <p>PROCEEDINGS</p>
<p>Cachola, Ellen-Rae</p> <p>Refereed Paper</p>	<p>University of Hawai'i at Manoa</p>	<p>Reflecting on Building an Activist Archive in Hawaii: Case Study of the Hawaii Peace and Justice Social Movement Archive.</p> <p>The Hawaii Peace and Justice Social Movement Archive is an activist archive being built on O'ahu, Hawai'i. Dr. Ellen-Rae Cachola, principal investigator on this project, will begin by introducing the HPJ archive and providing a glimpse of the content of the collections. She will discuss the process of spearheading and developing such archive, from the policy making, grant writing, inventorying, recruiting of student and community volunteers to participate in indexing, processing and digitizing the collections.</p> <p>Secondly, the presentation will discuss the political and cultural significance of the archive, as ethnographically described by the anthropologically trained archivist. Dr. Cachola will discuss a brief history of American Friends Service Committee-Hawai'i, a Quaker organization that came to include Kanaka Maoli, Asian and haole (Caucasian) organizers working to build multi-issued social justice movements in Hawai'i. Some of the issues they worked on were Hawaiian Sovereignty, demilitarization, global anti-imperialist movements, LGBT rights, women's rights, Conscientious Objector movements, among other issues.</p> <p>Specifically, the presentation will draw from Anthony Giddens, Frank Upward and Patrick Wolfe to theorize "memory structuration," a historically established memory structure that</p>

		<p>continues to build upon and evolve as new narratives are learned and assimilated onto public institutions and consciousness over time, as it relates to the HPJ Archive. Memory structuration will be used to explain the political-theoretical ideologies embedded in the discursive content of the archives that are in tension with each other, even if they lie together in the same archive. This affective tension is a reflection of the social, cultural and political work that is necessary in order for a socially just Hawaii to emerge from its position of (neo)colonial occupation. The presence of social-justice oriented Kanaka Maoli, Asians and haoles (whites) in AFSC-Hawaii challenges a liberal type of peace activism by insisting that the recognition and work to address the sovereign Hawaiian nation having been illegally occupied by the U.S. is an important aspect in defining peace and justice in Hawai'i. However, to recognize this history, as non-Hawaiians (as well as Hawaiians) requires a decolonial memory education to work through complicities of being intertwined and dependent upon the settler state, a perspective that Dr. Cachola will elaborate on as descendant of Ilocano plantation workers. The work to assimilate the historical facts of Hawai'i's history and theoretical futures into the complex lives of diverse individuals in Hawai'i is required in order to generate strong educators and leaders to stand behind and contribute to a collective vision of peace and justice in Hawai'i in which Kanaka Maoli rights are respected along side the rights of other subaltern groups that currently reside in Hawai'i. As archives have been important aspects of nation building, Dr. Cachola will discuss how the HPJ archive's provenance from anti-imperial record creators designs a memory structure according to what Dr. Noelani Goodyear-Ka'opua has documented as the lāhui--a different kind of imagination of the nation that can support learning and exchange from diverse community groups, as they work on their own unique and intersecting ways to manifest a decolonial Hawai'i.</p> <p>ABSTRACT ONLY</p>
--	--	---

<p>Carbone, Kathy Michelle</p> <p>Refereed Paper</p>	<p>UCLA/CalArts, United States of America</p>	<p>Artists and Archivists: Activisms in the Archives</p> <p>Over the past several decades the archival turn (Merewether, 2006) or ‘impulse’ (Foster, 2004) in contemporary art practice and the rise of artist-in-residence projects in archives has produced a panoply of visual, performance, and literary art works that activate the archives. Artists working within this turn often employ critical-aesthetic strategies to records in order to reconsider historical narratives, expose missing or silenced voices, interrogate modes of representation, or investigate relations between official and personal memory through art making processes and works. Other artists combine these strategies with socially- and community-engaged practices, as did investigative and documentary poet Kaia Sand and interdisciplinary artist Garrick Imatani, who were artists-in-residence at the City of Portland Archives and Records Center (PARC) in Portland, Oregon from 2013-2015. Using surveillance documents the Portland Police kept on civic and political activists in the late 1960s, 1970s, and early 1980s, Imatani and Sand created poetry objects, sculptures, and performances in collaboration with Portland community members: visual and literary artists; an archivist; and, activists who were under surveillance and whose lives are captured in the records. The artists envision their work as an addendum to the archives, a way to illustrate some of what is missing in the institutional record—the voice of the activist—and to talk back to, annotate, and fill in some of these silences and gaps within the records.</p> <p>In this paper I expand upon my ongoing ethnographic research of Imatani and Sand’s residency at PARC, engaging ideas from “relational aesthetics” (Bourriaud, 2002) and “performance remains” (Schneider, 2011) to explore the creation and transmission of two poems by Sand. The first, <i>She Had Her Own Reason for Participating</i>, comprises thirty inscribed copper plates and a performance that Sand created through her experiences in</p>
--	---	---

		<p>PARC's reference room working with surveillance records related to women activists and interacting with archivist Mary Hansen, with whom she performed the poem. The second, <i>_Air the Fire_</i>, is an embroidered triptych inspired by underexposed photographs that rendered those under surveillance unrecognizable. In this work Sand considers anonymity in a public record, exposure, ethical action, and notably, pays homage to the courage of past and present day activists. I will also discuss the ways in which Sand's archival interventions mediate and contribute to the evolvement of the record as well as the greater societal record of activism and civic engagement. And to conclude, I will contemplate how an artist-in-residence program in an archives is a form of activism itself as it opens the possibility of the archives to other and different socio-political engagements, arrangements, and communities through art production, circulation, and reception.</p> <p>ABSTRACT ONLY</p>
<p>Copeland, Andrea; Yoon, Ayoung</p> <p>Refereed Paper</p>	<p>Indiana University at Indianapolis, United States of America</p>	<p>Building Capacity for Inclusiveness through Connections with Community Archives</p> <p>The overall objective of this project is to explore how bridges can be constructed between existing cultural institutions (libraries, archives and museums) and community archives (or community groups wanting to develop archives) as well as the role of third parties in bridging these groups. Researchers have recognized the importance and impact of community archives. They connect people with their history and heritage, engage the community in social activities, and contribute to democratic heritage through participatory collecting. Despite the importance of community archives and their contribution to social justice through the recovery of hidden and marginalized stories, a number of community archives face many</p>

		<p>challenges, such as lack of expertise in and capability of preservation as well as technical and financial sustainability. Bringing cultural institutions and community archives together would be a mutually beneficial solution for both sectors: cultural institutions would be exposed to an increasingly broader scope of topics to build more inclusive and culturally relevant collections; community archives would be able to rely on the mainstream cultural institutions' professional expertise and existing preservation infrastructure. Third-party organizations may likely be the bridge between institutions and community groups, as they are in a better position to prioritize social justice than formal archival institutions, which operate from a premise of neutrality. Employing mixed methods, this project will first uncover the methods used in successful collaboration projects between existing community archives and cultural institutions. Second, it will develop a working model for creating equitable partnerships between community archives and cultural institutions. Lastly, it will explore the role of a third-party organization and design services at the Center for Personal and Community Heritage Informatics (CPCHI), IUPUI to help grassroots groups and community organizations to minimize tensions and build equitable partnerships between cultural institutions and community archives.</p> <p>This study will employ mixed methods, qualitative interview and content analysis, to explore the experiences and perceptions of heritage institutions and community groups who have successfully collaborated to create links between community heritage and a preservation and access infrastructure. As a starting point for this exploration, we will conduct interviews with International Coalition of Sites of Conscience (<a href="http://www.sitesofconscience.org/">http://www.sitesofconscience.org/</a>) staff, members leadership, and their member organizations. The International Coalition of Sites of Conscience will serve as a starting point for recruiting potential study participants, given their mission which states,</p>
--	--	--

		<p>"We are sites, individuals, and initiatives activating the power of places of memory to engage the public in connecting past and present in order to envision and shape a more just and humane future." This organization has 200 member organizations that work together to preserve painful stories that history might like to forget in order to motivate actions that will lead to social justice for these group, thereby connecting the past to the present. The interviews will explore recommendations of methods for creating connections between communities and heritage organizations and how those methods move archival memory to social action. A sample of the 200 sites will be analyzed to identify the methods used in the particular instances in which the member organizations are involved with.</p> <p>Audiences will benefit from learning about the successful experiences of creating strategic partnerships with heritage institutions. The project aims produce a working model for creating equitable partnerships between heritage institutions and community groups, while allowing both sides to maintain their voices and political independence.</p> <p>ABSTRACT ONLY</p>
de Moor, Aldo Refereed Paper	CommunitySense, Netherlands, The	<p>Collaborative Sensemaking: Bootstrapping a Pattern-Driven Participatory Community Mapping Methodology</p> <p>Participatory community mapping can support collaborative sensemaking within and across communities and their surrounding stakeholder networks. We list some observations from practice about using community mapping for making inter-communal sense. We outline how we are bootstrapping a methodology for pattern-driven participatory community mapping. We propose the need for a community collaboration pattern language, illustrating it with examples from the cross-case evolution of core community interaction patterns.</p> <p>ABSTRACT ONLY</p>

<p>Denison, Tom (1); Stillman, Larry (1); Sarrica, Mauro (2)</p> <p>Refereed Paper</p>	<p>1: Monash University, Australia; 2: Sapienza, University of Rome</p>	<p>PROTIC: Participatory Action Research and DI</p> <p>This paper reports on the PROTIC project, a 5 year collaboration between Monash University, Oxfam Australia and Oxfam Bangladesh. Working within a Participatory Action Research paradigm, PROTIC aims to work with disadvantaged rural women in agriculture to develop community capacity in the use of mobile technologies to support information sharing on topics including agriculture, human rights, domestic violence, health and disaster coping strategies. Baseline data has now been collected in a number of areas, including economic condition, water and sanitation, agriculture, health, disaster vulnerability and coping strategies, women's rights, and ICT use. At the time of the conference PROTIC will have just completed its pilot stage, which focused on agricultural information, and this will provide a useful opportunity to reflect on a range of issues relating to the project, including lessons learnt from the pilot, and reflections on some of the more promising theoretical frameworks under consideration for application to different aspects of the project.</p> <p>ABSTRACT ONLY</p>
<p>Engelbrecht, Louis (1,2); Botha, Marna (1,2); Botha, Adele (1,2)</p> <p>Refereed Paper</p>	<p>1: CSIR, South Africa; 2: UNISA, South Africa</p>	<p>Using Information Visualisation to give voice to a historical community</p> <p>During the Anglo-Boer War a community of women, children and some men were detained in the Mafeking concentration camp. A number of women described their war experiences some years after. The reliability of these testimonies have however been questioned by various authors. Their written testimonies are known as the Huyser collection .The study presents an Information Visualisation solution to visually represent the coherence of facts within the testimonies. The coherence theory states that the truth value of a proposition consists in its coherence within a set of propositions. By visually representing the coherence of the facts in the testimonies, the possible truth value of the facts is highlighted, thereby giving voice to an historical</p>

		<p>community of former concentration camp inmates. In order to find a solution to the research problem, a design science research approach was followed. The Huyser collection is regarded as Indigenous Knowledge.</p> <p>ABSTRACT ONLY</p>
<p>Ferris, Shawna; Ladner, Kiera; Allard, Danielle</p> <p>Refereed Paper</p>	<p>University of Manitoba, Canada</p>	<p>Learning lessons: Implementing indigenist and feminist anti-oppressive methodologies in DAMC community talks/consultations</p> <p>Based at the University of Manitoba in Winnipeg, Canada, the Digital Archives and Marginalized Communities Project is developing three separate but related digital activist archives using indigenist, feminist, and participatory design processes with stakeholder groups. Working titles for these archives are: the Missing and Murdered Indigenous Women Database (MMIWD), Sex Work Database (SWD), and Post-Apology Residential School Database (PARSD). Overarching objectives for this research project are: to create and mobilize—via multiple forms of digital media—knowledge that contests and re-envisions conceptions of violence against certain people as normal; to actively engage in decolonization; to challenge standard archival practices; to build bridges and dialogue between academic and non-academic stakeholder communities; and in doing so, to create community-based archives that preserve community-identified records in a way that “resonates with community understandings and knowledge” (Shilton &amp; Srinivasan, 2007, p.96).</p> <p>Having spent the last three years accumulating sample data, collecting a variety of materials for the archives, selecting software, building and training a research team, and cultivating relationships with stakeholder communities, DAMC team members are currently engaged in extensive consultations with Missing and Murdered Indigenous Women’s advocates, and with sex worker activists to learn how they would have</p>



		<p>us organize, describe, protect, and present their records in MMIWD and SWD. In this paper, we will share successes, discuss challenges, and analyze failures in DAMC community consultation methodologies and findings to date. We will also examine our ongoing efforts to build or modify digital activist archival spaces that take into consideration sometimes conflicting community needs and desires. In so doing, we hope to engage our CIRN colleagues in discussions pertaining to decolonization and digitization, and the roles that social justice researchers and community-oriented informatics professionals can (and perhaps cannot) play in indigenist, feminist, and anti-violence activist archival work.</p> <p>ABSTRACT ONLY</p>
<p>Flinn, Andrew  Refereed Paper</p>	<p>UCL, United Kingdom</p>	<p>Mausoleums of the past or resource centres for the future? History activism and working-class archives and museums in the UK</p> <p>This paper will draw on research into and experience of the creation and use of independent archives and museum by working-class activists and labour movement bodies to document and support their document their histories and support contemporary struggles. The paper will explore the past, present and future of a particular political strand of heritage activism in the UK. It will do this by identifying some key features of the historical development of independent archival spaces supporting the production of ‘useful’ and politically-engaged histories in the UK and then by suggesting some of the contemporary societal and archival challenges and opportunities facing such endeavours in contemporary society.</p> <p>ABSTRACT ONLY</p>

<p>Fogwill, Thomas; Alberts, Ronell</p> <p>Refereed Paper</p>	<p>CSIR Meraka Institute, South Africa</p>	<p>A use case for eHealth-enabled integrated and coordinated maternal healthcare</p> <p>Child and maternal health is a priority, particularly in lower income countries. The Millennium Development Goals (MDGs) stress a reduction in maternal and child mortality. Like many other countries, South Africa is implementing programmes to improve maternal and child health.</p> <p>Despite a relatively high level of expenditure on healthcare for a middle income country (8.5% of GDP vs a WHO recommendation of 5%), health outcomes in South Africa are poor. Life expectancy is 59.1 for males and 63.1 for females (MDG of 70). Maternal mortality is 155 per 100,000 live births (target of 100 by 2020), while infant mortality is 34.4 per 1000 (MDG of 18).</p> <p>eHealth in South Africa is characterised by fragmentation and a lack of interoperability. This is apparent in the experience a pregnant woman has with the public health system throughout her pregnancy.</p> <p>To address this, there is an increased focus on patient-centric, integrated, coordinated care. This requires that, wherever the patient encounters the health system, she has one view of the health system, clinicians have her accurate and up-to-date information, and her care is coordinated across care settings and health facilities.</p> <p>This paper presents an ideal use case, in which eHealth enables any pregnant woman to receive patient-centric, coordinated and integrated care across various care settings. Elements of this have been implemented in a pilot, using the national eHealth standards to ensure interoperability between information systems. Data are being collected in the pilot and will be presented in future.</p> <p>ABSTRACT ONLY</p>
---	--	--

<p>Galimberti, Jacopo</p> <p>Refereed Paper</p>	<p>Paris Institute of Political Studies, Germany</p>	<p>The Agency of an Activist Archive. The Primo Moroni Archive</p> <p>The Primo Moroni Archive is an activist archive that attempts to embody the values its documents bring to the fore. Founded in 2002, the archive owns one of the largest collections of documents concerning the 1960's and 1970's Italian political struggles, along with materials about the political movements that have emerged since the 1980s. The institution is self-managed, self-sufficient and views dialogue with current leftist struggles and debates as part and parcel of its mission. Its location – a Milanese “centro sociale” – is key to this endeavour, but it exposes the archive to the risk of eviction. In 2009 the squatters were evicted, but the presence of this major archive was one of the arguments to pressure the authorities into letting the squatters and the documents back into the premises, which happened shortly after the expulsion. This strategic use of memory and “culture” represents a way in which an activist archive can act as a political weapon. An alternative but compatible strategy informed the exhibit of Australian artist Marco Fusinato, From the Horde to the Bees, at the 2015 Venice Biennale. Fusinato transformed the holdings of the Primo Moroni archive into a work of art, while turning the resulting exhibit into a source of funding for the archive. I will trace the history of the Primo Moroni Archive and I will focus on the agency of this archive, notably its role as a tool to protect an occupied place and to introduce a subversive ethos into mainstream culture.</p> <p>ABSTRACT ONLY</p>
<p>Gonick, Lev; Forester, Liz</p> <p>Non-refereed paper</p> <p><b>* Proceedings p. 66. + PPT-PDF.</b></p>	<p>OneCommunity, United States of America</p>	<p>Connecting the Unconnected - At-Risk Community Engagement in the Digital Economy in Cleveland, Ohio</p> <p>OneCommunity is a 12 year old civic technology social enterprise based in Cleveland, Ohio. We seek to catalyze innovative ICT for public benefit. We have successfully built and deployed one of the largest community-owned fiber optic</p>

		<p>networks in the United States. We recently sold the fiber optic network and have taken proceeds from the sale to invest in a range of new initiatives including an effort to 'connect the unconnected.'</p> <p>Connecting the Unconnected is an effort to provide network connectivity to at-risk parts of our community including residents in public housing units, homeless shelters, and inner city senior citizen multiple dwelling units. After deploying the OneCommunity fiber optic network across the backbone of the city's neighborhoods we are experimenting with new millimeter wave wireless technologies as a fiber-substitute product to bring very robust, high speed (1 GB/s) and high availability connectivity to parts of our community that have no Internet access at home or place of residence.</p> <p>Connecting the Unconnected is ALSO a program to engage three targeted at-risk population groups and connect them to the digital economy. We have ongoing participatory action efforts with (1) returning military veterans, (2) men and women re-entering city life after extended periods of incarceration, and (3) a growing number of welfare-to-work single and single head of household women. Our participatory action efforts with these populations has been to establish ICT training and small company and non-profit formation activities in partnership with local innovation hubs at our city and county libraries, and a new community innovation hub established by our organization. A formal series of curricula have been developed through a participatory engagement effort facilitated by our partners at Cleveland Neighborhood Progress. This particular Connect the Unconnected effort seeks to create small work teams formed as part of our engagement with these at-risks population groups, to form 'geek squads' to work on a range of technology needs in the community. While some of the 'geek squads' are sponsored by philanthropic and charitable organizations others are developing co-op and</p>
--	--	--

		<p>small business models to sustain their work. The range of employment and career opportunities includes break-fix, scanning, digitization and tagging of hundreds of thousands of pages of documents, quality assurance and quality control for data entry, data literacy and community engagement, and citizen data science.</p> <p>Many of the organizing principles and business approaches to the Connect the Unconnected in Cleveland Ohio have been gleaned from well documented case studies in Africa, Asia, and Latin America and the Caribbean.</p> <p>Cleveland Ohio has a long and important history in community-based technology engagement dating back to well before the modern Internet. The Connect the Unconnected initiative is an early work in progress. We hope to both share our learnings through digital story telling and early findings. We also hope to learn from other case studies from participants at the Prato 2016 conference.</p>
<p>Guhathakurta, Meghna  Keynote</p>	<p>Research Initiatives, Bangladesh</p>	<p>Contested histories, participatory movements: the making of memories in Bangladesh</p> <p>The seventies witnessed the birth of a new nation called Bangladesh amidst much bloodshed and violence. It was also a time which saw the rise of authoritarianism and consequent militarization that veered the nation away from the foundational ideals of democracy and secularism. The eighties was a decade of much soul-searching; in politics, in literature and in movements against autocracy. Women’s movements in Bangladesh also fought along these lines claiming that democratic thinking was as much needed in the personal space that most women occupied, as it was needed in the public sphere. In Bangladesh therefore history and memory remains contested and a lived struggle.</p> <p>However the making of memories continues as does the construction of histories. Marginalized communities like indigenous</p>

		<p>peoples, outcastes, women, participate in different ways and have multiple entry points as they interrogate nationalist constructions of history. How can these processes be understood and made relevant to the nationalist discourse or indeed form a discursive practice of its own. This is the central question that I will explore from the perspective of certain trends in Participatory Action Research as is being practiced in Bangladesh.</p> <p>ABSTRACT ONLY</p>
<p>Howard, Mark Andrew</p> <p>Refereed Paper</p>	<p>Monash University, Australia</p>	<p>Social movement theory and the Italian radical community archives: A question of valence?</p> <p>The theory and practice of the radical community, and a capacity for self-organisation, demonstrates their ability to control the symbols and language of society, to define new conventions of meaning, and to offer alternative reasons and explanations for action. Invariably, however, the sociological study of Italian social movements of the 1960s and 1970s grant certain intellectual circles a monopoly over the comprehension of the 'object' of study. The wilful exclusion of potentially relevant theoretical practices in the sociological modelling of the nexus of the radical community and politics sweeps aside the localised actions and discourses of various subgroups within the social movement environment. That is, the assumptions in play in disciplinary thought treat the radical community as the material of the theorist, and disqualify the practice and theory of radical social movements as a credible mode of analysis of the social and political condition. Ultimately, this discounts the radical subject as knowledge producer. By reflecting on my personal experience of conducting doctoral research at three key archives in Italy—The Centre of Documentation in Pistoia, the Archives of Primo Moroni hosted by the Cox 18 social centre in Milan, and the Workers' Archives of Augusto Finzi managed by the Marghera Public Library—I contemplate an alternative approach, which considers the valence of these communities as essentially</p>

		<p>epistemological and not simply 'political', or social. I then discuss how access to knowledge, in particular the refusal of the exclusion from knowledge creation, is a central concern for the radical political subject. To finish, I briefly consider how the holdings of each archive, along with their unique approach to governance, may promote or diminish the epistemic value of radical social movements.</p> <p>ABSTRACT ONLY</p>
<p>Jarvie, Katherine Johanna</p> <p>Graduate Paper</p> <p><b>* Proceedings PDF-PPT</b></p>	<p>Monash University, Australia</p>	<p>Radical recordkeeping for activist communities</p> <p>Animal rights activists as a community have little to no archival representation globally. Beyond a few niche collections, the voice of animal activism is largely unheard and undocumented in institutional archives beyond "animal welfare" and law enforcement. A new appraisal model is needed to redress this imbalance, and using animal rights as a case study, research is underway for a new model that provides multiple views and provenances, incorporating the needs of these disruptive and marginalised communities.</p> <p>Katherine Jarvie will draw on her research in the field of radical recordkeeping and what radical means to archivists working with activist communities, particularly in relation to 'critical functional analysis' principles. Her presentation draws on a recent case study of activist groups' attempts to ban greyhound racing in Australia.</p>

<p>Kamarudin, Hanis Diyana</p> <p>Graduate Paper</p>	<p>Monash University, Caulfield Campus, Australia</p>	<p>Understanding of Community Participation in Oral History: the Need for Transformative Services in Cultural Institutions.</p> <p>There are two primary aims of my doctoral study. 1) to examine the current practices and participation of local communities in oral history projects; and 2) to investigate initiatives undertaken by cultural institutions in capturing the experience of local communities through oral history, and how those institutions organise, provide access to and preserve their collections. This research will be based on a qualitative approach with multiple case studies, and important to community and cultural institutions, as it will highlight alternative ways of improving the current practices of oral history. To date, little has been done to investigate the roles of cultural institutions and how they could be more responsive to the need of communities and/or researchers from the initial process of creation through to access and dissemination of oral history collections.</p> <p>Abstract Only</p>
--	---	---



<p>Kreek, Mike</p> <p>Work-in-Progress</p>	<p>Amsterdam University of Applied Science, Netherlands, The</p>	<p>Collective Digital Citizenship through Local Memory Websites</p> <p>Theories of empowerment and citizenship both mention processes and outcomes. Dahlgren’s ‘civic culture’ points to a set of interlocking processes that facilitate individual “people’s actual participation in the public sphere, in civil and political society” (Dahlgren, 2003, pp. 154–155). Empowerment theory covers similar interdependent processes, but also includes collective processes and outcomes: “a mechanism by which people, organizations, and communities gain mastery over their affairs” (Rappaport, 1987, p. 122). Following Couldry et al.’s suggestion to look for new acts of citizenship and underlying processes in digital environments (2014), we have related two local memory websites’ emergent empowerment properties to collective acts of citizenship. Ultimately, the first case was described as being better able to resist dominant local discourses and the second as being more representative for its neighbourhoods’ residents. Moreover, we showed how these acts are embedded in the core groups’ characteristics along five organizational continuums. Our findings show that it is not only important to study cultural dynamics in an online public sphere to learn about individual civic agency (Dahlgren, 2006), but also about the relation between the interests of the core group of participants and the common good for the community. Doing so, our close relation with both cases and Flyvbjerg’s plea to ‘make social science matter’ (2001) urged us to feed back the research results in both core groups. This helped them to acquire new literacies about the emergent properties of their collective actions and the organizational aspects with which they could influence this. Based on this, we would like to advocate this participatory approach in order to make research in digital citizenship matter to the communities it makes claims about.</p> <p>ABSTRACT ONLY</p>
--	--	--

<p>Mabila, Jabulisiwe (1); Herselman, Marlien (2); Van Biljon, Judy (1)</p> <p>Refereed Paper</p> <p><b>* Proceedings p. 70</b></p>	<p>1: University of South Africa (Unisa); 2: Council for Scientific and Industrial Research (CSIR)</p>	<p>Developing a sustainability model for tablet technology integration into teaching in resource constrained environments in South Africa: Integrating educators' views on digital content as a component for sustainability</p> <p>The purpose of this paper is to investigate educators' viewpoints regarding digital content in the integration of tablets into teaching at their schools. Digital content and curriculum were identified as focus areas in the South African government's "Operation Phakisa ICT in Education" program which was launched in 2015 to guide and accelerate the integration of technology and connectivity into teaching and learning. This is in addition to four other focus areas namely ICT teacher professional development, e-administration, information technology lifecycle management, and connectivity. The research questions that this paper seeks to answer are what are educators' perspectives regarding digital content in the sustained use of tablet technology into teaching, and how do these views impact on the development of a sustainability model for tablet technology integration into teaching in resource constrained environments in South Africa. A qualitative case study was used in this research involving educators from ten out of the twenty six schools which participated in the ICT for rural education development (ICT4RED) initiative, a South African government research, development and implementation project that was carried out over 3 years, from 2012 to 2015 at the Nciba school district in the Eastern Cape province of South Africa. A questionnaire using open-ended and closed questions was used to gather information on educators' perspectives on the main factors that currently affect their ability to use tablets for teaching and the steps that can be taken to address their concerns. The study showed that educators' use of the tablets is affected by the digital content and e-textbooks available and accessible to them for different subjects. Knowledge gaps about access to information and related processes were also identified. Educators'</p>
---	--	---

		recommendations were analyzed for integration into the sustainability model for tablet technology integration into resource constrained schools in South Africa.
--	--	--

<p>Margolis, Robin</p> <p>Refereed Paper</p>	<p>UCLA MLIS Media Archival Studies, United States of America</p>	<p>(Re)Staging Stories of Performance Past at the La MaMa Archives: Mediated Recordkeeping and Archives as a Site of Transmission</p> <p>This paper analyzes the existing and developing digital collections at La MaMa Archives, focusing on organizational efforts to digitize a collection of 170 performances recorded on PortaPak ½” video tape. Cultural memory and displacement are often at play in cultural heritage contained within archives pertaining to artists and the cultural output of marginalized communities. How can we promote the possibilities of our collections to act as hermeneutic aids in the transmission of cultural and societal memory? This paper argues for transforming the process of digitizing cultural heritage into an opportunity to reshape the collection in accordance with principles of participatory archiving. It envisions a “community curation” project, theorizing methods of engaging and partnering with Jeannette Bastian’s “community of records” connected to different performances held by La MaMa, taking up the call by Anne Gilliland and Sue McKemmish to “reposition the subjects of records and all others involved or affected by the events documented in them as participatory agents.”</p> <p>By taking up the call for participatory archives, it advocates for the benefits of the practices of reminiscing and oral history to offset or complement the web-driven or more technologically oriented solutions like crowdtagging often linked with participatory efforts. Anticipating the needs of the artists and community elders implicated within and involved as co-creators of these records, it integrates aspects of emerging models of continuum informatics and participatory appraisal with the professional practices of oral history and reminiscing work. In particular, it examines possibilities for integrating Leisa Gibbons Mediated Recordkeeping model with Jeffrey Dean Webster’s Heuristic Model of Reminiscing.</p> <p>Acknowledging that interventions into archival</p>
--	---	--

		<p>theory by the frameworks of the records continuum model (RCM) and post-custodial approaches have been driven by the possibilities of digital tools and systems, this paper hopes to join the growing conversation within the field of how to best insure that digital technologies are viewed as only one of the aspects of a larger practice oriented toward community-centered and social justice values. In doing so, it endeavors to escape simplistic binaries that frame a choice between socially-oriented or technologically-based solutions.</p> <p>ABSTRACT ONLY</p>
--	--	---

<p>Matyila, Muzi; Botha, Adele; Sibiya, George</p> <p>Refereed Paper</p> <p><b>* Proceedings p. 83 + PPT- PDF</b></p>	<p>Centre for Scientific and Industrial Research, Pretoria, South Africa, South Africa</p>	<p>The facilitation of adoption and use of text intensive mobile services by low literate users</p> <p>The challenge that low literate users face when using text intensive artefacts is well documented. The barrier to entry and participation by these users in some socio-economic activities is exacerbated by current mobile phones which provide support for mobile services with extensive textual support. Simple messaging mobile services like USSD and SMS as well as information oriented mobile services like business oriented mobile phone applications tend to pose the most challenges. It is noted that text intensive mobile services carry extensive significance and impact in socio-economic participation involving communication and information seeking. This paper argues that low literate users are frequently excluded in aspects of socio-economic participation especially those fostered by text intensive mobile services. In order to support the emancipation of low literate users and support their voice in being heard it is of essence to enhance text intensive mobile services and motivate their adoption and use by these users.</p> <p>The aim of this paper is to explore attributes of text intensive mobile services that are inhibiting access by low literate users with the purpose of enhancing them for adoption and use by these users. Tools facilitating the understanding and explaining the use of new technological systems and artefacts by users have been applied to business related domains and will be explored.</p> <p>Some practitioners allude to the fact that current mobile phones have the appropriate technological support to enable the development of mobile services accessible and usable by all user groups, including low literate users. This paper will apply the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement on tools that explain and facilitate the adoption and use of new technologies. The purpose will be to motivate low literate user adoption and use of</p>
---	--	---

		<p>text intensive mobile services thus emancipating these users by facilitating their participation in socio-economic activities. As has been proven with many user centred solutions, the application can extend beyond low literate users with wider benefits.</p>
<p>Motheeram, Preia; Botha, Adele; Herselman, Marlien</p> <p>Refereed Paper</p>	<p>CSIR, Meraka, South Africa</p>	<p>A scoping review towards the conceptualization of a digital Open Badges ecosystem in South Africa</p> <p>A scoping review was conducted towards supporting the conceptualization of a Digital Open Badge Ecosystem for South Africa. The scoping review intends to address the conceptualization of a digital Open Badges ecosystem for South Africa by: (1) Identifying the scope and range of available literature, and (2) summarizing and disseminating research findings. This paper argues that a digital badge ecosystem can accommodate, recognize and accredit all contexts of learning and learning outcomes to offer relevant and rewarding pathways for learners. Open Badges can provide the infrastructure to facilitate this recognition of skills and achievements. In the absence of specific skills accreditation for informal skills and small scale competency development that falls outside the formal</p>

		<p>recognized structures, a need to develop an ecosystem for South Africa that leverages Open Badges is identified. Albeit an emerging field, the identified studies addressed all the research questions and the authors developed a feel for the main areas of interest and range of available literature. A need to conduct a full systematic review has been identified.</p> <p>ABSTRACT ONLY</p>
<p>Rolan, Gregory</p> <p>Refereed Paper</p>	<p>Monash University, Australia</p>	<p>What do records do in people's lives that nothing else does?</p> <p>This paper is an attempt to answer Professor Anne Gilliland's question posed at a symposium in mid 2014: "What do records do in people's lives that nothing else does?" Drawing on research into transformative systems design for participatory recordkeeping, the paper outlines the unique way in which we conceptualise the role, meaning, and agency of records. Grounded in continuum theory and drawing on concepts from spacetime theory, information theory, documentality, sociomateriality, and ontological analysis this paper argues that, as representations of human activity, recordkeeping is an unescapable consequence of human consciousness, forming the core of what it means for a human "to be".</p> <p>In the modern world of information glut - where information is essentially noise - this approach assists us to understand how particular items of information may exhibit record Iaffordences_ to particular people at a given point in spacetime. These insights help us to address participatory recordkeeping issues and begin to approach some of the Grand Challenges that have been topics of discussion at CIRN over the past few years.</p> <p>ABSTRACT ONLY</p>



<p>Simayi, Siyolisile; Sibiya, George; Fogwill, Thomas</p> <p>Refereed Paper</p>	<p>Council for Scientific and Industrial Research, South Africa</p>	<p>Privacy and Confidentiality in Health Care: A Patient's Perspective</p> <p>Every single patient has privacy and confidentiality rights when it comes to their personal information. A patient has to give consent to physicians in order for a physician to access their personal information or to share their personal information within the circle of care. This is enforced in healthcare legislation and legislation dictates who is accountable when sharing a patient's information and how a patient's information may be shared. A patient can also seek to restrict who has access to their personal information and should also be able to access their personal information when they need to.</p> <p>All of these aspects must be taken into account when speaking about eHealth and the patient should know exactly who is accessing their personal information, why the person is accessing their personal information, when their personal information is accessed and what rights they have to their personal information.</p> <p>This paper aims to explore whether patients understand the rights that they have with regards to their personal information. The results from this paper will be used to bridge a gap between patient and physician care in order for a patient and physician to understand what is expected from both parties.</p> <p>The results from this paper will be a model used to assess a patient's competence with regards to looking after their personal data. The model that can assist both the patient and the physician to understand what information can be disclosed under certain circumstances is presented.</p> <p>ABSTRACT ONLY</p>
--	---	--

<p>Stillman, Larry (1); Akhter, MB (2); Chakraborty, Tapas (2); Priodarshine, Auvi (2)</p> <p>Workshop</p> <p>*</p> <p><b>Proceedings PDF-PPT</b></p>	<p>1: Monash University, Australia; 2: Oxfam Bangladesh</p>	<p>Participatory Action Research in Practice-from Bangladesh to the world.</p> <p>The purpose of this workshop is to provide and overview of Participatory Action Research has is being applied in the PROTIC project in Bangladesh. PROTIC is a 5 year project between Monash University and Oxfam Australia and Bangladesh to develop community capacity in the use of mobile technologies, with a focus on disadvantaged rural women in agriculture.</p> <p>PAR has a long history in Bangladesh, but its message about being a method for developing community voice and capacity is universal. We have been working with staff of Research Initiatives, Bangladesh to develop not only the capacity of rural stakeholders, but to influence and change the way in which NGOs and other concerned parties conduct their research.</p> <p>We will review what we have done, its strengths and weaknesses, show some video materials, and seek your strong feedback.</p> <p>We can also view this activity from an academic research perspective, and insights will be offered to the audience for comments.</p> <p>We are also interested in including the activity of other projects and researchers in this workshop.</p> <p>PROCEEDINGS -PPT-PDF</p>
---	---	--

<p>Troyan, Cassandra; Gonzalez, Maya Andrea</p> <p>Non-Refereed Paper</p>	<p>United States of America</p>	<p>The Traffic in Young Girls: Crisis, Criminality, and Moral Currencies in the Libidinal Economy</p> <p>The Traffic in Young Girls: Crisis, Criminality, and Moral Currencies in the Libidinal Economy provides a cognitive map of contemporary globalization by constellating the lives and labors of young sex workers across the Global North and South. This paper, only part of a much larger project, draws out implicit connections between the disparate socio-economic constraints under which young women reproduce their lives in the aftermath of economic crisis.</p> <p>Under the aegis of “conscious capitalism” and private sector white-saviorism in Anti-Trafficking NGOs, we argue that states are waging tactics of criminalization and social abjection against sex workers in order to harness the latent capacities of low-cost, female labor-power. By freeing adolescent workers from “sexual slavery” for commercial purposes, the current war on sex work additionally stands to mitigate popular and fiscal uncertainty around the rising tide of immigrant and surplus populations rather than attacking the structural causes of global inequality, staggering under-employment and epidemic homelessness.</p> <p>What are the ways participatory engagement with this information and structural analysis can provide new approaches for building solidarity among those who work in the sex trade and other populations criminalized by the state? The police have always been a force of violent coercion for sex workers but they are only one disciplinary body at work under regulatory control. As Maya and I are based in the United States, our work and research is used to critique the numerous disciplinary systems functioning through the War on Drugs, the War on Terrorism and the Anti-Trafficking Movement.</p> <p>Our following analysis investigates a number of apparatuses which Agamben describes as “the network that can be established between</p>
---	---------------------------------	--

		<p>these elements” rather than discrete and calculable locuses of power. By looking at the logic of conscious capitalism, the criminality of sex work, the continued incarceration of vulnerable populations, and the anti-trafficking movement through this Foucauldian strategy, it is possible to investigate these social phenomena as a system of relations—juridically, linguistically, and economically related to the oppression of the Global South under capitalist accumulation. All of these apparatuses create a network between universal categories, which delineate how different forms of exploitation are particularly expended on vulnerable populations and regulated through the wage relation, the use of force, and criminality under the guise of protection, safety, altruism, and other saviorist tendencies in the anti-trafficking movement and the sex trade at large. Thus, there is a direct correlation between the violence of state regulations and the allocation of resources which can only be determined through detention and imprisonment to fill quotas in order to maintain state funding for carceral programs and secure resources from private investors in the business of “militarized humanitarianism” (NGOs, immigrant detention centers, along with sex trafficking rehabilitation centers).</p> <p>ABSTRACT ONLY</p>
<p>van Biljon, Judy; Naude, Filistea; Hugo, Lotriet</p> <p>Refereed Paper</p> <p><b>* Proceedings p. 100</b></p>	<p>Unisa, South Africa</p>	<p>Citation measures for supporting scholarly impact in Community Informatics research.</p> <p>The global political environment place research institutions under increasing pressure to provide quantitative evidence of the scholarly impact of the research. Measuring impact in Community Informatics research in terms of traditional citation based metrics is particularly problematic due to the interdisciplinary nature of the field and the lack of coverage and indexing of the relevant journals by major commercial citation enhanced databases like Scopus and Web of Science. Furthermore, the citation based measures have many known limitations and therefore this paper argues for the</p>

		<p>investigation of altmetrics as an additional research impact measure in Community Informatics. This paper reports on a bibliometric and altmetric analysis conducted on The Journal of Community Informatics (JOCI). The bibliometric study investigated article production, collaboration and authorship patterns. The study also looked into JOCI article level metrics by comparing traditional citation metrics (Google Scholar citations), usage metrics (ABSTRACT ONLY and article views) and alternative metrics (Mendeley readership). The contribution is to provide more insight into the factors that could influence the citation impact in Community Informatics research.</p> <p>PROCEEDINGS</p>
<p>Vannini, Sara (1); Nemer, David (2); Halabi, Ammar (3); Sabiescu, Amalia Georgiana (4); David, Salomao (5)</p> <p>Refereed Paper</p>	<p>1: University of Washington; 2: University of Kentucky; 3: University of Fribourg; 4: RMIT University; 5: Università della Svizzera italiana - NewMinE Lab, Switzerland</p>	<p>Critical Incidents Analysis: mismatching expectations and reconciling visions in intercultural encounters</p> <p>Conflicts among stakeholders are common in Community Informatics (CI) research. They often derive from mismatches of expectations and are exacerbated by communication and intercultural issues. Such mismatches are breaking points in CI research, and might compromise the relationship of trust among project stakeholders and, ultimately, project outcomes. In CI, reflecting on moments of conflict and mismatch might help researchers unveil information, assumptions and cultural context of the communities they work with, as well as their own. This reflection should, then, lead to more accurate data and more sustainable project outcomes. In this paper, we present the Critical Incidents Analysis (CIA) Framework (Brunello, 2015), a tool that was conceived within the Community and Development Informatics field with the aim to reflect upon incidents and misunderstandings among stakeholders, their different cultural perspectives, and – eventually – prevent major project breakdowns. We apply the framework to our own research, where we analyze conflicts and mismatches of expectations that arose during the fieldwork conducted by two of the authors. We conclude that the CIA</p>

		<p>framework, applied “a posteriori” to our cases, was a useful tool to better analyze and report on our research, and to recast incidents as opportunities to enable a deeper understanding and – in some cases – build trust among stakeholders.</p> <p>ABSTRACT ONLY</p>
<p>von Rosen, Astrid Elisabeth</p> <p>Refereed Paper</p>	<p>University of Gothenburg, Sweden</p>	<p>Big dreams and impossible archival imaginaries: dance community archiving and the potential of participatory knowledge production in a digital age</p> <p>Drawing on recent research at the University of Gothenburg and University College London, this paper aims to chart and theorize the challenges faced by local independent dance communities when it comes to realizing their archival dreams. Three case studies are presented, exploring how dance archives have been dreamt of and actually have emerged in the city of Gothenburg, as well as how they are understood and used by the communities and by scholars investigating independent dance. Productive frictions are identified between an unimaginative and essentially positivist understanding of archives and sources as plain containers of facts, and the recent recognition that archival absences and imaginaries have the power to motivate research, propel change and stimulate the writing of new histories. Turning to recent theoretical development within archival theory, I use Anne Gilliland and Michelle Caswell’s terms “impossible archival imaginaries” and “imagined records”, as they “offer important affective counterbalances and sometimes resistance to legal, bureaucratic, historical and forensic notions of evidence” (Gilliland &amp; Caswell 2016:55). The paper concludes with a presentation of arguments for a methodologically conscious, digitally engaged participatory approach (“dancing where we dig – digging where we dance”) to local independent dance archiving and archival research as a way of further augmenting the potentially productive role of dreaming big dreams.</p> <p>ABSTRACT ONLY</p>

<p>Wright, Steve</p> <p>Refereed Paper</p>	<p>Monash University, Australia</p>	<p>The nature of 'document work', and its implications for radical community archives and their holdings</p> <p>The sixties and seventies saw the rise of a series of radical social movements across the globe. Some of these were connected to earlier social periods of mass unrest (above all, earlier waves of struggle by women, workers, and anti-war militants), while others were seemingly new. In their wake, such movements have left a mass of records and other documents (typically leaflets, journals, newspapers, posters and bulletins), many of which today are curated by community-based archives that continue to identify, however critically, both with those movements and others that have succeeded them. But what might these materials be able to tell us about the 'document work' (to use Ciaran Trace's useful concept) that originally led to their creation and use – and, in a broader sense, the experiences of the movement participants who utilised them as integral components of their political engagement? This paper will explore the meaning of document work within the practices of members of Potere Operaio, one of the most influential of the revolutionary groups formed in Italy during the late sixties, before concluding with some brief reflections as to the implications of this for the present day work of radical community archives.</p> <p>ABSTRACT ONLY</p>
--	-------------------------------------	--

<p>Zhao, Linlin</p> <p>Refereed Paper</p> <p><b>* Proceedings p. 113</b></p>	<p>Monash Caulfield School of IT, Australia</p>	<p>Inside out: Managing ethical dilemmas with autoethnography in insider participatory research</p> <p>In this paper, insider participatory research refers to research projects 1) conducted by researchers who are fully embedded in and enjoy a complete membership of the researched community or/and organisation; and 2) followed participatory approaches in research inquiry. Due to its complex nature, researchers involved in insider participatory research often are confronted with a range of ethical dilemmas, from acquiring access to participants and internal documents, managing community/ organisational politics, maintaining friendships and relationships, balancing role duality, harmonising pre-existing knowledge and new discoveries, ensuring data integrity and confidentiality, to sharing and communicating research outputs.</p> <p>This paper advocates for the use of analytic autoethnography as a research method to manage such ethical dilemmas in insider participatory research. Autoethnography is an approach to research and writing to recount and analyse personal experience in order to understand broader social phenomenon. Situated in the analytic ethnographic paradigm, analytic autoethnography aims to embrace the insider positions by encouraging the narrative visibility of the researcher, emphasise the analytic reflexivity in inquiry through engaging with data beyond the self, and commit to improve theoretical understanding of broader social phenomena. It provides insider participatory researchers an alternative method to systematically document and critically reflect on the participatory model, political/power relations, role management and data integrity in the research process.</p> <p>One of the main criticism towards existing literature on autoethnography is the lack of methodological frameworks in conducting autoethnographic research. This paper poses a practical framework, based on Mezirow's ten</p>
--	---	---



		phases of transformation and three levels of critical reflection, to guide researchers in using autoethnography as a research method to manage potential ethical dilemmas in insider participatory research.
--	--	--

## PIE News. A public design project toward commonfare

Francesco Botto <sup>1</sup> and Maurizio Teli <sup>2</sup>

<sup>1</sup> CREATE-NET, Trento, Italy <sup>2</sup> Madeira Interactive Technology Institute, Funchal, Portugal

**Abstract:** The new poor are a group of people composed by precarious workers, working poor, NEETs and people left behind by the safety nets, accounting for approximately 25% of the European population. Commonfare is a new collaborative form of welfare provision based on equitable governance and grassroots democracy, entailing the involvement of diverse stakeholders to facilitate the bottom-up arousal of collective practices tackling the needs of the new poor. The paper describes the concepts and building blocks of the PIE News project, a public design project which started in July 2016 with the aim to foster the emergence of commonfare as an alternative model to satisfy the needs of the new poor. PIE news leverages on 3 pilots (Italy, Croatia, Netherlands) with grassroots organizations in order to create a commonfare model through the development of a Collective Awareness Platform and a Digital Currency tool. The network supporting the project is constituted by organizations that account for approximately one-hundred thousand social media contacts. These organizations include ethical banking, networks of associations, activists for basic income, and many others.

**Keywords:** New poor, Commonfare, Public design, Collective awareness, Digital currency

### Introduction

Across Europe there are social groups that are particularly at risk of poverty or social exclusion, and the European Commission identifies them as “women, young people, people living in single-parent households, lower educated people and migrants.” (Eurostat 2015). However, due to the enduring crisis conditions and the insufficiency of social policies in some EU countries (Cantillon 2011) some new forms of poverty have turned up – also triggered by transformations in the labour market that have accelerated during the crisis (Jenkins et al. 2012). Indeed, before the crisis, the most common factor triggering a situation of poverty was the exclusion from the labour market and hence a lack of income. Today there are several other factors contributing for the rise of the *new poor* (Bauman 2004) condition: the precarious job conditions and the increase of working poors, of young people not involved in both employment or training, and of people who do not qualify for social safety nets.

The main objective of the PIE News project – 3 years EC-H2020-ICT-2015 funded since July 2016 – is to sustain the emergence of the *commonfare* as a new and collaborative economic model, connecting the new poor and relevant stakeholders like public administrations, advocacy organizations, and ethical financing organizations. Such general objective will be achieved relieving the PIE (Poverty, lack of Income and unEmployment) conditions people may experience through: 1) the provision, aggregation and sharing of useful information; 2) the support to sharing existing good practices on their daily efforts to cope with such conditions, and 3) supporting the strengthening at the European level of the most promising of these practices.

The project is deeply involved in community informatics because of the involved technology and methodology. PIE News foresees the adoption of information technologies as a way to help people facing their economic problems, therefore the consortium decided for the development and adoption during the project timeline of a collective awareness platform (CAP), including a reputation system, and a digital currency service.

The three pilots will be led by community management institutions that are already deeply involved with grassroots’ associations and working poor individuals in Netherlands, Croatia and Italy. PIE News technologies will be designed participatory and developed with the help of people using a *public design* approach.

This paper describes the building blocks of the PIE News project in its very early phase, aiming to: (1) contextualise the novel condition of poverty that is affecting Europe in the last years, (2) present commonfare as a possible part of the solution, (3) describe the technologies and methodologies adopted in order to participatory involve new poor in – a tentative of – establishing the commonfare, with two concrete user scenarios, and (4) assumptions and plans for making sustainable innovation.

## **Theory**

### **New poor**

In the European Union, more than 122 million of people (about 24% of the population) are at risk of poverty or social exclusion (Eurostat 2015). Even after social transfers, 17% of the population remain in such condition. Among them, 9% of the European population is severely materially deprived that is, for example, being unable to pay the bills or face unexpected expenses.

A series of factors are actually triggering a novel condition of poverty in Europe. A first relevant factor is the type of labour contracts and the spread of precarious conditions (Standing 2013; Fumagalli 2013), which lead to discontinuous income and unstable jobs. Current research also shows that women, young people and migrants are the groups more experiencing precarious conditions (McKay et al. 2012). A second factor triggering poverty in many European countries, are the decreasing wages characterizing the last years, even for stable workers. Wages have not been able to maintain purchasing power and, as a result, the amount of working poor has quickly been rising in Europe (Fraser et al. 2011). A third factor is linked to the deteriorating labour market conditions for early entrants (e.g. unreported jobs, unpaid jobs) and early school leave (e.g. school dropout) which together have been contributing to the emergence of the phenomenon of NEETs, that are young people Not in Education, Employment or Training (Eurofound 2012; Fumagalli 2013). Last, a fourth factor is the growing number of people who do not - or no longer - qualify for social safety nets because of the enduring crisis and the declining adequacy over time of those nets (such as unemployment benefits and social assistance, e.g. Nelson 2013).

We will refer to these four social groups as the new poor (Bauman 2004), as the forms of poverty which are triggered by these factors differ from the ones traditionally related to a lack of employment. In fact, the people experiencing this condition do not necessarily need to be outside the labour market although a prolonged expulsion from the labour market or the educational system may cause long-term marginalization.

Unfortunately, the number of new poor in Europe is still unknown. One of the objectives of PIE News is to get an image of this phenomenon while collaborating with people experiencing this condition.

### **Commonfare**

The main needs of new poor relate to the access to a primary income but also to a cluster of social services, which has to do with housing, training, or mobility. Addressing these needs requires novel and unconventional approaches, like house-sharing, peer-to-peer training, ride-sharing, or access to information about skill acquisition. These novel approaches can beneficially be supported and fostered with digital technologies, siding the conventional welfare state approaches and promoting the emergence of new economic models, like the commonfare.

Commonfare is an emerging direction for thinking and practicing welfare provision, that has been created in recent years by researchers and activists interested in alternative ways to overcome the European crisis (Provisional University 2014, Fumagalli 2015a, Fumagalli 2015b). With the reduction of vital welfare services and the rise of poverty caused by austerity in some European areas, it has been noticed that precarious conditions caused by

shortage of “common goods” for poor population could be overcome by initiatives concerning “self-managed commons”. In simple words: self-managed commons can take many different forms, always situated and negotiated between a particular community and the resources they depend on. It requests the equitable governance and grassroots democracy as well as the involvement of stakeholders in order to facilitate the emergence of good collective practices: the welfare of common (Fumagalli and Lucarelli 2015), a form of welfare provision supporting such collective practices.

The concept of Commonfare is not still academically mature and it grounds on theoretical and practical reasoning on “cognitive capitalism” and austerity politics in Europe (Fumagalli 2008; Vercellone 2014). One of the PIE News objectives is to develop this concept from a middle theoretical/activists’ understanding to a politically-oriented and empirically-grounded research one.

### **Public design**

PIE News will rely on design methodologies to involve directly the target social groups in shaping the PIE News platform, in order to successfully adapt the potential digital tools available into effective instruments for people empowerment. To do that, the consortium will rely upon the design tradition known as Participatory Design (PD), originated in Scandinavia in the ‘70s of the last century, to include directly the perspective of the future users into the technology design. PD is a form of co-design strongly oriented toward users’ empowerment, both as a general social goal as well as during the design process of the technologies that will affect their lives (Simonsen and Robertson 2012).

Recent developments of PD referred to as community-based participatory design (DiSalvo, Clement, and Pipek 2012), participatory development (De Angeli et al. 2014), or “public design” (Teli et al. 2015), allow getting PD out of the workplace, its original main locus of research, to work in the wider social domain. Public design, in particular, starts with the concerns of people for their everyday life to promote their emergence as an organized collective sharing information and collaborative action, in an open-ended design process (Teli et al. 2015). Due to the open-ended nature of co-design, PD, and public design, the technological objectives indicated here are going to act as elements participating to the design process as sensitizing concepts, not as design choices already made.

In relation to Participatory Design, Public Design promotes the enlargement of the design space from the workplace to the public dimension. Moreover, in relation to existing public design projects (like the ones conducted by Di Salvo and colleagues already cited), PIE News has the ambition to engage in a large-scale, multi-lingual and international design process, starting with the locations of the specific pilots but not limited to them. In relation to the larger field of HCI, the public design approach promoted here goes beyond the attention toward vulnerable populations (like homeless, Woelfer et al. 2011) to actually sustain the formation of a recursive public able to gain long-term sustainability (Teli et al. 2015).

### **Practical strategy**

Given the objective of fostering commonfare emergence by connecting new poor and relevant stakeholders, “informing” “sharing” and “supporting” are the three specific objectives (Figure 1) to be achieved through a comprehensive approach that will benefit from the complementarity among the partner organizations, beginning with the civil society organizations that have domain knowledge and networks to be mobilized.



**Figure 1: PIE News specific objectives**

In a commonfare perspective, the three specific objectives begin with the new poor and connect them to the relevant stakeholders, improving the capabilities for distributed interventions not only by individuals but also by domain organizations.

### **Consortium and funding**

The design approach used by the PIE News consortium, together with the involvement of three civil society organizations like BIN (Basic Income Network, Italy), CMS (Center for Peace Studies, Croatia), and Daniela Paes Leão & Merel Willemsen acting for SF (STAFF Foundation / Museu da Crise, Netherlands), is what makes the PIE News deeply user-driven. BIN, CMS and SF have domain knowledge, local networks to be mobilized and a high level of motivation to do it at its best. Therefore, the three partners represent the pulsating core of PIE News by supporting full involvement of the three pilots' users in continuous services design, adoption and evaluation.

On the technical side three other partners take care of the Community Awareness Platform, the Digital Currency System, and the Reputation System. They are CREATE-NET (Italy), Dyne (Netherlands) and Abertay University (UK), that will work in collaboration with the University of Trento (Italy) in the role of design – and project – coordinator, and with the Madeira Interactive Technologies Institute (M-ITI, Portugal) as research and innovation coordinator.

### **Technological approach and building blocks**

In spite of the economic barriers to access, 49% of the lower-income people are regular internet users (Eurostat 2014). A clickstream based study has actually shown that people in PIE conditions indeed use the web more than others, looking for information about employment, career and services (Martens and Pantea 2013). This scenario suggests that there is a wide number of PIE people having not only the skills and the means, but also the motivation to become part of this project for a concrete improvement of life conditions.

Due to the open-ended nature of the co-design approach adopted, public design, some key decisions about the technological Community Awareness Platforms (CAP) will be taken with the relevant groups and based on the pilot outcomes. Nevertheless, it is already possible to identify the key components that have a high degree of probability of being included in the PIE News platform. This is possible considering the PIE News objectives of informing,

sharing, and supporting, in combination with the existing technological tools that provide such capabilities. To summarize, we can foresee the public design and implementation of the following core elements:

1. PIE News Information Hub: the organized provision of information on welfare state provisions and other opportunities (training, mobility, etc.);
2. PIE News Stories Hub: the organized collection of existing stories and tools to facilitate the production and upload of new stories;
3. PIE News Networking Hub: the organized collection of networking tools, each one well described and open to incremental improvement via people intervention.

Figure 2 highlights the main functional elements that PIE News as a digital platform will provide. This will represent the reference functional architecture and it will be the background for the implementation of the technical solutions during the project life-cycle. From an architectural perspective, PIE News technical solution will be composed according to three main layers:

- External Social Networks are the main channels in order to trigger user engagement. They complement the platform in order to forge effective communication channels and foster the setup of relationships with target users and with all the relevant stakeholders. PIE News platform will structure itself as a social network supporting concerned publics at local level, fostering the bottom-up emergence of a European public.
- Front-end: PIE News platform will also provide a dedicated web portal responsive for mobile use, whose front-end will be structured according to the following main components, the PIE News Information, Stories, and Networking Hubs.
- Backend services of PIE News platform will provide core services needed to support users in the access and interaction with the platform, and more specifically: curation tools, storytelling tools, collaborative economy tools, social tools, users and groups management, security and privacy, reputation system, digital currency management, network dynamics management, and further others.

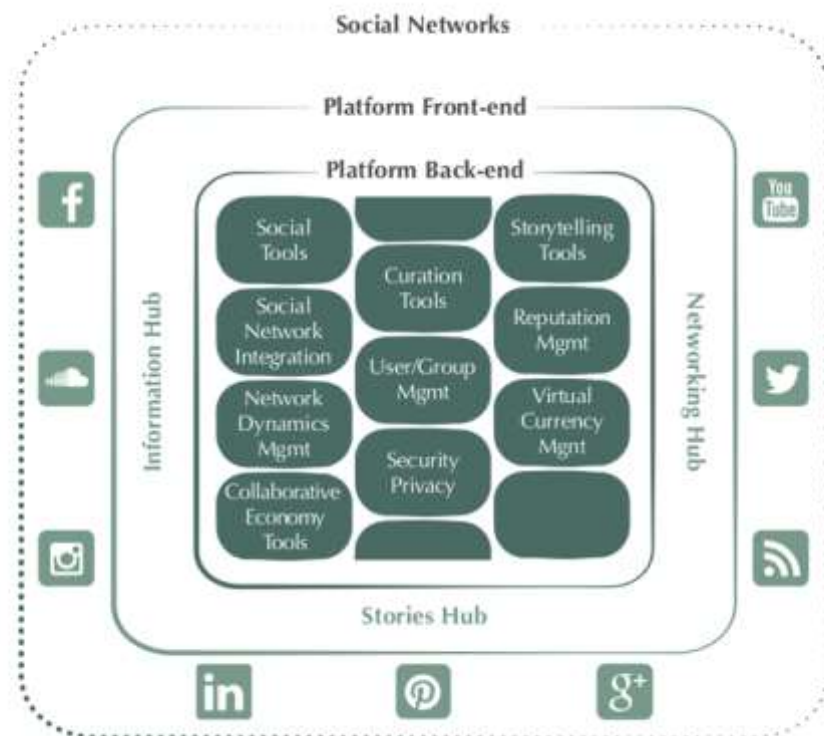


Figure 2: PIE News technological approach (image by Daniela Paes Leão)

The design principles that will be followed for building the technical solution can be summarized as follows:

1. Maximization of reuse of existing external services and open source components;
2. Usage of “responsive design” to maximize multi-channel access to the platform;
3. “Privacy-by-design” in order to address privacy issues in a systematic way;
4. Perform technical components selection and integration to guarantee scalability of the platform to a large users’ base;
5. Address horizontal multilingual support and translation capabilities in order to support and facilitate both user participation at the local level and content internationalization (passing through English language).

The core modules of the platform for reaching a concrete participation of users and enhancing a new form of collaborative economy are the Reputation system, the Digital Currency system, and the Network Dynamics system.

### **Reputation system**

PIE News will conduct research on the use of reputation and reputation systems as social mechanisms able to support engagement, collective action and offer incentives for participation (Dellarocas 2003). In social media projects, reputation can trigger what Farmer and Glass (2010) call the “reputation virtuous circle”: people receive reputational rewards for their participation and production of good quality content and this in turn triggers strong motivation for participation and increases the likelihood of attracting new participants.

A key assumption of PIE News is that the real challenge for fostering participation of people in CAPS platforms does not lie in the creation of novel algorithms or novel interface representation of reputation. Rather, the challenge is to use existing models in line with what are the user needs (e.g. Farmer and Glass 2010; Jøsang et al. 2007). Therefore, by coupling direct participation of the user in the design process together with the adoption of reliable models will support the scalability of a CAPS project. For example, a successful online platform such as AirBnB features a simple and well tested approach to reputation, with the user being able to offer simple feedbacks and ratings. However, the cleverness of AirBnB approach lies in the bidirectional use of existing models with the opportunity for both hosts and guests to rate each other. This system has proven successful to sustain the platform success and ratings across the platform display average values of reputation for hosts that on average are much higher compared to hotels in similar websites such as Tripadvisor (Zervas et al. 2015). This example shows that the challenge is to leverage existing models in ways that sustain the engagement and action of the users.

For PIE News, we will rely on a similar strategy, by using well established reputation metrics and interface solutions such as simple and direct feedbacks (e.g. 1-5 stars) and their aggregation (average value). This approach- has also the advantage that the users will be able to use well known and established interface patterns. One project task will be devoted to the identification of appropriate existing models to be used in PIE News, for example to promote the upload of stories, their rating, their translation in different languages, or their curation in thematic folders. In line with the perspective of the public design approach (Teli et al 2015), we will work alongside the users in the co-design of the reputation systems for PIE News.

### **Digital currency**

The PIE News Digital Currency is a useful tool to better implement the access to basic social services, first of all to a minimum income. We face a lot of examples which testify the relevant role played by complementary currencies in many parts of Europe, especially in the phase of circulation (see Wir in Switzerland, Sardex in Sardinia, Italy, just to quote the most well-known). But only a few are able to build up a monetary circuit from the beginning to the end: starting from the finance role, as way to support local investment activities (i.e. to increase the quality of life in a given territory) to the finance of direct and indirect income till the possibility to spend the complementary currency in participating shops and in purchasing public services (like transport).

As a starting point, PIE News will implement an income via the PIE News Digital Currency in two ways: (1) to give each PIE News member a periodical amount of digital tokens (basic income); (2) to harness the storytelling capabilities of pilot participants (reward for labour). In both cases, the digital tokens can be spent on the Networking Hub of the PIE News platform. In either cases, tokens will then circulate as a form of welfare gained through a knowledge co-creation process on a Collective Awareness Platform.

From a theoretical perspective, the idea to experiment in the design of complementary currencies represents an increase in the possibilities to frame the features of a means of payment in new and innovative ways. On the one hand, conventional money is mere bank debt bearing a positive interest. On the other hand, what we call complementary currency (Lietaer 2012) are all the design alternatives to the conventional blueprint: interest-free, negative-interest/demurrage currencies, time currencies, social-purpose currencies and their crypto-currency counterparts are all examples of design variations from the main template: debt at positive compounded interest.

### **Network Dynamics**

PIE News Network Dynamics tools can be used to boost the operational properties of the PIE News platform using complex networks technology. A crucial aspect for the platform is to engage users' participation: this in turn requires the users to be active on the platform, to produce contents and to engage with each other and with social groups across the various pilots. In particular, there is a key aspect related to user's participation: the evolution of the topology of the PIE News network.

The platform owner has therefore the possibility to perform actions which engender users' engagement and participation, e.g., by acceleration, that is by prioritizing the visualization of specific contents. All social media platforms possess a critical point of activation: below a threshold of engagement of users onto the system, the platform operations become critical, e.g., the platform may become not sustainable economically or it may fail to provide global connectivity or to diffuse information among the involved social groups timely and efficiently. To this respect, it is possible to leverage on imitation processes and to model them using evolutionary game theory to predict the effect of certain actions involving the platform users and, more important, to predict where the resources should be allocated the most in order to reach above the threshold activation level.

Activation of PIE News users, i.e., the process of engaging them onto the platform dynamics, will permit reaching for a critical mass which can let the system develop over time and grow to a global scale, e.g., the national or even the EU level. There are several mechanisms that we can leverage in order to permit such an uptake, like incentive design of user engagement tools (Chahin et al. 2013) and cooperative schemes for online advertisement (Maggi 2014).

### **Design and pilots**

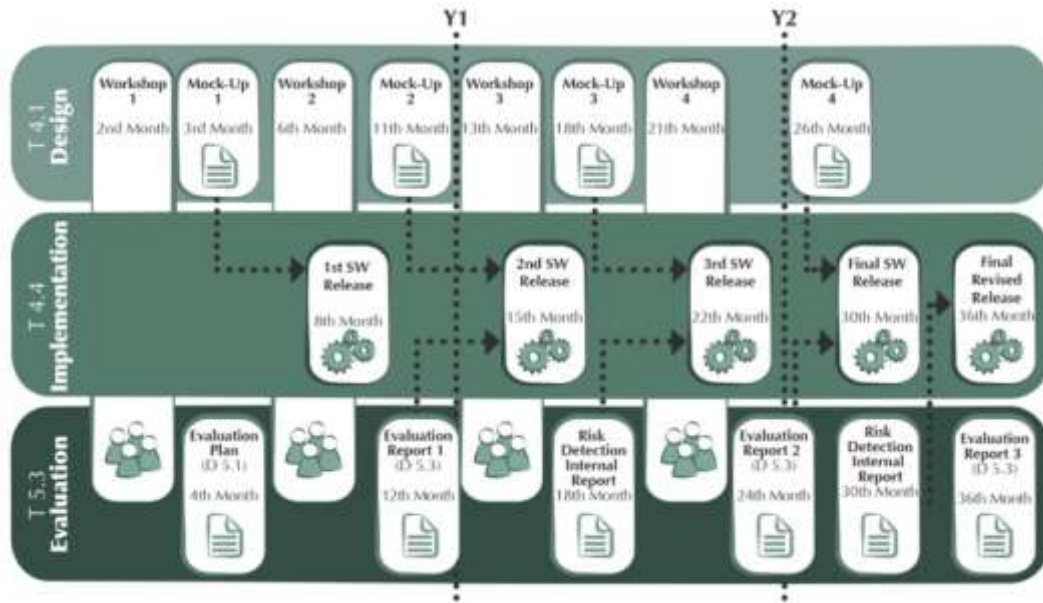
Leveraging on the Public Design methodology, the PIE News Design and Implementation cycles (Figure 3) will be enhanced by the following tools: (a) workshops with pilots' leaders and subsequent specific pilots design activity (the PIE News Design Workshops - DWS); (b) mock-ups as outcome of the local design activities; (c) Software releases informed by mock-ups, and (d) evaluation reports as investigation of users' technological experience.

Five iterative cycles will involve the Design, Implementation and Evaluation tasks:

1. Basic architecture design and information: starting from the workshop 1 the project will be presented to local communities and the first early requirements will be gathered with the help of future platform users. Accordingly, the first platform mock-up and release will be generated.
2. Advanced distributed storytelling functionalities in the pilot sites: starting with the workshop 2 the advanced storytelling tools will be co-constructed with users, with subsequent generation of the second platform mock-up and release.



3. Design of currency and reputation and basic collaborative economy: starting with the workshop 3 both reputation system and the early stage of the collaborative economy functionality will be shaped with the help of users, allowing the creation of the third mock-up and release.
4. Advanced collaborative economy and sustainability: the workshop 4 will open a period of participatory investigation on improving the collaborative economy functionality, trying also to increase the sustainability of the platform. This will produce the fourth mock-up and the final release of the platform.
5. Platform improvement: a final cycle of work with users will help the consortium generating a final revised release of the PIE News platform.



**Figure 3: PIE News design and implementation approach (image by Daniela Paes Leão)**

The project objective is to concretely involve 240 and 450 users respectively in design in evaluation activities. The evaluation approach plays a crucial role in PIE News, in fact complementing design activities with a cyclic and continuous analysis of: involved off-line networks/communities, users and stakeholders' evaluation of technological solutions, and PIE News on-line activity.

During the second year of the project an "Evaluation Dashboard" will be published and updated online in order to share with users the main evaluation results. Even if feedback-improvement cycles will be continuous during the PIE News timeline, the evaluation process will produce three yearly "Evaluation Reports" as macro evaluation reviews and two "Risk Detection Internal Reports" in order to informally create awareness in the consortium on possible issues affecting project activities.

The PIE News continuous evaluation will adopt on the following tools:

1. online: platform web logs/analytics, PIE News Network Dynamics analysis, PIE News Networking Event analysis;
2. offline: focus groups, questionnaires. Offline analysis will mainly leverage on focus groups involving pilot's partners, which constitute an essential gateway to platform users and stakeholders, during PIE News Design Workshops.

## Scenarios

### Scenario I

Carlo, a self-employed artist, finds himself in line at the local food bank. It had never been easy for him to make ends meet, but lately it seemed virtually impossible. The cuts in cultural funding over the previous years had a distressing effect on his standard of living. Knowing that the number of households that depend on the food bank increased by a staggering 30% over the past year made Carlo feel a little less ashamed. That and the fact that he was in good company: next in line were an architect and a journalist. They started talking and at some point the journalist asked the others if they had heard of the PIE News Platform.

Carlo's curiosity was aroused and at home he got behind his laptop and searched the project the journalist had been speaking of. After a simple registration process and a few clicks, he stumbled upon a story from a fellow artist in a similar situation. In a short video she explains how she and a few others have set up a ride sharing initiative and invites locals to participate. He gives a high rating to the video, as he found it very instructive. In another story, a man from Ukraine demonstrates how to recognize edible mushrooms and how to preserve them for later consumption. Not particularly interested in mushrooms, Carlo clicks on to discover a series of links to financial aid provisions in his city; some provisions he had never even heard of. Then his eye is drawn to the upper corner. Next to his profile picture he sees an icon that looks like a currency symbol. He discovers that he was awarded 50 PIES for supporting the ride sharing initiative and would monthly receive 500 PIES just for being active on the platform.

A few weeks later Carlo is on his way to participate in one of the PIE News Networking Events, including art foundations as participants. He figured that if he could update his website with his latest projects, it might result in a new commission. He exchanged his PIES for the workshop and the ride. He is in the car with two others: a consultant and a carpenter. They started talking and at some point the carpenter asks...

### Scenario II

Helena has been active on the PIE News platform for almost a year. She is a single mother with two kids. She has met some nice people in her neighbourhood through the platform with whom she sometimes shares a nice meal and good conversation. She has commented on a few stories and also uploaded some of her own. Most of her stories deal with providing kids with warm and comfortable clothes at low costs; a strategy she has mastered by necessity over the past few years.

Her neighbour is also a single mother, raising a five-year-old daughter. Every other day the girl plays at her house in the afternoon because her mother is at work. Sometimes in the afternoon she, her kids and the girl take the dog of an elderly lady living across the street for a walk at the beach and do some grocery shopping for her on the way home. Helena isn't financially compensated for her neighbourly services, nor does she expect to be, even though it is at times hard for her not to compare her contributions to a liveable neighbourhood with the effectiveness of those actions by well-paid officials.

At the PIE Platform Helena receives 500 PIES unconditionally each month that she can spend either way she sees fit. This motivates her to do not only the things she is supposed to do for a reward, such as sharing and voting, but also to discover some completely new and unforeseen ways to support the PIE community, similar to what she is doing in her own neighbourhood.

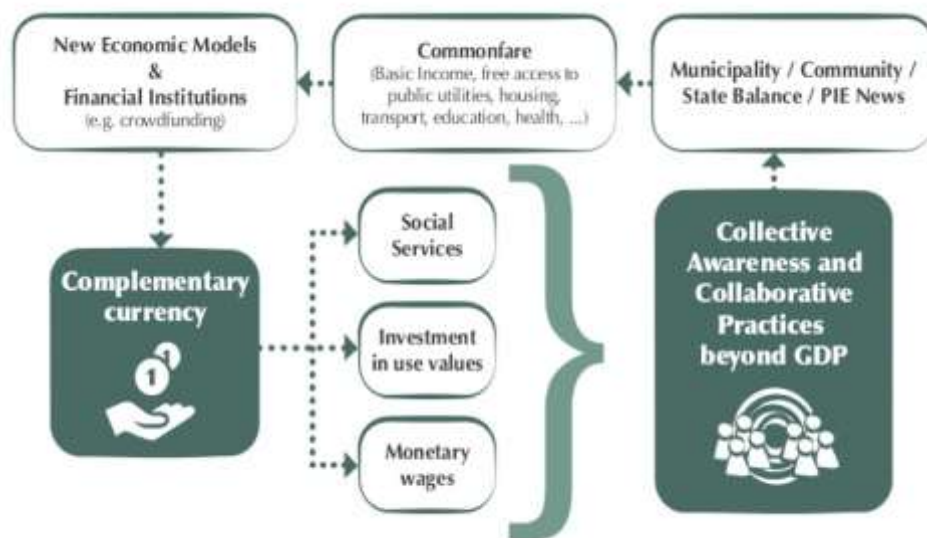
## Conclusion: the sustainability challenge

The open problems to achieve a full sustainability of the model, that will be explicitly addressed by the PIE News consortium within a specific project task, are: 1) to provide an institutional guarantee for the circulation of the PIE News Digital Currency, something that

will be investigated starting with the supporting municipalities; 2) to sign an agreement with the governance institutions (municipality, category associations, trade unions, entrepreneur associations, financial institutions...) to coordinate the emission and redeem of the PIE News Digital Currency. This value chain is strictly correlated to the PIE News project, since that aims at supplementing the actual welfare state towards the commonfare, supporting PIE News sustainability.

Figure 4 represents the “commonfare” social hypothesis that is promoted by the PIE News project. As for every complementary currency system, also the PIE News Digital Currency will act in parallel - as a complement to - the conventional money that individuals experiencing PIE conditions are already able to acquire. In general, a complementary currency takes root when a group of people decides to use something as a means of payment alongside conventional bank debt as a result of lack of performance of the latter. When incentive mechanisms are put in place that sustain the various bridges among unused resources and unmet needs of the members of the group, then a complementary currency circuit is running optimally.

For all these reasons, the consortium is convinced that relevant stakeholders can be convinced to sustain PIE News Digital Currency.



**Figure 4: The PIE News social hypothesis on commonfare (image by Daniela Paes Leão)**

Participants from all three pilots in Italy, Croatia and the Netherlands will be endowed with access to the PIE News Digital Currency and they will be allowed to spend the currency created endogenously within the platform. However, in Italy and the Netherlands, the experimentation will go further as the plan is to involve local authorities both in Milan and the pilot cities in the Netherlands. This strategy suggests the relevance of relating to existing institutions in order to promote sustainability for collaborative projects, in particular to sustain the economic basis of existing collaborations.

The main weakness of PIE News is to consider only new poor who are internet users. Unfortunately, the collective awareness platforms framework places technology at the center of a social problem resolution and it is difficult to include people without internet connection in this activity. Nevertheless, we should consider that: (a) our local networks are also purely social and associations on the territory will work also with no-internet users; (b) a project “risk detection” activity will monitor technology illiteracy and internet limited access of target groups, trying to find solutions like organizing training sessions and suggesting pilots to engage in collaboration with public libraries, bars, and community centers that offer free wifi and computers; (c) unemployed and precarious workers are very often smartphone users (Eurostat 2014); (d) it is reasonable to consider a future gradual reduction of the digital divide.

## References

- Bauman, Z. (2004). Work, consumerism and the new poor. Berkshire, McGraw-Hill International.
- Cantillon, B. (2011). "The paradox of the social investment state: growth, employment and poverty in the Lisbon era." Journal of European Social Policy 21(5): 432-449.
- Chahin, W., Widi, H.B., El-Azouzi, R., De Pellegrini, F. and Walrand, J. (2013). "Incentive mechanisms based on minority games in heterogeneous DTNs." Proceedings from Teletraffic Confress (ICT). Shanghai: IEEE.
- De Angeli, A., Bordin, S. and Blanco, M. (2014). "Infrastructuring participatory development in information technology". Proceedings of the 13<sup>th</sup> Participatory Design Conference Volume 1: 11-20. New York, ACM.
- Dellarocas, C. (2003). "The digitalization of word of mouth: promise and challenges of online feedback mechanisms." Management science 49(10): 1407-1424.
- DiSalvo, C., Clement, A. and Pipek, V. (2012). Participatory design for, with, and by communities. International Handbook of Participatory design. J. Simonsen and T. Robertson. Oxford, Routhledge: 182-209.
- Eurofound (2012). NEETs - Young people not in employment, education or training: characteristics, costs and policy responses in Europe. Luxembourg, Publication office of the European Union.
- Eurostat (2014). Europe 2020 indicators - poverty and social exclusion. Retrieved from: [http://ec.europa.eu/eurostat/statistics-explained/index.php/Europe\\_2020\\_indicators\\_-\\_poverty\\_and\\_social\\_exclusion](http://ec.europa.eu/eurostat/statistics-explained/index.php/Europe_2020_indicators_-_poverty_and_social_exclusion).
- Eurostat (2014). Information society statistics at regional level. Retrieved from: [http://ec.europa.eu/eurostat/statistics-explained/index.php/Information\\_society\\_statistics\\_at\\_regional\\_level](http://ec.europa.eu/eurostat/statistics-explained/index.php/Information_society_statistics_at_regional_level)
- Eurostat (2015). Severe material deprivation rate: percentage of total population. Retrieved from: [http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc\\_mddd11&lang=en](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc_mddd11&lang=en)
- Eurostat (2015). Smarter, greener, more inclusive? Indicators to support the Europe 2020 strategy. Luxembourg, Publications Office of the European Union.
- Farmer, R. and Glass, B. (2010). Building web reputation systems. O'Reilly Media.
- Fraser, N., Gutierrez, R. and Pena-Casas, R. (2011). Working Poverty in Europe. Palgrave Macmillan. Retrieved from: <http://www.palgraveconnect.com/pc/doi/10.1057/9780230307599>
- Fumagalli, A. (2008) "Trasformazione del lavoro e trasformazioni del welfare: precarietà e welfare del comune (commonfare) in Europa". In Leon, P. and Realfonso, R. (eds), L'Economia della precarietà. Rome, Manifestolibri: 159-174.
- Fumagalli, A. (2013). Lavoro male comune. Milano, Bruno Mondadori-Pearson Italia.
- Fumagalli, A. (2015a). "Cognitive, Relational (Creative) Labor and the Precarious. Movement for "Commonfare": "San Precario" and EuroMayDay". In Cocco, G., Szaniecki, B. (eds.), Creative Capitalism, Multitudinous Creativity, Radicalities and Alterities. Maryland, Lexington Books: 3-25.
- Fumagalli, A. (2015b). "Commonwealth, Commonfare and the Money of the Common: the challenge to fight life subsumption". In Bak Jorgensen, M., Garcia Agustín, O. (eds), Politics of Dissent. Frankfurt, Peter Lange: 157-179.
- Fumagalli, A. and Lucarelli, S. (2015). "Finance, austerity and commonfare." Theory, Culture and Society 32(7-8): 51-65.
- Jøsang, A., Ismail, R., and Boyd, C. (2007). "A survey of trust and reputation systems for online service provision." Decision support systems 43(2) 618-644.

- Lietaer, B., Arnspenger, C., Groener, S. and Brunnhuber, S. (2012). Money and Sustainability - the missing link. Devon, Triarchy Press Ltd.
- Maggi, L. and De Pellegrini, F. (2014). "Cooperative online native advertisement: A game theoretical scheme leveraging on popularity dynamics." Proceedings from 2014 IEEE DySON Workshop on Dynamic Social Networks INFOCOM. Toronto: Canada.
- Martens, B. and Pantea, S. (2013). Has the Digital Divide Been Reversed? Evidence from Five EU Countries. Joint Research Centre, Institute for Prospective Technological Studies.
- McKay, S., Jefferys, S., Paraksevopoulou, A., and Keles, J. (2012). Study on Precarious work and social rights. Working Lives Research Institute & London Metropolitan University. Study carried out for the European Commission (VT/2010/084). Retrieved from: <http://ec.europa.eu/social/BlobServlet?docId=7926&langId=en>
- Nelson, K. (2013). "Social assistance and EU poverty thresholds 1990–2008. Are European welfare systems providing just and fair protection against low income?" European Sociological Review 29(2): 386-401.
- Provisional University. (2014). The Abduction of Europe III: Commonfare. Retrieved from: <https://provisionaluniversity.wordpress.com/2014/03/14/the-abduction-of-europe-iii-commonfare/>.
- Simonsen, J. and Robertson, T. (2012). Routledge International Handbook of Participatory Design. Oxford, Routledge.
- Standing, G. (2013). The Precariat: the new dangerous class. London, Bloomsbury.
- Teli, M., Bordin, S., Menendez Blanco, M., Orabona, G. and De Angeli, A. (2015). "Public design of digital commons in urban places: a case study." International Journal of Human-Computer Studies 81: 17-30.
- Vercellone, C. (2014). "Towards a welfare of common". Ekonomski pregled 65(2): 194-204.
- Woelfer, J.P., Iverson, A., Hendry, D.G., Friedman, B., and Gill, B.T. (2011). "Improving the safety of homeless young people with mobile phones: Values, form and function." Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (1707-1716). New York, ACM.
- Zervas, G., Proserpio, D., and Byers, J. (2015). A first look at online reputation on Airbnb, where every stay is above average. Retrieved from: <http://ssrn.com/abstract=2554500>.

## Acknowledgements

This paper was supported by the European Community within the H2020-ICT-2015 Program (nr.: 687922).

The work that brought to this paper is the result of the collaborative effort by all the PIE News Consortium Members. Potential mistakes and misunderstandings in the summary of the project approach presented here should be attributed only to the authors. In particular, the PIE News Consortium has been able to elaborate on:

- the Commonfare thanks to the contribution by Basic Income Network Italy, in particular by Andrea Fumagalli;
- the Reputation part thanks to the contribution by the Abertay University, in particular by Stefano De Paoli;
- the Digital Currency part thanks to DYNE, in particular by Denis "Jaromil" Rojo and Marco Sachy;
- the Network Dynamics part thanks to Francesco De Pellegrini from CREATE-NET;
- the Scenarios part thanks to Merel Willems and Daniela Paes Leao from Museu da Crise.

# Connecting the Unconnected – At-Risk Community Engagement in the Digital Economy in Cleveland, Ohio

Liz Forester and Lev Gonick<sup>1</sup>

<sup>1</sup> DigitalC, Cleveland, Ohio, USA

**Abstract:** DigitalC, in partnership with over 30 local, national and international organizations, agencies and philanthropic investors has developed an integrated approach to reducing inequality for those with structural barriers to participating in the 21<sup>st</sup> century economy. We at DigitalC believe that the digital economy is here and that its benefits are unevenly distributed. We believe that everyone can find opportunities and choices in the digital economy. Finally, absent an intentional strategy, we believe that the dynamics of the digital economy will actually exacerbate and widen the divide between the haves and have not's. In response, we have designed three interrelated strategies that together provide the community a framework for dialog, conceptualization and action for addressing this digital divide. The comprehensive approach focuses on access, adoption, and use of digital technologies as an on-ramp strategy to the digital economy. The project is founded on a collaborative strategy that invites a coalition of the willing to work with unconnected community to create an inclusive approach to opportunity and choice in the 21<sup>st</sup> century.

**Keywords:** access, technology, digital economy, digital divide

## The Problem & Opportunity

Cleveland, Ohio was built on a 20<sup>th</sup> century manufacturing base and today faces the challenge of transitioning to a digital economy. Our community needs strategies and practical programming that support this transition, and the residents of our community need a pathway to 21<sup>st</sup> century careers. However, the digital economy opportunities that presently exist are unevenly distributed, and without a clear and intentional strategy, the dynamics and speed of innovation in technology threatens to intensify the divide between the technology literate and those who are not.

Recent joint research by five Workforce Innovation and Opportunity Act (WIOA) Boards and the Ohio Means Jobs organization in Northeast Ohio indicate four strategic issues that challenge our regions ability to make the necessary transition to today's global economy and achieve the areas full economic and workforce potential:

First, while there are more adults unemployed or underemployed in the region than there are jobs available, employers continue to express an inability to find sufficient labor to address their workforce needs. This issue is partially attributed to the rapid up-skilling of jobs from low-skill to mid-skill levels, while the areas available workforce fails to keep pace, resulting in a skills miss-match.

Second, since the recent U.S. recession, Ohio's job gain has not kept pace with the nation overall. Total available jobs in the region continue to remain below pre-recession levels. Specifically, sectors with a heavy impact on the Ohio economy, including manufacturing, finance and insurance, social assistance, technical and scientific services and wholesale trade have all shown lacklustre growth since 2007. Conversely, industry sectors that have shown growth have up-skilled and up-credentialed many jobs, resulting in employers having to import workers to bridge the skills gap in the region. Meanwhile, low-skilled workers are left to relocate to other regions with more available jobs or continue to remain unemployed.

Third, while Cuyahoga County (home to the city of Cleveland) provides over 50% of the region's jobs, less than half of the regions workforce resides in the county. Such overlapping labor markets throughout the region mean that residents of one county often work in another, but efforts at regional cooperation around talent and workforce development are lacking, resulting in an inability for the region to keep pace with the rapid changes surrounding 21<sup>st</sup> century job skills.

Lastly, and most pertinent to the topic at hand, advances in technology and the implementation of technology-centric product and service creation and delivery methods are the leading cause of the up-skilling of occupations across sectors. Traditionally lower-skilled jobs are becoming mid-skilled, leaving workers with low or no digital literacy unqualified and unemployable in today's job market.

With a coalition of 30+ local and national organizations, DigitalC has created an intentional strategy to address the equity focused issue of access to 21<sup>st</sup> century technology and skills, specifically for at-risk populations. DigitalC's organizational mission is to catalyse technology for community impact. Our role in this access initiative is to partner with community organizations to deliver the full scope of activities outlined in the project outcomes to be described. There are three phases to this work: 1) connecting those who live in unconnected areas to the internet and providing them with digital literacy skills (2) launching the Re-Start Tech Training Program, and (3) Build a Collaborative that matches the newly certified employees with technical assistance work. The overall goal of the Connect the Unconnected and ReStart programs is to address both the fundamental components of the digital divide (internet connectivity and training) and create a workforce that can serve the labor needs of the local community and provide 21<sup>st</sup> century career opportunities for the regions most unconnected.

### **Phase One – Public Housing Connectivity**

A large number of the participants who will be targeted to enroll in the Connect the Unconnected and ReStart programs live in public housing. According to the Cuyahoga Metropolitan Housing Authority (CMHA), in the city of Cleveland approximately 50,000 persons living in 23,000 households earn less than \$11,302 a year and live in 45 public housing estates (8,802 households) or utilize housing vouchers to secure a home residence (14,463 households). Ninety-seven (97) percent of those families are female headed. Over 45% are disabled or single. Ninety-one (91) percent are African American. Like many American cities, these populations are the neediest and the most at-risk. In the city of Cleveland, this defined set of tenants represents 50 percent of all persons living under the poverty line, according to the 2010 US Census.

The price tag of a commercial fiber network provider bringing the 45 public housing units with 8,802 households and 16, 273 persons exceeds \$1 million in infrastructure costs alone. In response to this challenge, DigitalC has proposed an alternative innovative technology that can drastically reduce the cost to connection. Utilizing an innovative Wi-Fi Technology called Siklu, DigitalC is piloting a project that will create a network connecting eight facilities (including six public housing facilities, a men's homeless shelter, and a school) to robust, high speed broadband connectivity. For the pilot, one CMHA facility will have end-to-end connectivity, with the remainder coming online in a phased approach.

The connectivity for the pilot is made possible by an in-kind grant by DigitalC to its fiber footprint, along with the hard-costs to procure, design and install Siklu wireless technologies and Actelis connectivity technologies, as well as three years of internet connectivity for approximately 800 residents living in the six pilot public housing sites. Upon fully launching the pilot, the goal is to scale the connectivity service to all 45 CMHA public housing estates in Cuyahoga County.

## **Phase Two – One Device Per Home Campaign**

A total of 23,265 households in Cleveland live in public housing or utilize the Housing Choice Voucher Program. The nearly 9,000 households living in public housing earn an average household income of \$7,572. The average household income of the 14,000+ families using Housing Choice vouchers is \$11,302. At this time, the proposed program of activity targets the public housing population only.

In partnership with a coalition of community and corporate partners, DigitalC is working to launch a 30-month campaign to:

- Acquire and distribute 10,000 devices (desktops, laptops, smartpads or netbooks) with wireless connectivity to every household in public housing
- Provide household level orientation and basic digital literacy training certification for up to 10,000 households
- Develop, deploy and maintain a portal for network access that focuses on applications and services associated with health and wellness, education and training and access to relevant community goods and services
- Engage community delivery partners
- Develop a continuous community engagement and assessment model

In our initial pilot program, full end-to-end connectivity will initially take place at one of the CMHA public housing facilities, with 155 individual residential units having a symmetrical 25-megabit connection in the home. A resident from each unit will then participate in a 12-hour training session to establish basic digital literacy skills, including modules on:

- Computer Literacy: mouse, keyboard, Windows OS, browser use, email, data storage, Microsoft Office
- Digital Literacy: search techniques, evaluating online sources, virus/spyware, online identity, online privacy
- Home Connect: computer maintenance, downloading and installing software

Following successful completion of the curriculum, residents will be provided with a device (laptop or desktop) loaded with the Microsoft Office suite of software. These devices are being provided via a partnership with RET3, a non-profit entity that refurbishes used computer equipment for area schools, residents and non-profit organizations.

## **Phase Three – Re-Start Tech Collaborative**

Beyond access, devices and basic digital literacy training, Connect the Unconnected is also a program to engage with four at-risk population groups to provide them with career pathways into the digital economy. Ongoing participatory action efforts are underway with (1) returning military veterans, (2) men and women re-entering the workforce after extended periods of incarceration, (3) women who are single heads of households and reliant on public assistance, and finally (4) youth aging out of juvenile systems. This participatory action, called ReStart, will establish Information and Communication Technology (ICT) training and small company and non-profit formation activities in partnership with local innovation hubs at our city and county libraries, as well as within new community innovation hubs established by DigitalC. A formal series of curricula are being developed through engagement with partners at WeCanCodeIt, Global Corporate College and local higher education institutions.

Utilizing a stackable, micro-credentialing format, ReStart participants will be able to select from various workforce pathways, including entrepreneurial geek squads, entry level ICT or other industry positions, or continued education opportunities at local colleges and



universities. For example, the Re-Start effort will seek to create small work teams formed as part of our engagement with the aforementioned at-risk population groups, to form ‘geek squads’ that work on a wide variety of technology needs in the Northeast Ohio community. While some of the ‘geek squads’ will be sponsored by philanthropic and charitable organizations, others will be developing co-op and small business models to sustain their work. The range of employment and career opportunities and outcomes for ‘geek squads’ include break-fix, scanning, digitization and tagging of documents, quality assurance and quality control for data entry, data literacy and community engagement and citizen data science. Additionally, the ReStart tech skills program will provide participants with training and credentialing that is transferable and translatable across sectors or can be utilized to create gateways for further education opportunities. Whether it’s an ICT career pathway or manufacturing, operations, retail, marketing, or any other sector, technology is quickly becoming the fundamental, foundational layer of expertise needed for entry into 21<sup>st</sup> century careers. ReStart will create entry points into this growing and emerging economy, specifically for populations that experience barriers and impediments to employment.

Many of the organizing principles and business approaches to the Connect the Unconnected in Cleveland Ohio have been gleaned from well documented case studies in Africa, Asia, and Latin America and the Caribbean. Cleveland Ohio has a long and important history in community-based technology engagement dating back to well before the modern Internet. The Connect the Unconnected initiative is an early work in progress. We hope to both share our learnings through digital story telling and early findings. We also hope to learn from other case studies from participants at the Prato 2016 conference.

## **Digital content and sustained use in integrating tablet technology into teaching in resource constrained environments in South Africa: Educators' views**

Jabulisiwe Mabila<sup>1</sup>, Marlien Herselman<sup>1,2</sup>, Judy van Biljon<sup>1</sup>

<sup>1</sup>University of South Africa, <sup>2</sup> Council for Scientific and Industrial Research, South Africa

**Abstract:** Government initiatives have been undertaken to provide ICT infrastructure including digital content to public schools in South Africa, however the educators' views on the sustainability of integrating tablet technology into teaching in resource constrained environments have not been adequately advanced. Cost, sustainability and efficient use of ICTs are critical elements which will define ICT's future as an effective tool for social and economic development. The purpose of this paper is to investigate educators' perspectives on digital content and sustained use in integrating tablet technology into teaching in resource constrained environments in South Africa. Participants in the study included educators from eight public schools at one of the school districts in the Eastern Cape Province of South Africa. A case study approach using open-ended questions was used to gather information on educators' perspectives on content related factors that affect their ability to use tablets for teaching and the steps that can be taken to address their concerns. The findings provided evidence that while educators' use of the tablets is affected by the availability and accessibility of digital content and e-resources for different subjects, communication and knowledge gaps also affect digital content use by educators. The findings validate the elements in existing frameworks and models of sustainability for mobile learning in schools. However, identified differences in the context and environment necessitate some adaptation of the exiting frameworks and models.

**Keywords:** Tablets, digital content, sustainability, resource constrained environment

### **Introduction**

In order to understand how to sustain ICT education programs, it is necessary to understand what influences teachers to use technology to support teaching (Chiu & Churchill, 2015). There is no consolidated view of how to sustain the practices and learning with mobile devices because of the diverse contexts, devices and theoretical frameworks for mobile learning (Ng, 2013). Teachers' willingness and preparedness to adopt mobile learning are critical to successful implementation of ICT programs (Ismail, Azizan & Azman, 2013). First-order barriers such as hardware and software resources, training and support, institutional culture, and second-order barriers such as educators' beliefs, confidence and their perceived value of technology to the teaching and learning process, have an influence on educators' use of ICTs (Ertmer & Ottenbreit-Leftwich, 2010). Educators may be concerned that the level of support provided to them may be insufficient and inconsistent, and that new technologies will increase their workload or responsibilities (Chiu & Churchill, 2015). Access to effective, engaging, and sustained digital learning resources to support the curriculum has been identified as a critical prerequisite (DoE White paper, 2004).

- [1] Digital content is essential to e-Education as it can be easily accessed from many locations, and can be easily adapted and manipulated. Development and deployment of innovative and sustainable e-Learning resources is critical, and educators, content developers and administrators should effectively contribute to development of these resources (DoE White paper, 2004). The government, private sector, and non-governmental organisations are involved in developing and providing electronic content resources (Thutong, 2016; Mindset Learn, 2015; Vodacom digital classroom, 2014). In South Africa examples include educational portals initiated by the Department of Basic Education (DBE) to provide digital content resources, and content resources developed by other organisations which are available via satellite television, Internet, multimedia and supplemented by printed material (Mindset Learn, 2015). The strategic, pedagogical, and developmental framework on e-education implementation in South Africa is outlined in the "White paper on e-Education" published by the South African Department of Education as early as 2004.

The White paper on e-Education advocates for a blended approach in the use of learning and teaching support material (LTSM), stating that digital resources in e-schools should be complimented by conventional print media and radio broadcasts (DoE White paper, 2004). There is a move to digital online teaching, and knowledge and information sharing via the Internet, and educators need to be equipped with the necessary ICT skills to utilize online e-education platforms (DTSP, 2014). Educators can also enhance their personal development by engaging in online programs to enhance their ICT skills and content knowledge (More, 2015). The objective of the White paper on e-Education is “Transforming learning and teaching through information and communication technologies”, (DoE White paper, 2004). This is in line with other national policies such as the National Development Plan (NDP).

South Africa’s National Development Plan (NDP) asserts that greater use of technology, backed by high-speed broadband, could open new opportunities for teachers and learners to match the needs of the changing world (National Planning Commission, 2012). The DBE, through Operation Phakisa ICT in Education, seeks to deploy ICT programs that will develop and modernize the skills of teachers and learners. Establishing an e-literate society by 2030 is one of South Africa’s National Development Plan (NDP) objectives. The Eastern Cape Department of Education (ECDoE)’s key priority of accelerating the deployment of ICT by providing infrastructure, financial, and human resources to schools (ECDoE, 2016), is aligned to this objective.

The challenge of sustaining ICT projects in resource constrained environments has been discussed in various studies (Pade-Khene, Mallinson, & Sewry, 2011; Mamba & Isabirye, 2014). Trucano (2010) stated that many educational initiatives for adoption of ICTs at schools in developing countries fail. Failure mode or decay often occurs when the project leadership transitions from the project managers to the institution’s middle managers who are supposed to continue with the project (Parsons & Cornett, 2011). This study seeks to answer the research question: What are educators’ perspectives on digital content and sustained use in integrating tablet technology into teaching in resource constrained environments in South Africa? Participants in the study included educators from eight public schools at one of the school districts in the Eastern Cape Province of South Africa who participated in a South African government ICT implementation initiative which involved the deployment of tablets to the schools.

The rest of the paper is organized as follows: The next section outlines the background to the study, defines digital content, and explains the concept of sustainability and the context of the study. Thereafter, a framework for the sustainability of mobile learning in schools is presented. The research methodology is described and the results are presented and discussed. This is followed by the conclusion.

## **Background**

Educators require the knowledge, skills, values and attitudes, as well as the necessary support, to integrate ICT into teaching and learning (DoE, 2007). Educators are required to teach learners to be competent with ICT, and help students become collaborative, problem solvers, and creative learners through using ICT so they will be effective global citizens (Unesco, 2016). As mobile technologies emerge, educators have to keep up with the changes, and take advantage of the power of technology to design and deliver learning and teaching support material which promote students’ understanding of concepts, and equip their students with relevant skills. In South Africa, the DBE has developed plans and strategies in line with the countries’ 2030 Vision which states that “By 2030, South Africans should have access to education and training of the highest quality, leading to significantly improved learning outcomes” (National Planning Commission, 2012). Despite the programs that have been undertaken to address this, some challenges in the education system still prevail.

Some of the challenges in the basic education system include the large numbers of learners. South Africa spends about 5% of its Gross Domestic Product (GDP) on basic education (DBE Strategy, 2016). The number of public schools in South Africa in 2014 was 24060, and there were 12 117 015 learners served by 390608 educators (DBE Strategy, 2016). The high costs associated with purchasing large numbers of textbooks and transportation of these from publishers to warehouses and eventually to schools, some of which are remote, can result in delays in the delivery and availability of textbooks (DBE, 2014; DBE Metcalfe Report, 2012). The use of electronic content such as e-books, accessed

through tablets, can potentially alleviate some of the content and curriculum related challenges experienced in the education system. Tablet devices provide a powerful multimedia interface for accessing digital content such as e-books, and enable Web access.

## **Sustainable provision of digital content**

### **Digital Content**

- [2] “Digital content” can be defined as data produced and supplied in digital form (Wessing, 2015). It is information available for download or distribution on electronic media (Mullan, 2011). This includes computer programs, applications, games, music, videos or texts, ebooks, irrespective of whether they are accessed through downloading or streaming, from a tangible medium or through any other means (Shah, 2000). A distinction can be made between digital content itself and the method by which it is supplied. Digital content itself cannot be regarded as a “tangible item”, and it is often copyright protected. Digital content can however be “sold” because it can be supplied on a physical medium, the “tangible item”. Where digital content is not supplied on any tangible medium, it is ‘accessed’ or provided as a service and is not ‘sold’ (Hervé Jacquemin, 2010), hence the need to consider digital management rights (DRM).

Digital content is often covered by intellectual property rights, and right-holders protect and enforce their rights through technological measures, or DRM. DRM enable copyright holders to set rules of access and use of digital content and enforce these rules (Benčová, 2015). The purchase of digital content is universally governed by an “end user license agreement” (EULA) which requires that an account be created with the content provider.

These are some of the digital content related facts which teachers need to be aware of when they get a tablet to use to support teaching and learning in their classrooms as they can affect access to digital content, and the sustained use of e-resources.

### **The sustainability concept**

Sustainability necessitates that any use of resources should take account of the stock of resources and the impacts of its utilization on the social, economic and political context of people today and in the future (Unesco, 2010). It has financial, technological, social, institutional, and environmental dimensions (Best & Kumar, 2008). Despite the differences between the concept *ICT usage in education* and the concept of *mobile learning* the same dimensions are relevant to sustainability.

Sustainability is inextricably linked to basic questions of equity, fairness, social justice and greater access to a better quality of life (UNDP, 2011). The provision of equitable and quality primary and secondary education, leading to relevant and effective learning outcomes is critical, as stated in the Sustainable Development Goal 4 (SDG4) on education (United Nations, 2015). Technology literacy enables learners to use ICT in order to learn more efficiently, acquire in-depth knowledge of their school subjects, and apply it to complex, real-world problems (Unesco, 2016). At the innovation level of the Teacher professional framework, educators should be able to use ICT to develop critical thinking, informed decision-making, collaborative and experiential learning, and to use ICT to develop higher levels of cognitive processing (DoE, 2007).

Initiatives have been undertaken to provide ICT infrastructure and e-resources to public schools. However, educators’ views on the sustainability of integrating tablets into teaching in resource constrained environments have not been adequately advanced. Educators who participated in this research are from schools that participated in the ICT for rural education and development (ICT4RED) initiative.

### **Research context - ICT for rural education and development (ICT4RED)**

ICT4RED is a large-scale pilot South African government research, development and implementation initiative, which was carried out to improve the quality of teaching and learning in a school district in the Eastern Cape province of South Africa. The initiative was carried out over three years between 2012 and 2015. Educators were trained through the Professional Teacher Development program (TPD) on how to teach with technology and integrate mobile tablets in their classrooms. The

TPD used the “earn as you learn” model which enabled educators to “earn” 10 inch Android tablets which became their personal property through a formalized (digital) badges system when they completed specific modules and provided evidence of how they applied their training in their classrooms (Botha & Verster, 2014). Additional incentives such as projectors, screens and “mobikits” consisting of a set of 15 to 20 tablets were awarded to schools based on the specific badge level that was achieved by educators from the school. Each school established their own ICT Committee and selected one of the educators as an ICT Champion. Support of the programme at the schools also included provision of infrastructure.

In the ICT4RED programme the deployment of tablets was supported by provision of technology hardware and software for the school infrastructure and network connectivity, including WiFi equipment, safe-keeping and charging facilities as well as e-books, content server and related electronic resources (ICT4RED, 2015). Digital content which was made available on the content servers for teachers and learners to download via the WiFi at schools include digital forms of existing paper-based South African Learning and Teaching Support Material (LTSM), such as workbooks, e-books, lesson plans. There were also Curriculum Assessment Policy Statements (CAPS) documents focusing on numeracy, literacy, mathematics, science and English as a first additional language. CAPS, for each approved school subject is a single, comprehensive, and concise policy document which provides details on what teachers need to teach and assess on a grade-by-grade and subject-by-subject basis (DBE CAPS, 2016; Variend, 2013). In addition to these, new digital or multimedia content, consisting of educational apps, quizzes, tests, games, audio books, video material, interactive workbooks, interactive stories, music, animations, that are appropriate for the South African curriculum, and Open Educational Resources (OERs) were provided (Herselman & Botha, 2014).

Despite the provision of these resources, effective integration of ICTs into teaching remains a challenge. Like in many other educational ICT4D projects, sustainability was identified as a major risk for the ICT4RED initiative (Ford & Botha, 2013). There is a framework that has been developed for sustainable mobile learning at schools (Ng & Nicholas, 2013). The diversity in contexts in which mobile learning occurs however, makes it difficult to establish a consolidated view of how to sustain the practices and learning with mobile devices (Ng, 2013).

## **A framework for sustainable mobile learning in schools**

In 2013, Ng and Nicholas stated that at the time there was no model of sustainability for mobile learning in schools in the literature (Ng & Nicholas, 2013). They have since developed a “Framework for sustainable mobile learning in schools” and a “Person-centred sustainable model for mobile learning” (Ng & Nicholas, 2013). They utilize a more general framework, known as the “Framework for sustainability of information and communication technology (ICT) in education” (Cisler, 2011). This framework comprises of economic, political, social, and technological sustainability. Ng & Nicholas (2013) proposed a “Framework for sustainable mobile learning in schools”. Ng & Nicholas added a fifth element, pedagogical sustainability to the four elements in Cisler’s framework, as shown in Table 1. This Framework forms the basis for the “Person-centred sustainable model for mobile learning” (Ng & Nicholas, 2013) shown in Figure 1.

Table 1: Framework for sustainable mobile learning in schools	
Framework for sustainability of ICT education (Cisler, 2011)	
1.	<i>Economic sustainability</i> : Financial capability of educational institution over a “long” period
2.	<i>Political sustainability</i> : Role of leadership and institutional policies required to adopt and maintain mobile learning programmes. Leaders (Principals, heads of schools/faculties, coordinators of programmes need to identify “the requirements” Manage the change process such as ensuring teacher readiness
3.	<i>Social sustainability</i> : Community involvement (parents, political leaders, business partners such a computer companies)
4.	<i>Technological sustainability</i> : Decision making on type of technology based on institutional need and goals for “extended periods of time”. Considerations of costs of technology and innovation such as uptake of iPads and Tablets Technical support; Access to infrastructure; Technical assistance
Framework for sustainable mobile learning in schools (Ng & Nicholas, 2013)	
Includes the four elements from Cisler (2011) - Economic, Political, Social and Technological sustainability PLUS:	
5.	<i>Pedagogical sustainability</i> : Teaching and learning practices to support “long-term” goals of the mobile learning programmes. Roles of teachers (and learners) in facilitating learning with mobile devices; Preparation and practices to facilitate learning with mobile devices; Peer collegiality required to ensure best pedagogical practices; Informal learning facilitated by mobile learning

The “Person-centred sustainable model for mobile learning” (Ng & Nicholas, 2013), recognizes the complex relationships between the technical aspects and people-related factors. People related factors are the interpersonal relationships between leadership and management (principal and programme coordinator), teachers, students, technicians and the wider community (parents, suppliers, policy makers, software developers and researchers).

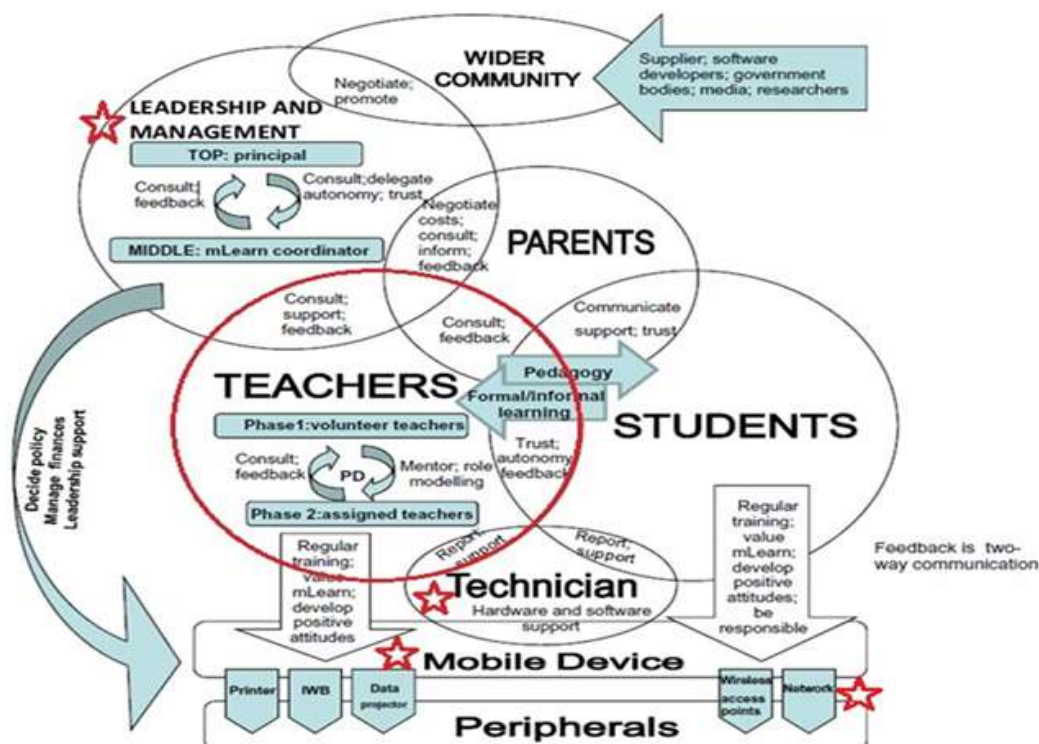


Figure 1: Person-centred sustainable model for mobile learning in schools (Ng & Nicholas, 2013) (\*Highlights added for emphasis)

The context of Ng and Nicholas (2013)'s framework and the "Person-centred sustainable model for mobile learning" is secondary education in Australia, and is based on data collected at an Australian school. The Australian school was selected because of the enthusiasm and active involvement of the technologically 'savvy' principal who actively participated in the "mLearn programme". Funding for the programme was internal, provided within the school. This differs from the context of this study. Funding for the ICT4RED initiative was external, provided from outside of the schools, provided by government departments. In addition, the environment of the schools is considered to be resource constrained. However, the framework provides a useful tool for discussing educators' views on sustained use of digital content and tablet technology use in resource constrained environments.

## **Research Methodology**

The underpinning philosophy of this paper is interpretivism as the educator's views will be interpreted by applying hermeneutics. According to Odman (2003) and Gummesson (2003) hermeneutics is concerned with the interpretation of non-lingual expressions of human life where tacit knowledge is transformed into words. The position adopted in interpretive research is that our knowledge of reality is a social construct by human actors (Walsham, 1995). Educators' views on the role of digital content in the sustained use of tablets were obtained from 58 educators from 8 schools using a questionnaire. The questionnaire was printed and administered to educators at the schools who completed it manually. Open-ended questions were used to ascertain what was going well, what should be done to make things better, and the concerns that educators had. Ethical approval for the research was obtained from the educational institution which supported the study and the research adhered to the research guidelines required by the Department of Basic Education in South Africa.

Qualitative analysis of participants' responses to the open-ended questions involved the use of ATLAS.ti, a computer-based qualitative data analysis (CAQDAS) tool. ATLAS.ti entails developing codes and using quotations in primary documents to enhance analysis of data (Woolf, 2014).

## **Sample**

A case study was used in this research. The case study method requires that the case should be defined (Creswell, 2014; Yin, 2013), in an endeavour to understand complex social phenomena (Yin, 2013). Research conclusions are made based on data collected from the unit of analysis. The sampling applied was purposive in order to represent schools from the three different phases of the ICT4RED project. The ICT4RED project involved 1 school in Phase one, 11 additional schools in phase two, and 14 more schools in the third phase, and a total of 350 educators (Herselman & Botha, 2014).

In this study questionnaires were distributed to 100 educators from ten schools. There were 58 responses received from 8 schools. A profile of the participants shows that a large proportion (81%) of participants were aged above 40 years, and were mostly female (62%). There was also a large composition (50%) of respondents who were aged between 41 and 50 years of age.

## **Findings and Discussion**

Educators' perspectives were abstracted from the data in response to the research question namely, What are educators' perspectives on the sustained use of digital content in tablet technology use to support teaching in resource constrained environments in South Africa?, The perspectives were categorized according to the benefits and the challenges and requirements from the educators' perspective.

### **Main themes emerging from analyzed data**

Educators noted that the use of tablets offered advantages by improving information storage, access to the Internet, and the potential for creating digital content and communicating online. The

five main themes that emerged when the data collected was analyzed were: “Digital content is available, but should be more comprehensive, and must ensure that it is CAPS aligned”; “It is easier to store digital information”; “Internet access is important”; “Educators and learners can create digital content and communicate it online”; and “Monitoring and evaluation is necessary”. The findings are presented and discussed according to these themes in the following sections.

### **Digital content is available, but should be more comprehensive, and must ensure that it is CAPS aligned**

Educators acknowledged the digital content loaded in the tablets and the school servers such as e-books, and commended its usefulness, stating that:

*“Even if there is a shortage of textbooks at school, we can find the textbooks”.*

However, some educators felt that the content favored some learning areas, maintaining that:

*“Teachers are using tablets. Tablets should be loaded with different content not science subjects only”;*

*“As a language teacher what I have observed is that our tablets are not fully loaded with our content as well as e-books”, “Upload a lot of content for different subjects”, and “Ensure that content covers all grades”.*

The analysis uncovered the perception that some of the digital content was not CAPS alignment. These educators stated:

*“Ensure that content is CAPS aligned”;* *“Content material is not enough to capacitate educators and learners”*, and *“The problem is that tablets are not installed with the content”.*

This perception conflicts with the fact that all the tablets were loaded with CAPS aligned content, and covered all the learning grades (Herselman & Botha, 2014). There may have been gaps in communication, or knowledge gaps, regarding the digital content accessible or how the educators could access it from the content server, and whether it is CAPS aligned or not.

### **Information storage support**

The tablets and servers provide an effective storage facility in which information can be easily stored and retrieved at any time, including educators’ lesson plans, teaching materials such as videos, and information on learners, and learners’ assignments. Statements made by educators regarding information storage include:

*“Information storage is easier”, “It is easy for the teachers to keep the information in the tablets and also learners’ work”, and that “It is easy for the teachers to keep the information in the tablets such as lesson plans, videos for learners when doing their activities”.*

The easier, anytime access of data using tablets is reflected by one of the educators who stated that:



*“We are introduced to ICT, so we can store and retrieve information anytime”*

While educators acknowledged the usefulness of tablets and the server for information storage, none of the educators elaborated on the school “network” or the use of an “intranet”. The essence of a network is the ability to share things, and this could be a tool for improving communication within the school. A network also facilitates tracking and monitoring of pupils’ web and chatroom activities, plus software usage.

The element “Technicians” shown in Figure 1 in the “Person-centred sustainable model for mobile learning in schools” (Ng & Nicholas, 2013) indicates that system users, educators and learners, require technical support to identify and solve hardware and software faults. There seem to be a need to define the feedback mechanisms and processes regarding how to address infrastructure and technical problems such as network problems, Internet access problem, tablets that need to be fixed, with broken screens, ports, and freezing screens. Appropriate measures should be taken to ensure economic sustainability, which is the “financial capability of educational institution over a long period” as depicted in the “Framework for sustainability of ICT education” (Cisler, 2011) in Table 1. Planning should involve long-term consideration taking issues like copyright into account. The availability of financial resources also influences provision of technicians to support educators.

Some educators’ were unable to access the digital content on the servers even though this was loaded on the content servers. The provision and access to digital content cannot be viewed in isolation. There is a need for continuous monitoring and evaluation in order to identify challenges and provide support. Formal platforms and processes for information gathering within schools, and interaction between schools and district officials pertaining to how ICTs are used, and challenges faced should be defined and communicated.

### **Access to the Internet**

It was evident that educators considered access to the Internet as an important aspect in the use of the tablets. Educators indicated that they are able to find information from specific Web sites. They remarked that:

*“Educators can get the lesson plans through ‘Thutong’ and ‘Quick Mathematics”.*

“Thutong” and Quick Mathematics” are some of the websites developed and supported by the government, private sector, and non-governmental organizations. These websites provide electronic content resources at no charge.

This provides evidence that these websites are accessible to educators, but the degree to which educators use these resources need to be established in order to determine the support that educators require in order to sufficiently exploit the resources.

Some educators indicated they had difficulty accessing the Internet, and stated that Internet access is “required” as it enables easy access to information. This was an unexpected finding because all the schools were provided with the necessary infrastructure to ensure Internet access. Further investigation is required to ascertain what access-related issues could account for the educators’ inability to utilise the Internet. This could for example result from communication deficiencies, knowledge gaps, and technical support. Some educators may not fully understand the process that needs to be followed to ensure continued access to the Internet that was provided through the ICT4RED program.

## **Can create digital content and communicate it online**

According to the educators, the tablets offer educators and learners the opportunity to create and communicate digital content using email and applications such as Facebook, WeChat, and Youtube with the tablet devices. Educators' proclamations regarding this include:

*"Making lesson plan of the lesson you are going to teach, and assessments",*

*"Using of apps like email, Facebook, WeChat, and Youtube, is exciting e.g photo taking and video clips, watch and listen to it", and*

*"Social networks such as Whatsapp and Facebook, making videos and taking photos of learners during teaching and learning".*

However, concerns were raised regarding responsible use of the Internet, which indicates the need to ensure the appropriate use of social networks, and the Internet. As indicated by one of the educators:

*"Social networks are good to know but use in a proper way/manner".*

## **Monitoring and evaluation needed**

Educators expressed the need for increased interaction with DBE officials, who should monitor and evaluate the use of the tablets and provide support. Educators stated the need for:

*"Regular monitoring by the district education officials to monitor the usage and the condition of the tablets", "Check-ups, assessment and intervention by the department of education both at National and Provincial (level)", and "Visits from ICT4RED to check the situation would help".*

Educators also stated that monitoring is necessary because:

*"Educators can concentrate on apps that are not mostly relevant to their subject."*

The need for increased monitoring by district officials of how tablets are used also relates to the need for support.

## **The findings in view of the sustainability model for mobile learning in schools**

The findings highlight both the advantages experienced and the critical requirements for sustained mobile technology usage. The perceived advantages include the improved ease of information storage and the opportunity afforded to create and communicate digital content. The requirements include the scope (cover all grades) and applicability (CAPS curriculum) of the digital content made available. It is important to note that the issue was a communication problem rather than a content provision problem.

The need for internet access emerged, this was assumed as a prerequisite for the implementation and it was not clear whether the problem was with the implementation or with the communication. Finally there was a request for monitoring and evaluation that was a request for management to stay involved in ensuring technical and other support. This relates to the need for "consulting, feedback, and support" as indicated in the "Person-centred sustainable model for mobile learning in schools" outlined in section 3, between educators and, Leadership (Principal and ICT Champion). In the context of resource constrained schools in this study, it is imperative that "consulting, feedback and support" between the schools and the District should be maintained. In the context of South African public schools, Districts are tasked with "facilitating ICT connectivity in all institutions within their

district” (DBE, 2013 - Roles & Responsibilities), and to provide support to and collaborate with principals and educators to improve the quality of teaching through school visits, classroom observation, and cluster meetings so the issue seems to be one of communication and accountability.

As stated in the DoE White paper, “Any solution that South Africa adopts has to be cost-effective to meet the developmental demands of reaching the most remote areas. It is no use having state-of-the-art technology unless it can be sustained. Deployment of ICTs does not guarantee their efficient utilization and therefore capacity building and effective support mechanisms must accompany deployment” (DoE White paper, 2004: 6).

The findings validate the elements in existing frameworks and models of sustainability for mobile learning in schools such as Ng & Nicholas’ model however differences in context necessitate some adaptation, an indication that effective integration of ICT into teaching is complex. Ng & Nicholas’ “Person-centred sustainable model for mobile learning in schools” seems to represent a different reality than occurs in resource constrained schools in South Africa, mainly because the funding in the school used in Ng’s case was internal to the school. The Principal in Ng’s case is also described as an “enthusiastic, tech-savvy” individual. This is not always the case for the schools in this research. In addition, the Principal already had resources allocated to the program and for employing a technician. The model is also non-hierarchical (Ng & Nicholas, 2013). These conditions and institutional environment differ in resource constrained environments where schools (micro level) are largely dependent on external funding and acquisition of technicians, which is influenced by processes, leadership support and policy implementation at district (meso level), provincial and national levels (macro level). A sustainable model for mobile learning in resource constrained schools would need to take these factors into account. It is thus proposed that the “Framework for sustainable mobile learning in schools” should add the element “institutional sustainability” as depicted in Table 2.

Table 2: Revised framework for sustainable mobile learning (Context - resource constrained public schools in South Africa (Based on Table 1 (Cisler, 2011) and (Ng & Nicholas, 2013))
1. Economic sustainability: The financial capability of the educational institution to support the ICT technology in the long-term.
2. Political sustainability: The role of leadership and institutional policies required to adopt and maintain and monitor the success of mobile learning programmes. Consulting and feedback between the different levels of the institution.
3. Social sustainability: Community involvement which includes parents, political leaders and business partners such a computer companies.
4. Technological sustainability: Informed technology selection based on institutional needs and mid-to longer term strategic goal. Mindful considerations of technology, access and maintenance costs, access to infrastructure and technical support. Consulting and feedback between the service providers in terms of content, technical support and the users (teachers).
5. Pedagogical sustainability: Teaching and learning practices to support the goals of the mobile learning programmes. The roles of teachers (and learners) in facilitating learning with mobile devices; Preparation and practices to facilitate learning with mobile devices; Peer collegiality required to ensure best pedagogical practices; Informal learning facilitated by mobile learning
6. Institutional sustainability: Alignment between processes, leadership support and policy implementation at school, district (meso level), provincial, and national levels (macro level).

Thus the “Person-centered sustainable model for mobile learning” would need to incorporate institutional structures, which in this research refers to the Department of Basic education’s District, and their interaction with the school. This is necessary because in this context the District’s interaction with the school affects the deployment of resources, finances, technicians, and the District is also expected to provide leadership and management, and to monitor and support schools.

## Conclusion

The study highlighted the considerations when developing and deploying digital content to public schools in resource constrained environments from the educators' perspective. Effective support mechanisms must accompany deployment of ICTs. Provision of digital content is closely related to other factors such as technical support, monitoring, and economic sustainability. Financial resources are required to ensure that technical support is afforded to educators. The nature of digital content, or data produced and supplied in digital form and distributed on electronic media, requires that infrastructure be provided, supported and maintained. Institutional structures which are tasked with monitoring and support functions should be strengthened and provided with resources so that they can perform their monitoring and support responsibilities effectively. Based on educators' views, the "Framework for sustainable mobile learning in schools", some consideration needs to be made for an additional element, "institutional sustainability" to be added for a framework that can apply to resource constrained environments. The "Person-centred sustainable model for mobile learning" (Ng & Nicholas, 2013) would also need to be adapted to depict institutional structures and processes and their interaction with the school as they affect the deployment of resources, finances, technicians, and affect monitoring and support in this environment. Advancing educators' views can help to identify the benefits experienced and the challenges that need to be addressed for sustainable deployment of digital content to support teaching.

## References

- Best, M. L., & Kumar, R. (2008). Sustainability failures of rural telecenters: Challenges from the sustainable access in rural India (sari) project. *Information Technologies and International Development*, 4(4), 3-45.
- Benčová, J. (2015). DRM and Consumer Protection in E-commerce Transactions: A Comparative Study of the EU and the US Legal Framework.
- Botha, A., Herselman, M., & Ford, M. (2014). Gamification beyond badges. In *IST-Africa Conference Proceedings, 2014*, IEEE, 1-10.
- Botha, A., & Verster, M. (2014). *ICT4RED Teacher Professional Development Course*. TECH4RED, CSIR Meraka Institute.
- Cisler, S. (2011). Planning for sustainability: How to keep your ICT project running. Retrieved: <http://www.ctcnet.org/ctc.Cisler/sustain>
- Chiu, T. K., & Churchill, D. (2015). Exploring the characteristics of an optimal design of digital materials for concept learning in mathematics: Multimedia learning and variation theory. *Computers & Education*, 82, 280-291.
- Creswell, J. W. (2014). *A concise introduction to mixed methods research*. Sage Publications.
- DBE, (2016). Education Statistics in South Africa 2014. Department of Basic Education. Retrieved: <http://www.education.gov.za/EMIS/StatisticalPublications/tabid/462/Default.aspx>
- DBE Metcalfe Report, (2012). Verification of text books deliveries in Limpopo. Retrieved: <http://www.corruptionwatch.org.za/metcalfe-textbooks-report-what-you-need-to-know/>
- DBE, 2013 - Roles & Responsibilities (2013). Policy on the organization, roles and responsibilities of education districts. Department of basic education
- DBE Strategy, (2016). Revised Five-year strategic plan 2015/16-2019/20. Department of Basic Education. Retrieved: [http://www.gov.za/sites/www.gov.za/files/DBE\\_%20Strategic%20Plan%20\\_March%202016\\_.pdf](http://www.gov.za/sites/www.gov.za/files/DBE_%20Strategic%20Plan%20_March%202016_.pdf)
- DoE White paper, (2004). *White paper on e-education: Transforming learning and teaching through information and communication technologies (ICTs)*. Department of Education. Retrieved: <http://www.education.gov.za/Portals/0/Documents/Legislation/White%20paper/DoE%20White%20Paper%207.pdf?ver=2008-03-05-111708-000>
- DoE, (2007). Guidelines for Teacher Training and Professional Development in ICT. Department of Education. Retrieved:

DTPS, (2014). *National integrated ICT policy green paper*. Department of telecommunications and postal services.

ECDoE, (2016). 2016/17 Operational plan. Eastern Cape Department of education.

Ertmer, P. A., & Ottenbreit-Leftwich, A. T. (2010). Teacher technology change: How knowledge, confidence, beliefs, and culture intersect. *Journal of research on Technology in Education*, 42(3), 255-284.

Gummesson, E. (2003). All research is interpretive! *Journal of business & industrial marketing*, 18(6/7), 482-492.

Herselman, M, & Botha, A (Eds.). (2014). Designing and implementing an Information Communication Technology for Rural Education Development (ICT4RED) initiative in a resource constraint environment: Nciba school district, Eastern Cape, South Africa. Pretoria, South Africa: CSIR Meraka.

ICT4RED. (2015). *ICT4RED – A South African innovation*. Research Brief. Pretoria: CSIR. Retrieved: [http://www.africaevidencenetwork.org/wp-content/uploads/2015/02/ICT4RED\\_Policy-Brief\\_final.pdf](http://www.africaevidencenetwork.org/wp-content/uploads/2015/02/ICT4RED_Policy-Brief_final.pdf)

Ismail, I., Azizan, S. N., & Azman, N. (2013). Mobile Phone as Pedagogical Tools: Are Teachers Ready? *International Education Studies*, 6(3), 36.

Mamba, M. S. N., & Isabirye, N. (2015). A framework to guide development through ICTs in rural areas in South Africa. *Information Technology for Development*, 21(1), 135-150

Mindset Learn, (2015). Mindset Founding partners. Retrieved: <http://learn.mindset.co.za/>

Retrieved: <http://www.corruptionwatch.org.za/metcalfe-textbooks-report-what-you-need-to-know/>

More, M., (2015). Operation Phakisa ICT to take education to new standard. SA News. Retrieved <http://www.sanews.gov.za/south-africa/operation-phakisa-ict-take-education-new-standard>

Mullan, E., 2011. What is Digital Content. Retrieved: <http://www.econtentmag.com/Articles/Resources/Defining-EContent/What-is-Digital-Content-79501.htm>

National Planning Commission. (2012). *National Development Plan*. Pretoria: National Planning Commission, Office of the Presidency.

Ng, W. (2013). Conceptualising mLearning Literacy. *International Journal of Mobile and Blended Learning (IJMBL)*, 5(1), 1-20.

Ng, W., & Nicholas, H. (2013). A framework for sustainable mobile learning in schools. *British Journal of Educational Technology*, 44(5), 695-715.

Pade-Khene, C., Mallinson, B., & Sewry, D. (2011). Sustainable rural ICT project management practice for developing countries: investigating the Dwesa and RUMEP projects. *Information Technology for Development*, 17(3), 187-212

Parsons, M. L., & Cornett, P. A. (2011). Leading change for sustainability. *Nurse Leader*, 9(4), 36-40.

Trucano, M. (2010). Worst practice in ICT use in education. Edutech: A World Bank Blog on ICT Use in Education (30 April 2010), <http://blogs.worldbank.org/edutech/worst-practice>.

Thutong, (2016). Thutong - South African educational portal. Retrieved: <http://www.thutong.doe.gov.za/>

Shah, P.A. (2000). The Uniform Computer Information Transactions Act. *Berkeley Technology Law Journal*, 85-107

UNDP. (2011). Human development Report. Retrieved: [http://hdr.undp.org/sites/default/files/hdr\\_2011\\_en\\_summary.pdf](http://hdr.undp.org/sites/default/files/hdr_2011_en_summary.pdf)

UNESCO. (2010). Teaching and learning for a sustainable future: a multimedia teacher education programme. Glossary. Retrieved: [http://www.unesco.org/education/tlsf/mods/theme\\_gs.html](http://www.unesco.org/education/tlsf/mods/theme_gs.html)

UNESCO, (2016). UNESCO ICT Competency Framework for Teachers. Retrieved <http://www.unesco.org/new/en/unesco/themes/icts/teacher-education/unesco-ict-competency-framework-for-teachers/>

United Nations. (2015). Sustainable development goals. Retrieved <http://www.un.org/sustainabledevelopment/sustainable-development-goals/>

- Variend, (2013). What you need to know about CAPS. Pearson South Africa. Retrieved: <http://maskewmillerlongman.ning.com/profiles/blogs/what-you-need-to-know-about>
- Vodacom digital classroom, (2014). Vodacom mobile education programme. Retrieved: <http://digitalclassroom.co.za/digitalclassroom/>
- Walsham, G., (1995) Interpretive case studies in IS research: nature and method. *European Journal of information systems*, 4(2), 74-81
- Woolf, N. (2014). Analytic strategies and analytic tactics. Retrieved: <https://depositonce.tu-berlin.de/handle/11303/5126>
- Wessing, T., (2015). Consumer Rights Act 2015 Digital Content. Retrieved: [http://united-kingdom.taylorwessing.com/fileadmin/files/docs/CRA15\\_DigitalContent.pdf](http://united-kingdom.taylorwessing.com/fileadmin/files/docs/CRA15_DigitalContent.pdf)
- Yin, R. K. (2013). Case study research: Design and methods. Sage publications

# The facilitation of adoption and use of text intensive mobile services by low-literate users.

Muzi Matyila<sup>1,2</sup>, Adele Botha<sup>1,2</sup> and George Sibiya<sup>1</sup>

<sup>1</sup> Centre for Scientific and Industrial Research, Pretoria, South Africa

<sup>2</sup> University of South Africa, Pretoria, South Africa

**Abstract:** The challenge that low-literate users face when using text intensive artefacts is well documented. The barrier to entry and participation by these users to some socio-economic activities is exacerbated by current mobile phones which provide support for text intensive mobile services. Simple messaging, business and public service oriented mobile services may pose the most challenges. It is noted that text intensive mobile services carry significant impact in socio-economic participation involving communication, information seeking and knowledge generation. In order to support the emancipation of low-literate users and their voice in being heard it is of essence to enhance text intensive mobile services and motivate their adoption and use by these users. The aim of this paper is to explore attributes of text intensive mobile services that are inhibiting accessibility by low-literate users with the purpose of informing the enhancement of those mobile services to facilitate adoption and use by low-literate users. Tools facilitating the comprehension of users' acceptance, adoption and use of new technological systems and artefacts have successfully been applied to business related domains and will be explored for understanding and explaining low-literate user challenges with text intensive mobile services. The preferred reporting items for systematic reviews and meta-analyses (PRISMA) statement will be used to select an appropriate tool from the available set. The use of such an acceptance tool may explain acceptance thus enabling the emancipation of low-literate users by facilitating their participation in socio-economic activities using text intensive mobile services.

**Keywords:** Low-literacy, text intensive mobile services, technology acceptance, socio-economic participation

## Introduction and Background

Mobile phones have transcended from the simple facilitation of classical person to person communication as a complement for fixed line telephones to the multi-purpose devices providing support to individuals in a number of ways for a variety of tasks (Böhmer, 2013, p. 7). Mobile phones have eclipsed fixed line telephones in communication in the developed world and are competing with personal computers for information sharing and dissemination in the developing world (Donner & Gitau, 2009; infoDev, 2012) including South Africa (Mphidi, 2008). In fact mobile phones are in a new era by moving beyond being sources of information and communication to enabling knowledge sharing and dissemination allowing decisions to be made and adopted anywhere and anytime (Botha et al., 2010; Botha, van der Berg, Batchelor, & Islas Sedano, 2008). As a result, socio-economic participation is facilitated among different individuals (Aker & Mbiti, 2010; Wasserman, 2011). This is made possible by mobile services.

Mobile services are rich applications natively supported by mobile phones (Charland & Leroux, 2011; Holzer & Ondrus, 2011; Mei Min, Ling Hong, Jian Ai, & Pei Wah, 2012). Advanced mobile phones referred to as smart phones provide extensive support for mobile services which in turn allow the seamless support of different operations on mobile phones almost simultaneously (infoDev, 2012), in this regard mimicking personal computers. Voice communication, messaging (SMS and MMS) and even data services can be supported simultaneously thus facilitating knowledge sharing and dissemination (Boyera et al., 2009; infoDev, 2012).

Mobile services inherently support information sharing and knowledge dissemination (Sharma, Fantin, Prabhu, Guan, & Dattakumar, 2016) and can play a pivotal role in facilitating sustainable development with minimalistic impact on the environment. Digital literacy particularly relating to mobile phones enable users to gain the most benefit in using mobile services for socio-economic participation and contributing to development within communities and society at large (Sharma et al.,

2016; Wasserman, 2011). However literacy challenges inherent in society due to socio-economic challenges foster the emergence of illiterate individuals as well as individuals with differing degrees of low-literacy (Chipchase, 2005; Heugh, 2015). Low-literacy is not only manifested in academia but also in different sectors within communities thus posing challenges to the day to day functioning of individuals (Chipchase, 2005; *Functional Literacy In Eastern And Western Europe*, 1990). These challenges are more evident in users interacting with mobile phones since some mobile services required a degree of textual and numeric literacy in order to be used successfully (Chipchase, 2005).

Technological advancement in most mobile phones particularly smart phones, support multimedia and graphical user interfaces allowing users to successfully use mobile phones even with limited general literacy (Huenerfauth, 2002; Medhi et al., 2011; Medhi, Sagar, & Toyama, 2006). However, domain specific, public services related mobile services as well as information and knowledge dissemination mobile services are inherently text intensive and pose the greatest challenges to low-literate users (Anyasi & Otubu, 2009; Chaudry, Connelly, Siek, & Welch, 2012; Deep & Sahoo, 2015; Shaikh & Karjaluoto, 2015). In the current study low-literate users refers to users experiencing challenges with low-literacy.

Text carries significance in general and particularly in text intensive mobile services. Text has been shown to provide direct and simple access to information with positive spinoffs on socio-economic impact within communities and society at large (Barker & Escarpit, 1973; Kirsch & Guthrie, 1977; Malale, 1996). According to Mphidi (2008) and infoDev (2012) e-services from which m-services (mobile services geared for government to citizen and citizen to government communication) are a subset of, are extensively employed by the government for public services in an effort to bridge the digital divide and make information available to its citizens. Current mobile phones especially smart phones provide extensive support for textual interfaces making them an ideal vehicle for mobile services geared for public, financial, health, education sectors and so forth thus encouraging socio-economic participation. The study will later show that text intensive mobile interfaces pose challenges to low-literate users potentially excluding these users from socio-economic participation.

Typically low-literate users prefer communicating through voice despite the associated cost instead of adopting more cost effective means of communication, information and knowledge sharing like messaging and social networks (Chipchase, 2005; Medhi et al., 2011). Due to the popularity of messaging and social network related mobile services low-literate users may be excluded from participating in these mobile services. Children at school going age have shown attraction to important features of mobile phones through social networks and messaging (Donner & Gitau, 2009; Kreutzer, 2009). Understanding and explaining challenges experienced by low-literate users with typical text intensive mobile services may foster participation and contribution to socio-economic activities by these users.

The current research will investigate the technology acceptance model (TAM) as a tool to understand text intensive mobile services for use by low-literate users. However, in light of the numerous extensions of the model the preferred reporting items for systematic reviews and meta-analyses (PRISMA) statement will be used to identify a suitable version or extension of TAM to be used for the understanding of text intensive mobile services usable by low-literate users. The rest of the paper is outlined as follows: the current section provides the introduction and background of the paper followed by the related work section. Subsequent to that section is the literature review; this will be followed by section on selecting a version of TAM appropriate for low-literate users. Finally, the discussion and the conclusion sections will be presented.

## **Related work**

A number of studies have been undertaken to investigate the accessibility, potential adoption and use of mobile services by low-literate users. In the current section we highlight some of the studies that identified challenges experienced by low-literate users with mobile services, potential accessibility of mobile services with minimal text intensity as well as studies using visual interfaces as an intervention for providing mobile service access to low-literate users.



Chipchase (2005) noted that mobile phones, their interfaces and the services they provide inherently contain text and numbers which may pose challenges to low-literate users. According to Hellstrom and Scharff (2015, p. 55) the majority of mobile interfaces and their related services require some degree of literacy resulting in low-literate users being impeded from fully utilizing them. Subsequently the text intensive m-services employed by the government towards its citizens could potentially pose accessibility challenges to low-literate users. Rao and Ramey (2011) through their formal systematic literature review noted that low-literate users avoided text intensive mobile services and preferred calling rather than messaging and also preferred numeric or multimedia interfaces with minimal text intensity. Naturally, text intensive mobile services like USSD and SMS are extensively used by public services providers and financial institutions (Donner & Tellez, 2008; infoDev, 2012) for the benefit of users in the public sector and the associated clientele in the finance sector respectively. These mobile services are mainly text based only. Low-literate users generally experience challenges discerning and processing numerous text inherent in these mobile services (Kodagoda & Wong, 2008). Without intervention, such mobile services may potentially be not accessible to low-literate users (Medhi et al., 2011) and discourage adoption, acceptance and use of not only those mobile services but mobile services in general.

Medhi-Thies, Ferreira, Gupta, O'Neill, and Cutrell (2015) noted the significance of social media in low income communities within developing countries and tailored a social media mobile service for low-literate farmers assisted by mediators. Mediators were digitally literate individuals familiar with mobile phones in general and with solid educational background. From their findings it is noted that with the assistance of mediators a visual social media mobile service may be accessible to low-literate communities for socio-economic participation in restricted contexts due to privacy concerns by users stemming from the assistance provided by mediators (Medhi-Thies et al., 2015). Mediators may potentially eavesdrop on these users' communications. Ahmed et al. (2015) took advantage of interdependence between individuals within communities to design, with some success, an interface that would allow low-literate individuals to seek assistance from a digitally literate individual to access and use day to day operations of a mobile phone. These efforts may potentially facilitate the participation of low-literate users to socio-economic activities.

Beyond mobile services, Kemp and Eagle (2008) noted that low-literacy pose challenges to the health sector due to the lack of comprehension regarding the administration of medication for low-literate patients. According to Gribbons (2007) the health sector has a moral and economic responsibility to address the needs of low-literate users. Further, it is noted that that the health sector is on a trajectory of mobile services, for example the Mom Connect ("MomConnect," 2016) mobile service employing both SMS and USSD. Oliver, Huettig, Singh, and Mishra (2014) highlight that low-literate users may experience challenges with visual searches due to cognitive shortcomings. This can potentially have an impact on the future use of general mobile services by low-literate users and not only text intensive mobile services as currently observed.

Kodagoda, Wong, Rooney, and Khan (2012), Kodagoda and Wong (2008) and Nielsen (2005) noted challenges experienced by low-literate users with text intensive interfaces, particularly those offered by mobile phones; from cognitive overload to general accessibility problems with discerning numerous text. Belay, McCrickard, and Besufekad (2016) sought to provide design guidelines for mobile interfaces geared for low-literate users. Challenges experienced by low-literate users were to be enhanced for designers potentially informing design considerations for mobile services in general to acknowledge the presence of low-literate users (Belay et al., 2016). Such an effort can potentially inform the design of not only general mobile services but also text intensive mobile services accessible and usable by low-literate users.

Challenges with text intensive mobile services experienced by low-literate users may result in these users being excluded in socio-economic activities and further widening the digital divide. The significance of designing mobile applications with low-literate users in mind to facilitate their socio-economic participation is considered essential (Chaudry et al., 2012) and is anticipated to occupy future design efforts (Meiselwitz, Wentz, & Lazar, 2010).

Current mobile services as supported by smart phones provide extensive support to multimedia and graphical user interfaces (infoDev, 2012). Designing current text intensive mobile services with low-literate users in mind could potentially allow the use of more visual interfaces making such mobile services accessible to low-literate users. Huenerfauth (2002) showed that interfaces designed

for visually impaired users benefitted low-literate users while Gribbons (2007) noted that design considerations benefitting low-literate users may benefit aging populations as well. As a result text intensive mobile services accepted and usable to low-literate users may also extend the socio-economic participation of other users groups as well further contributing towards one of the goals of human computer interaction of promoting universal usability through designing for diverse user groups (Lazar, 2007).

Shneiderman (2000) points out that poor interface and interaction design remain one of the defining variables between technology haves and have not's and this extends to typical mobile services which are not designed with low-literate users in mind. According to Shneiderman (2000) accommodating user diversity including low-literate users, in application design is very important despite the challenge associated with such. Of essence is affording diverse user groups, including low-literate users access to text intensive mobile services, especially in light of the contribution of these services to the participation of users in socio-economic activities. In the next section we explore TAM as a tool that can be used in understanding and explaining the potential adoption, acceptance and use of text intensive mobile services by low-literate users as well as PRISMA as a tool that would enable the selection of attributes from TAM, text intensive mobile services and low-literate users that may afford low-literate users access and use thus facilitating socio-economic participation.

## **Literature review**

The paper explores problems experienced by low-literate users with socio-economic participation using text intensive mobile services. The current section will undertake a literature review to address and ground concepts relating to low-literacy, mobile services and the tools identified in the study to explore interventions possible for enhancing mobile services for acceptance, adoption and use by low-literate users.

### **Low-literacy**

Starting with low-literacy, the significance of profiling low-literate users is noted and such a profile is dependent on the concept of literacy. According to Lonsdale and McCurry (2004) literacy has no single universal definition. However, literacy is defined in a number of ways from different perspectives, contexts and aims (Malale, 1996). It is generally accepted that the classical definitions of literacy are mainly based on abilities to read and write (Kodagoda et al., 2012; Malale, 1996; Posel, 2011). According to Kirsch and Guthrie (1977) and Hellstrom and Scharff (2015) literacy is defined based on the acquisition of intellectual skills associated with basic competencies in reading and writing and other various educational measures. Closely associated with literacy is the concept of functional illiteracy which is noted to be interchangeable with functional literacy. Functional illiteracy is based on whether an individual can utilize written information in their day to day activities at home, work or in their communities (*Functional Literacy In Eastern And Western Europe*, 1990). Low-literate users are considered to experience degrees of functional illiteracy and are as a result of the different categorization of levels of literacy skills from no literacy skills to limited literacy skills (Hellstrom & Scharff, 2015; Kodagoda & Wong, 2008). It is noted that literacy plays a significant role in the general socio-economic participation of users and this potentially puts low-literate users at a disadvantage. Next mobile services are addressed highlighting their significance in supporting socio-economic participation by users as well as challenges some of them pose on low-literate users.

### **Mobile services**

Mobile services consist of all applications geared towards the user running on a mobile phone, particularly smart phones and can be categorised in a number of ways. Some mobile services are considered basic services, mainly the communication related voice calling and messaging services (SMS, MMS and USSD) (Boyera et al., 2009; infoDev, 2012), while others are considered advanced services; mobile web, email and social media which are basically feature rich natively running mobile

applications (Bouwman, Bejar, & Nikou, 2012; Nikou & Mezei, 2013). Some of the significant mobile services form social and community based interventions, others support self-expression and articulation while others are for consumption purposes (Bouwman et al., 2012). As a result the role of mobile services on socio-economic participation is indicative, from individual upliftment to community contribution.

Mobile services form part of the Mobile for Development (M4D) initiative involved with providing information and knowledge based services for individuals across a number of sectors, that is, government, health, finance, education and so forth (infoDev, 2012; Ogunleye et al., 2011; Svensson & Wamala, 2012; Wicander, 2010). However, some of the mobile services underlying the M4D initiative are text intensive thus not accessible to low-literate users with an adverse effect of excluding these users in socio-economic participation (Chaudry et al., 2012; Meiselwitz et al., 2010). As such, it is important to understand the use of text intensive mobile services by low-literate users in an effort to allow them to participate in socio-economic activities.

For an investigation of user acceptance, adoption and use of general mobile services, and text intensive mobile services in particular we turn to technology acceptance models, one of the most used in the field being the technology acceptance model. It is noted that a number of acceptance models exist as outlined partially in Venkatesh, Morris, Davis, and Davis (2003). However, the study opted to use the technology acceptance model due to its popularity and leadership status among competing acceptance models (Bagozzi, 2007; Marangunić & Granić, 2015). Bagozzi (2007) notes that the technology acceptance model has been a model of choice for a considerable period thus elevating its status among competing models.

### **The technology acceptance model**

The technology acceptance model (TAM) has been used in a number of studies to understand and explain new technology acceptance, adoption and use (Bagozzi, 2007; Chuttur, 2009; Marangunić & Granić, 2015). According to Venkatesh et al. (2003) explaining user acceptance of a technology, particularly a new one is often described as one of the most mature research areas of contemporary Information Systems. According to Bagozzi (2007) the attributes of the technology acceptance model; perceived usefulness and the perceived ease of use of a (new) technology artefact determines the users intention to use it which in turn influences the users usage behaviour. According to Davis (1985) the acceptance of a technology artefact; an information or a computer system used by a user, is often affected by the attributes and characteristics of the artefact or system and its general appeal to that user. Users will be interested in adopting a technology only if they are comfortable using such technology and if it adds value to their work or day to day activities (Nelson, 2013). Having noted the significance of text intensive mobile services in supporting socio-economic participation, the technology acceptance model can be employed as a tool towards understanding and explaining the adoption, acceptance and use of text intensive mobile services by low-literate users thus affording low-literate users participation in socio-economic activities.

The current study needs to address attributes from TAM that can be beneficial to low-literate users in accepting text intensive mobile services. According to Marangunić and Granić (2015) the technology acceptance model has experienced a number of modifications and extensions as new constructs are added to the model to cater for different domains or to extend its validity. The process of selecting the appropriate version of TAM to be used in the study necessary to cater for low-literate users and text intensive mobile services and in light of the numerous modifications and extensions available (Bagozzi, 2007; Marangunić & Granić, 2015), will be guided by the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) statement (Liberati et al., 2009; Moher, Liberati, Tetzlaff, & Altman, 2009). In the next section the PRISMA statement will be applied to the literature on TAM to elicit the appropriate version to be used for enhancing text intensive mobile services for use by low-literate users.

## Selecting a version of TAM appropriate for low-literate users

In the current section we present the preferred reporting items for systematic reviews and meta-analyses (PRISMA) statement for the purposes of guiding the selection of an appropriate version of TAM to be used in the study. Such a version of TAM will facilitate eliciting attributes from text intensive mobile services and from low-literate users necessary for the successful application of the model. The PRISMA statement is the evolution of the Quality of Reporting of Meta-analyses standards (QUOROM) statement and generally provides weight to general literature reviews in particularly systematic and meta-analyses. The PRISMA statement was motivated by challenges highlighted by Mulrow (1987, p. 486) that most systematic literature reviews failed to meet a pre-specified scientific criteria. The investigative process on TAM was guided by the 27-item checklist of the PRISMA statement as advocated by (Liberati et al., 2009) and (Moher et al., 2009). This is presented in table 1 below – blank results were not given attention.

**Table 1: PRISMA statement checklist**

PRISMA Statement checklist item	Application on the research
Title	
1. Title	Exploring the Technology Acceptance Model on low-literate user challenges with text intensive mobile services.
Abstract	
2. Structured summary	The study explored the use of text intensive mobile services by users in general to make a case for the need to access these mobile services by low-literate users. Low-literate users generally have challenges using text intensive mobile services. Current smart phones provide support for designing mobile services to diverse user groups. Designers could consider low-literate users when designing mobile services.
Introduction	
3. Rationale	To inform research and practise on the needs of low-literate users with regards to text intensive mobile services and influence design considerations for general mobile service design and implementation.
4. Objectives	<ul style="list-style-type: none"> <li>• To motivate low-literate users to use all mobile services through the design that acknowledges their challenges.</li> <li>• To enable the environment where there is free use and contribution to socio-economic activities by low-literate users through all mobile services.</li> </ul>
Methods	
5. Protocol and registration	Not applicable as the articles to be evaluated were not split within a research team
6. Eligibility criteria	<ul style="list-style-type: none"> <li>• Technology acceptance model studies</li> <li>• Mobile applications or mobile services</li> <li>• Studies involve low-literate users</li> </ul>
7. Information sources	<ul style="list-style-type: none"> <li>• Google scholar which also indexes Taylor &amp; Francis Online, JSTOR, ACM Digital Library, Wiley Online Library and ScienceDirect among other journals, though theoretically all (Falagas, Pitsouni, Malietzis, &amp; Pappas, 2008).</li> <li>• Search terms were: technology acceptance model mobile services low-literacy empirical study (0 results); empirical study (0 results); technology</li> </ul>

	acceptance model mobile services low-literacy (0 results); technology acceptance model empirical study (20 results); technology acceptance model mobile (158)
8. Search	The search strategy used followed the following approaches: <ul style="list-style-type: none"> <li>• Keyword search on the information sources specified in '7' above. The keyword used revolved around technology acceptance</li> <li>• Full title search on google scholar</li> </ul>
9. Study selection	<ul style="list-style-type: none"> <li>• Studies were selected primarily based on the title, abstract and where necessary scanning through the introduction, discussion and conclusion sections of the article.</li> <li>• Recommendations from the supervisor, co-supervisor and co-researchers.</li> </ul>
10. Data collection process	Data extraction not undertaken. Fully read articles probed for the data analysis, methods and results.
11. Data items	User, mobile phone or mobile service attributes
12. Risk of bias in individual studies	
13. Summary measures	Perceived ease of use, perceived usefulness and behavioural intention
14. Synthesis of results	The studies investigated the acceptance, adoption and use of technology artefacts centred on mobile phones or mobile services in a number of domains. The technology acceptance model was the main tool used in the investigations. Mobile phones and mobile services were noted to provide support for business processes and participation of users with potential for adoption and use of the business processed in consideration facilitated by mobile phones or mobile services.
15. Risk of bias across studies	Constant or similar user groups despite potential benefit of artefacts to wider and more diverse user groups
16. Additional analyses	
<b>Results</b>	
17. Study selection	The final list of studies was selected based on the attributes: <ul style="list-style-type: none"> <li>• Low-literacy</li> <li>• Mobile services</li> <li>• Technology acceptance or technology acceptance model</li> </ul>
18. Study characteristics	Technology acceptance, mobile phones, low-literate users
19. Risk of bias within studies	<ul style="list-style-type: none"> <li>• Generalize mobile services despite the requirements inherent in some like social media services, SMS, etc.</li> <li>• Generalize user groups in terms of literacy background due to bias towards developed countries.</li> </ul>
20. Results of individual studies	Summarized in table 2 below
21. Synthesis of results	Not formally undertaken though key attributes of the original TAM, perceived ease of use, perceived usefulness and behavioural intention were investigated in detail.

22. Risk of bias across studies	Limited attention provided for the diversity of users particularly their different needs.
23. Additional analysis	The profile of the sample was given extensive detail as the attributes involving literacy were considered key in the study.
Summary of evidence	
24. Summary of evidence	Table 2 below.
25. Limitations	Limitations noted were the unavailability of low-literate users or attention given to literacy in the articles screened.
26. Conclusions	Text intensive mobile services from mobile phones may afford users support for socio-economic participation. However, low-literate users seldom considered in mobile service design in general with potential impact on their socio-economic participation.
Funding	
27. Funding	Centre for Industrial and Scientific Research (CSIR)

The flow diagram of PRISMA for study selection involving the stages of identification, screening, eligibility and inclusion (Liberati et al., 2009; Moher et al., 2009), is presented below:

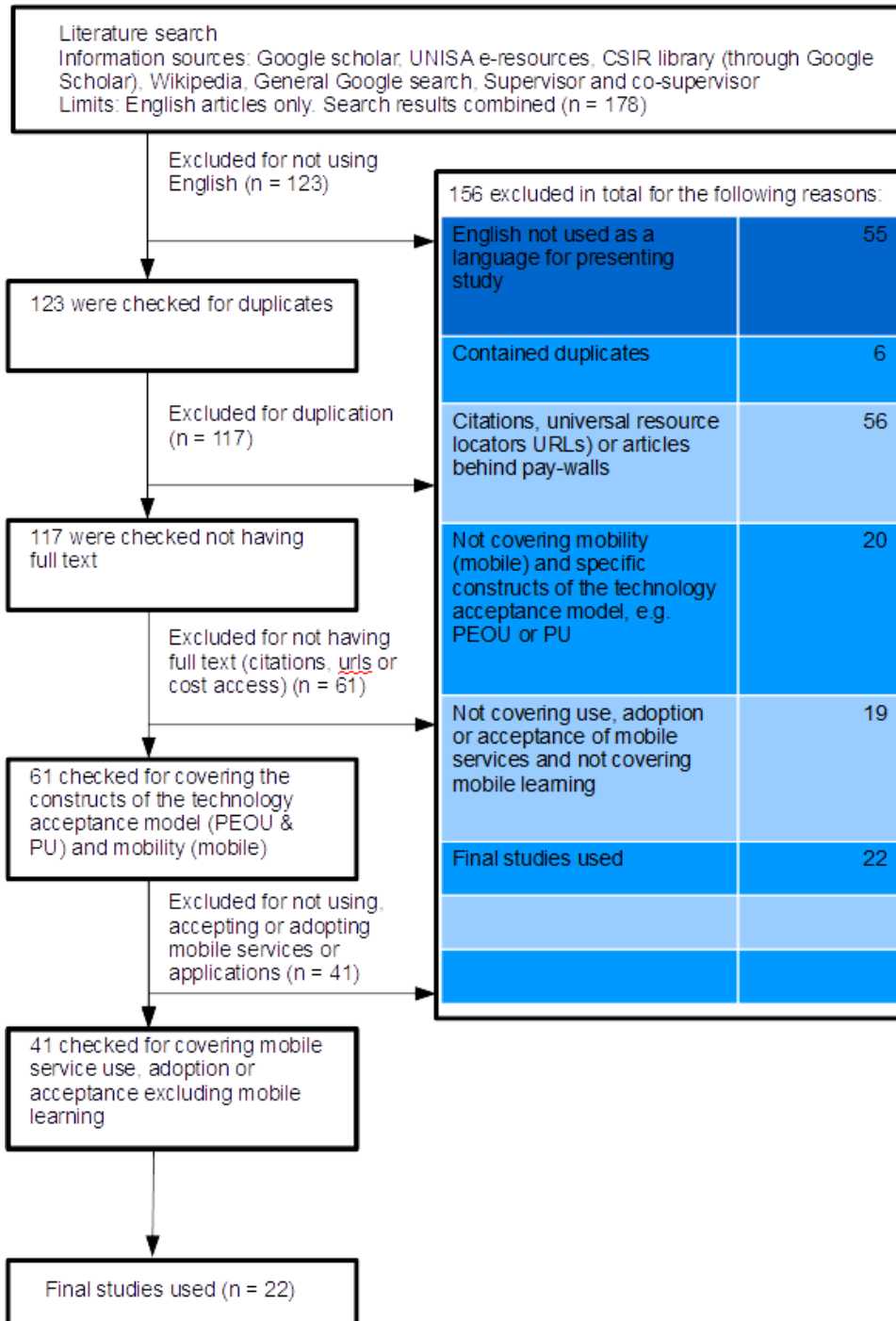


Figure 5: PRISMA flow diagram on TAM for mobile services

Key:

TAM – technology acceptance model

PEOU – Perceived ease of use

PU – Perceived usefulness

The table below provides a list of articles which were dealt with in detail:

**Table 2: List articles addressed in detail**

Citation	Findings
1. Ozturk, Bilgihan, Nusair, and Okumus (2016)	TAM on m-commerce. Mobile Hotel booking (MHB) application. Small sample size, generalizability to diverse user groups limited.
2. Gebauer, Shaw, and Subramanyam (2007)	PEOU based on well-constructed mobile service may facilitate acceptance, adoption and use and may potentially be generalized to diverse user groups including low-literate users.
3. Ohk, Park, and Hong (2015)	PEOU and PU, both attributes of TAM are some of the attributes that have a positive behavioural intention. Sample did not take into account literacy consideration of the users
4. Choi, Park, and Park (2012)	Education mentioned as an attribute to be investigated in the study without any evidence. PEOU and PU tested with positive results in mobile services in tourism.
5. Lu, Yao, and Yu (2005)	Personal innovativeness in information technology (PIIT) has a positive impact on acceptance and usage of mobile services. PIIT is supported by PEOU and PU, constructs of TAM
6. Jayasingh and Eze (2009)	Malay individuals within the ages of 15 and 29. No information on educational background, literacy considerations not feasible. Messaging related communication, text, may be useful to low-literacy populations. PEOU and PU (TAM attributes) found to be significant in determining acceptance of mobile coupons.
7. Gao, Moe, and Krogstie (2010)	Mobile Student Information System assessed. PEOU from TAM among key determinants for adoption. PU has a negative impact on behavioural intention. Sample involved university students so relationship to low-literate users not applicable. However, it is necessary for designers to attend to specific needs of users geared for a mobile service, possibly low-literate users as well.
8. Kargin and Basoglu (2006)	TAM used in the study. However, university students used in the sample so relationship to low-literate users not applicable.
9. Gao, Krogstie, and Gransæther (2008)	Extended technology acceptance model, mobile services acceptance model (MSAM) used. MSAM contains PEOU and PU. Mobile service designed mainly with students in mind so consideration for low-literate users limited
10. Golding and Donaldson (2009)	Design science applied to TAM and used in the study. Random sample was used with a possibility of low-literate users. However, literacy was excluded in the study.
11. Whang, Lee, Kang, and Lee (2004)	Study deals with general mobile phone adoption using TAM. Low-literate users formed part of the sample but no special consideration was given. Main attributes considered for adoption mainly based on the mobile phone.
12. Praveena and Thomas (2014)	Continuance intention usage of Facebook – explanation through TAM. PEOU and PU influence behavioural intention (BI) to promote usage. Students used in the study with no attention to literacy.
13. Algethmi (2014)	Thesis – full analysis not undertaken.
14. Han (2005)	Thesis – full analysis not undertaken.
15. Pojon-Mannari (2011)	Thesis – full analysis not undertaken.



16. Nelson (2013)	Sample involved university students so relationship to low-literate users not applicable or possible to determine. PU useful and PEOU not that useful in determining behavioural intentions.
17. Bader, Baldauf, Leinert, Fleck, and Liebrich (2012)	TAM used in the study and PEOU with PU significant contributors in determining behavioural intention. Literacy considerations not made in determining sample.
18. Tsai, Wang, and Lu (2011)	TAM used in the study, but PEOU and PU not treated in depth. Sample profile not provided.
19. Yang and Zhou (2011)	Sample involved American college students who may not count as low-literate. TAM used in the study with PEOU and PU given little attention.
20. Jeung-tai and Chihui (2009)	TAM used in the study with PEOU and PU being significant contributors of behavioural intention. Literacy considerations not undertaken in the study.
21. Thanarithiporn (2004)	Dissertation – analysis not undertaken
22. Moon and Chang (2014)	Study undertaken on smart phones and not the associated mobile services. Literacy considerations not undertaken. However professional medical staff sampled in the study. TAM used and PEOU considered but not PU. PEOU shown to impact behavioural intention.

## Discussion

The previous section illustrated the application of the PRISMA statement on TAM in investigating attributes necessary for the provision of text intensive mobile services to low-literate users. The original version of the technology acceptance model as explained by Davis (1985) and Davis, Bagozzi, and Warshaw (1989) contains attributes necessary to understand and explain the needs of low-literate users in adopting, accepting and using text intensive mobile services in light of the significance of the perceived ease of use and the perceived usefulness attributes of TAM.

A search was undertaken on Google scholar using search terms which were elicited through the study selection section (item 9) of the 27-item checklist of the PRISMA statement. The challenge of irrelevant studies (vom Brocke et al., 2015) was mitigated through starting off with more specific searches down to more general ones. In this way the challenge of returning thousands of results in search was alleviated. Initially 178 results were returned. The approach formed the identification process of the PRISMA flow diagram (Liberati et al., 2009; Moher et al., 2009).

From the 178 results, screening, eligibility and inclusion was undertaken resulting in 22 articles to be analysed in detail. These articles are listed in table 2. Five of the articles were thesis or dissertations, consequently detailed analysis not undertaken. From the remaining 17 articles, TAM was found to be significant in general particularly the core attributes PEOU and PU in the adoption, acceptance and use of mobile services. Other significant attributes from iterations of TAM were noted; subjective norm (TAM 2) (Venkatesh & Davis, 2000), and Social Influence Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003). These were not taken into consideration.

It is noted that of the analyzed articles, the studies paid insignificant attention to the diversity of user groups which could potentially benefit in the use of the mobile services being studied. Bias was mainly towards developed countries with challenges like literacy not being addressed in the studies based on the sample chosen as most of the studies employed post basic education users to form the sample. From these studies it is noted that the technology acceptance model is significant in enabling practitioners to understand and explain the acceptance, adoption and use considerations for a new technology artefact. Consequently, the technology acceptance model can be extended to understanding and explaining the acceptance of text intensive mobile services by low-literate users. Future work in this regard will need to properly define the attributes of low-literate users as well as define what constitutes text intensive mobile services and what does not.

The preferred reporting items for systematic reviews and meta-analyses (PRISMA) statement applied to the literature review of the current study illustrated the lack of application of the technology acceptance model on mobile services use. Other models are generally used in investigating the usage of mobile services by users in set context, but few articles (Gao et al., 2008) and (Gao et al., 2010) used the technology acceptance model on mobile services. The situation is even more critical when the user group of low-literate users is used.

## Conclusion

The study notes that text intensive mobile services play a significant role in affording users socio-economic participation. However, low-literate users generally experience cognitive challenges and challenges discerning numerous text making text intensive mobile services not accessible to these users. The technology acceptance model contain attributes that can be modified or extended to investigate the adoption and potential use of text intensive mobile services by low-literate users.

From the studies that were investigated for the acceptance of mobile services using TAM or its variants, little or no attempt was made to address the needs of diverse user groups as advocated by human computer interaction practises. The current study investigated socio-economic participation by low-literate users assisted by text intensive mobile services. In light of the user group of interest in the current study, the sample used in general in the studies analysed involved post basic education students or made no effort to investigate low-literate or illiterate users clearly illustrating a need for involving more diverse user groups.

The literature review investigated some studies which addressed the use of mobile services or mobile phones by low-literate users. However, in general the investigations in these studies did not employ TAM to understand and explain acceptance, adoption and use despite TAM having been validated numerously using a number of user groups and in different domains.

The preferred reporting items for systematic reviews and meta-analyses (PRISMA) statement has been used for reviews in a number of domains particularly the health sector. However, there exists a gap in exploring TAM for a domain and a specific user group using the PRISMA statement. The current study provides a template for such an application as a contribution to the field of information systems in general and particularly where the needs of low-literate users are to be investigated.

The technology to enhance text intensive mobile services is available and supported by smart phones. So the onus is on the practitioners of text intensive mobile services like designers to have low-literate users in mind when designing mobile applications. The current study already explored key attributes from TAM, the perceived ease of use and the perceived usefulness involving mobile services and low-literate users necessary for the adoption, acceptance and use of text intensive mobile services by low-literate users. In this way it may be possible to minimise the text intensity inherent in these applications or provide support in other interfaces usable to low-literate users so as to afford these users socio-economic participation.

## References

- Ahmed, S. I., Zaber, M. H., Morshed, M. B., Ismail, M. H. B., Cosley, D., & Jackson, S. J. (2015). *Suhrid: A Collaborative Mobile Phone Interface for Low Literate People*. Paper presented at the Proceedings of the 2015 Annual Symposium on Computing for Development.
- Aker, J. C., & Mbiti, I. M. (2010). Mobile phones and economic development in Africa. *Center for Global Development Working Paper*(211).
- Algethmi, M. A. (2014). Mobile commerce innovation in the airline sector: An investigation of mobile services acceptance in Saudi Arabia. Brunel University School of Engineering and Design PhD Theses.
- Anyasi, F., & Otubu, P. (2009). Mobile phone technology in banking system: Its economic effect. *Research Journal of Information Technology*, 1(1), 1-5.
- Bader, A., Baldauf, M., Leinert, S., Fleck, M., & Liebrich, A. (2012). Mobile Tourism Services and Technology Acceptance in a Mature Domestic Tourism Market: The Case of Switzerland: na.

- Bagozzi, R. (2007). The legacy of the technology acceptance model and a proposal for a paradigm shift. *Journal of the association for information systems*.
- Barker, R., & Escarpit, R. (1973). *The Book Hunger*.
- Belay, E. G., McCrickard, D. S., & Besufekad, S. A. (2016). Mobile User Interaction Development for Low-Literacy Trends and Recurrent Design Problems: A Perspective from Designers in Developing Country. Paper presented at the International Conference on Cross-Cultural Design.
- Böhmer, M. (2013). *Understanding and supporting mobile application usage*. (Dissertation), Universität des Saarlandes: Startseite.
- Botha, A., Makitla, I., Ford, F., Fogwill, T., Seetharam, D., Abouchabki, C., . . . Oguneye, O. (2010). Mobile phone in Africa: providing services to the masses.
- Botha, A., van der Berg, M., Batchelor, J., & Islas Sedano, C. (2008). *Ability through mobility*. Paper presented at the Proceedings of the 3rd International Conference on e-Learning.
- Bouwman, H., Bejar, A., & Nikou, S. (2012). Mobile services put in context: A Q-sort analysis. *Telematics and informatics*, 29(1), 66-81.
- Boyera, S., Song, S., Butagira, T. F., Vota, W., Bharat Popat, C., James Macauley, G. M.-B., & Liebhardt, J. (2009). Mobile Web for Social Development Roadmap.
- Charland, A., & Leroux, B. (2011). Mobile application development: web vs. native. *Communications of the ACM*, 54(5), 49-53.
- Chaudry, B. M., Connelly, K. H., Siek, K. A., & Welch, J. L. (2012). *Mobile interface design for low-literacy populations*. Paper presented at the Proceedings of the 2nd ACM SIGHT International Health Informatics Symposium.
- Chipchase, J. (2005). Understanding non-literacy as a barrier to mobile phone communication. Retrieved September, 16, 2008.
- Choi, H.-S., Park, J.-W., & Park, S. B. (2012). A study on the effect of mobile tourism information services on tourist satisfaction and continual reuse intention. *International Journal of Business and Information Technology*, 1(3).
- Chuttur, M. Y. (2009). Overview of the technology acceptance model: Origins, developments and future directions. *Working Papers on Information Systems*, 9(37), 9-37.
- Davis. (1985). D. 1986, "A Technology Acceptance Model for Empirically Testing New End-User Information Systems: Theory and Results": . . . of Technology, Sloan School of . . .
- Davis, Bagozzi, R., & Warshaw, P. (1989). User acceptance of computer technology: a comparison of two theoretical models. *Management science*.
- Deep, M. K., & Sahoo, G. (2015). m-Governance for better G2C service. *The Journal of Internet Banking and Commerce*, 2011.
- Donner, J., & Gitau, S. (2009). *New paths: exploring mobile-centric internet use in South Africa*. Paper presented at the Pre-Conference on Mobile Communication at the Annual Meeting of the International Communication Association.
- Donner, J., & Tellez, C. A. (2008). Mobile banking and economic development: Linking adoption, impact, and use. *Asian journal of communication*, 18(4), 318-332.
- Falagas, M. E., Pitsouni, E. I., Malietzis, G. A., & Pappas, G. (2008). Comparison of PubMed, Scopus, web of science, and Google scholar: strengths and weaknesses. *The FASEB journal*, 22(2), 338-342.
- Functional Literacy In Eastern And Western Europe. (1990). Retrieved from Hamburg, Germany:
- Gao, S., Krogstie, J., & Gransæther, P. A. (2008). *Mobile services acceptance model*. Paper presented at the Convergence and Hybrid Information Technology, 2008. ICHIT'08. International Conference on.
- Gao, S., Moe, S. P., & Krogstie, J. (2010). *An empirical test of the mobile services acceptance model*. Paper presented at the Mobile Business and 2010 Ninth Global Mobility Roundtable (ICMB-GMR), 2010 Ninth International Conference on.
- Gebauer, J., Shaw, M. J., & Subramanyam, R. (2007). Once built well, they might come: An empirical study of mobile e-mail.
- Golding, P., & Donaldson, O. (2009). A design science approach for creating mobile applications. *ICIS 2009 Proceedings*, 165.

- Gribbons, W. M. (2007). Universal accessibility and functionally illiterate populations: Implications for HCI, design, and testing. In A. Sears & J. A. Jacko (Eds.), *The Human-Computer Interaction Handbook: Fundamentals, Evolving Technologies and Emerging Applications* (2nd ed., pp. 111): Lawrence Erlbaum Associates, Taylor & Francis Group.
- Han, S. (2005). Understanding user adoption of mobile technology: focusing on physicians in Finland: Turku Centre for Computer Science.
- Hellstrom, J., & Scharff, C. (2015). *Mobile Participation: Access, Interaction and Practices*: Cambridge Scholars Publishing.
- Heugh, K. (2015). Language and literacy issues in South Africa.
- Holzer, A., & Ondrus, J. (2011). Mobile application market: A developer's perspective. *Telematics and informatics*, 28(1), 22-31.
- Huenerfauth, M. P. (2002). Developing design recommendations for computer interfaces accessible to illiterate users. (Masters), National University of Ireland  
University College Dublin  
Faculty of Science
- infoDev, W. B. I. C. T. (2012). *Information and Communications for Development 2012: Maximizing Mobile*. Retrieved from Washington, DC: World Bank.:  
<http://siteresources.worldbank.org/EXTINFORMATIONANDCOMMUNICATIONANDTECHNOLOGIES/Resources/IC4D-2012-Report.pdf>
- Jayasingh, S., & Eze, U. C. (2009). *Exploring the factors affecting the acceptance of mobile coupons in Malaysia*. Paper presented at the 2009 Eighth International Conference on Mobile Business.
- Jeung-tai, E. T., & Chihui, C. (2009). *Perceived Innovativeness, Perceived Convenience and TAM: Effects on Mobile Knowledge Management*. Paper presented at the Proceedings of the 2009 Third International Conference on Multimedia and Ubiquitous Engineering.
- Kargin, B., & Basoglu, N. (2006). *Adoption factors of mobile services*. Paper presented at the 2006 International Conference on Mobile Business.
- Kemp, G., & Eagle, L. (2008). Shared meanings or missed opportunities? The implications of functional health literacy for social marketing interventions. *International Review on Public and Nonprofit Marketing*, 5(2), 117-128.
- Kirsch, I., & Guthrie, J. T. (1977). The concept and measurement of functional literacy. *Reading Research Quarterly*, 485-507.
- Kodagoda, N., & Wong, B. (2008). *Effects of low & high literacy on user performance in information search and retrieval*. Paper presented at the Proceedings of the 22nd British HCI Group Annual Conference on People and Computers: Culture, Creativity, Interaction-Volume 1.
- Kodagoda, N., Wong, B., Rooney, C., & Khan, N. (2012). *Interactive visualization for low literacy users: from lessons learnt to design*. Paper presented at the Proceedings of the SIGCHI Conference on Human Factors in Computing Systems.
- Kreutzer, T. (2009). Generation mobile: online and digital media usage on mobile phones among low-income urban youth in South Africa. *Retrieved on March, 30, 2009*.
- Lazar, J. (2007). *Universal usability: Designing computer interfaces for diverse user populations*: John Wiley & Sons.
- Liberati, A., Altman, D. G., Tetzlaff, J., Mulrow, C., Gøtzsche, P. C., Ioannidis, J. P., . . . Moher, D. (2009). The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: explanation and elaboration. *Annals of internal medicine*, 151(4), W-65-W-94.
- Lonsdale, M., & McCurry, D. (2004). *Literacy in the New Millennium*: ERIC.
- Lu, J., Yao, J. E., & Yu, C.-S. (2005). Personal innovativeness, social influences and adoption of wireless Internet services via mobile technology. *The Journal of Strategic Information Systems*, 14(3), 245-268.
- Malale, M. M. (1996). *Gender and literacy education in a rural area of Mpumalanga*. (Masters Dissertation), Rand Afrikaans University, South Africa.
- Marangunić, N., & Granić, A. (2015). Technology acceptance model: a literature review from 1986 to 2013. *Universal Access in the Information Society*, 14(1), 81-95.

Medhi-Thies, I., Ferreira, P., Gupta, N., O'Neill, J., & Cutrell, E. (2015). *KrishiPustak: A social networking system for low-literate farmers*. Paper presented at the Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing.

Medhi, I., Patnaik, S., Brunskill, E., Gautama, S., Thies, W., & Toyama, K. (2011). Designing mobile interfaces for novice and low-literacy users. *ACM Transactions on Computer-Human Interaction (TOCHI)*, 18(1), 2.

Medhi, I., Sagar, A., & Toyama, K. (2006). *Text-free user interfaces for illiterate and semi-literate users*. Paper presented at the Information and Communication Technologies and Development, 2006. ICTD'06. International Conference on.

Mei Min, C., Ling Hong, C., Jian Ai, Y., & Pei Wah, W. (2012). Conceptual Paper: Factors Affecting the Demand of Smartphone among Young Adult. *International Journal on Social Science, Economics and Art*, 2(2), 44-49.

Meiselwitz, G., Wentz, B., & Lazar, J. (2010). *Universal usability: Past, present, and future*: Now Publishers Inc.

Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2009). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *Annals of internal medicine*, 151(4), 264-269.

MomConnect. (2016). Retrieved from <http://www.health.gov.za/index.php/about-mom-connect>

Moon, B. C., & Chang, H. (2014). Technology acceptance and adoption of innovative smartphone uses among hospital employees. *Healthcare informatics research*, 20(4), 304-312.

Mphidi, H. (2008). Digital divide and e-governance in South Africa. *Research, Innovation and Partnerships*.

Mulrow, C. D. (1987). The medical review article: state of the science. *Annals of internal medicine*, 106(3), 485-488.

Nelson, K. (2013). Exploring the use of text messaging to enhance reference services at The University of the West Indies Mona Campus Library. *Caribbean Library Journal is an open access, refereed journal of research and discussion on issues related to all aspects of libraries and librarianship in the Caribbean.*, 7.

Nielsen, J. (2005). Usability for the masses. *Journal of Usability Studies*, 1(1), 2-3.

Nikou, S., & Mezei, J. (2013). Evaluation of mobile services and substantial adoption factors with Analytic Hierarchy Process (AHP). *Telecommunications Policy*, 37(10), 915-929.

Ogunleye, O. S., Makitla, I., Botha, A., Tomay, J., Fogwill, T., Seetharam, D., & Geldenhuys, P. (2011). *Mobi4D: A next generation service delivery platform for mobile government services: An African perspective*. Paper presented at the Adaptive Science and Technology (ICAST), 2011 3rd IEEE International Conference.

Ohk, K., Park, S.-B., & Hong, J.-W. (2015). The Influence of Perceived Usefulness, Perceived Ease of Use, Interactivity, and Ease of Navigation on Satisfaction in Mobile Application. *Advanced Science and Technology Letters*, 84, 88-92.

Olivers, C., Huettig, F., Singh, J., & Mishra, R. (2014). The influence of literacy on visual search. *Visual Cognition*, 22(1), 74-101.

Ozturk, A. B., Bilgihan, A., Nusair, K., & Okumus, F. (2016). What keeps the mobile hotel booking users loyal? Investigating the roles of self-efficacy, compatibility, perceived ease of use, and perceived convenience. *International Journal of Information Management*.

Pojon-Mannari, C. (2011). Role of Relevance in Acceptance of Mobile Advertising: A consumer approach (Available on Internet).

Posel, D. (2011). Adult literacy rates in South Africa: A comparison of different measures. *Language Matters*, 42(1), 39-49.

Praveena, K., & Thomas, S. (2014). Continuance intention to use Facebook: A study of perceived enjoyment and TAM. *Bonfring International Journal of Industrial Engineering and Management Science*, 4(1), 24.

Rao, P. G., & Ramey, J. (2011). *Use of mobile phones by non-literate and semi-literate people: A systematic literature review*. Paper presented at the Professional Communication Conference (IPCC), 2011 IEEE International.

Shaikh, A. A., & Karjaluoto, H. (2015). Mobile banking adoption: A literature review. *Telematics and informatics*, 32(1), 129-142.

Sharma, R., Fantin, A.-R., Prabhu, N., Guan, C., & Dattakumar, A. (2016). Digital literacy and knowledge societies: A grounded theory investigation of sustainable development.

*Telecommunications Policy*.

Shneiderman, B. (2000). Universal usability. *Communications of the ACM*, 43(5), 84-91.

Svensson, J., & Wamala, C. (2012). *M4D: Mobile Communication for Development*. Paper presented at the 3rd Sanord International Symposium 2012, Aarhus University, Denmark, 6-7 June 2012.

Thanarithiporn, S. (2004). A modified technology acceptance model for analyzing the determinants affecting initial and post intention to adopt mobile technology in Thailand.

Tsai, C.-Y., Wang, C.-C., & Lu, M.-T. (2011). Using the technology acceptance model to analyze ease of use of a mobile communication system. *Social Behavior and Personality: an international journal*, 39(1), 65-69.

Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management science*, 46(2), 186-204.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS quarterly*, 425-478.

vom Brocke, J., Simons, A., Riemer, K., Niehaves, B., Plattfaut, R., & Cleven, A. (2015). Standing on the shoulders of giants: Challenges and recommendations of literature search in information systems research. *Communications of the Association for Information Systems*, 37(9), 205-224.

Wasserman, H. (2011). Mobile phones, popular media, and everyday African democracy: Transmissions and transgressions. *Popular Communication*, 9(2), 146-158.

Whang, J., Lee, J. O., Kang, S., & Lee, S. (2004). An Empirical Study of Accepting Mobile Devices Using TAM.

Wicander, G. (2010). M4D Overview 1.0: the 2009 introduction to mobile for development.

Yang, H. C., & Zhou, L. (2011). Extending TPB and TAM to mobile viral marketing: An exploratory study on American young consumers' mobile viral marketing attitude, intent and behavior. *Journal of Targeting, Measurement and Analysis for Marketing*, 19(2), 85-98.

# Citation measures for supporting scholarly impact in Community Informatics research

Judy van Biljon, Filistéa Naudé and Hugo Lotriet

University of South Africa, Johannesburg, South Africa

**Abstract:** The global political environment place research institutions under increasing pressure to provide quantitative evidence of the scholarly impact of the research. Measuring impact in Community Informatics research in terms of traditional citation based metrics is particularly problematic due to the interdisciplinary nature of the field and the lack of coverage and indexing of the relevant journals by major commercial citation enhanced databases like Scopus and Web of Science. Furthermore, the citation based measures have many known limitations and therefore this paper argues for the investigation of altmetrics as an additional research impact measure in Community Informatics. This paper reports on a bibliometric and altmetric analysis conducted on The Journal of Community Informatics (JOCI). The bibliometric study investigated article production, collaboration and authorship patterns. The study also looked into JOCI article level metrics by comparing traditional citation metrics (Google Scholar citations), usage metrics (abstract and article views) and alternative metrics (Mendeley readership). The contribution is to provide more insight into the factors that could influence the citation impact in Community Informatics research.

**Keywords:** Community Informatics, Research impact, co-authoring, Altmetrics, Usage statistics, Article Level Metrics, Open Access, Google Scholar, Downloads, Mendeley Readership

## Introduction

Community Informatics is the use of Information and Communication Technologies (ICT) to enable and empower the community as a complex sociological phenomenon (Stillman and Linger 2009). Community Informatics, as interdisciplinary research area present challenges to professional librarians and scholars who aim to characterise and delineate the subject area (Less 2008). This can affect research impact as measured by citation indexes negatively. Global academic literature remains dominated by northern hemisphere research and developed-world models that do not always take into account the specific socio-political environment of the developing regions (Alperin 2015; Neylon et al. 2013) and the challenges faced by researchers from developing and emerging economies (using the characteristics proposed by Roztocki & Weistroffer (2011) to distinguish between developed, emerging and developing economies). Citation metrics, like any other socially constructed information and knowledge artefact can reflect unequal distributions of power and privilege and therefore the factors influencing citation metrics are of interest when considering the research perspective on meaningful and equal partnerships with community, civil society, and NGO organisations around the world.

The global political environment requires transparency, accountability and demonstrable return-from-investment and tertiary education institutions are under increasing pressure to provide evidence of the value of the services they provide (Neylon et al. 2013; Von Solms and Von Solms 2016). The term *impact* is generally agreed to refer to the effect of research beyond the academia and captures the idea that there are a range of impacts of different types, which may be of different levels of importance to various stakeholders (Neylon et al. 2013). The measuring of research impact is contested (Bornmann 2014), the criteria include the quality of the research outputs, funding associated with research outputs and the citations (Neylon et al. 2013; Von Solms and Von Solms 2016) as measured by bibliometrics and alternative metrics (Bornmann 2014). Therefore publishing research outputs and being cited are some of the premier demonstrations of academic success, both to the researchers and sponsoring institutions involved. The CI researcher, like all other researchers are subjected to performance evaluation measures for the purpose of appointment, promotion and in the awarding of grants and research incentives and thus researchers need to navigate those challenges to progress in their research and their careers. Against the background of the interdisciplinary CI

landscape and the mounting pressure to show research impact the research question guiding this study is: What research metrics should be considered in supporting CI research impact?

As noted the concept of research impact is contested but a wider discussion of research impact is beyond the scope of this study which will conclude with the definition of research outputs making impact when they are read, used and/or cited (Von Solms and Von Solms 2016). The impact of research is assessed using qualitative measures (peer review) and supplemented with quantitative measures (bibliometric indicators and citation based metrics). Agarwal et al. (2016) defines bibliometrics as “the process of extracting measurable data through statistical analysis of published research studies and how the knowledge within a publication is used”. It is a method to systematically count the number of publications within a discipline. More recently Altmetrics (or alternative to citation metrics) measures are steadily gaining ground in the global political environment that values transparency, accountability and research institutions are under increasing pressure to provide evidence of not only scholarly but also societal impact of the research (Bornmann 2014; Neylon et al. 2013). Altmetrics (also referred to as social media metrics) measure scholarly performance of individual articles based on engagement of scholars and the public with research articles in an online and social media environment (Lin and Fenner 2013).

In general, three types of research outlets are currently available to disseminate such research outputs: journals, conference proceedings, and books. Alternative metrics hold the promise of developing indicators for measuring scholarly work outside these customary outputs (NISO 2014). These non-standard artefacts can include software, scientific data sets, video, images etc. (Galligan and Dyas-Correia 2013; Kousha and Thelwall 2015).

The message is that impactful research needs to be done and impactful research needs to be seen to be done. That supports the rationale of this study namely to investigate traditional citation metrics and altmetric measures in the field of CI research. The landscape of Community Informatics research, has similarities and overlaps with Development Informatics (Stillman and Linger 2009) and therefore the literature on bibliometric analysis and authoring patterns in DI is considered relevant to CI research. Based on a recent bibliometric study of the ICT4D field, Naude (2016b) identified an absence of bibliometric studies in this academic area. Alperin (2015) pinpoints the need for studies that investigate the altmetrics of research, journals and articles published and read in a developing country towards an emerging regions perspective (Alperin, Packer, and Aguado-López 2014). The lack of altmetrics research and data from developing nations make it difficult to determine the impact and value of altmetrics in the developing context. In this paper we present a bibliometric and altmetric analysis of the Journal of Community Informatics (JOCI). JOCI is a peer-reviewed, online open access journal, established in 2004 to create a space for CI in the academic environment (Less 2008). JOCI was selected for analysis due to the emphasis on community and development informatics research and the relevance thereof for CI researchers’ profiles. This study which analyses the publication data from 2004 to 2015, complements a previous citation analysis conducted by Less (2008), that analysed the reference lists of JOCI articles for the publication years 2004-2005.

The focus of this study is firstly on considering the article production, authorship and collaboration patterns in JOCI, and secondly, determining the correlation between the following article level indicators: traditional citation metrics (Google Scholar), usage metrics (abstract and article views or downloads) and altmetrics (Mendeley readership).

## **Literature Review**

Citations are an accepted standard of measuring research impact (Von Solms and Von Solms, 2016). Alternative metrics, such as downloads and Mendeley readership hold the promise of developing indicators for measuring scholarly work outside the limitations of traditional citation metrics (NISO 2014). This is particularly useful in interdisciplinary research which challenges the traditional delineation of subject areas. However, to propose altmetrics as a credible measure of research impact it is necessary to consider the correlation between citations and altmetric measures. A literature review of the correlation between citations and downloads is summarized in Table 1 by considering the comparison detail, the results and the findings.



**Table 1: Comparison of studies on the correlation between citations and downloads**

Comparison detail	Results	Findings	Citation
Google Scholar citations and Social Science Citation Index (SSCI) relationship to the 200 top downloaded papers in the RePEc Digital Library in 2006.	A single downloaded paper on average receives twice as many citations from Google Scholar as from SSCI.	Downloads appear to have a moderate relationship with citations.	(Chu and Krichel 2007)
Google Scholar citations and downloads by examining the top 50 most downloaded papers between January 2000 and December 2002, published in the journal <i>Intelligent Systems in Accounting, Finance and Management: An International Journal</i> .	The number of downloads and citations were highly correlated.	Downloads are a leading indicator of citations even years into the future.	O'Leary (2009)
Randomised controlled trial of open access publishing involving 3245 articles in 36 journals in the sciences, social sciences and humanities	Open access articles received significantly more downloads	Downloads had no effect on article citations within the first 3 years after publication	Davis (2011)
Evaluated the Scopus citations and download figures for the 50 most viewed articles from 5 BioMed Central open access oncology journals	Correlation between downloads and citations was limited	Limited correlation	Nieder, Dalhaug, & Aandahl (2013)
Differences between citation and downloads from 2002 to 2011 for four ScienceDirect categories that included arts and humanities, computer science, economics, econometrics & finance and oncology.	Results indicated that 50-140 downloads corresponded to one citation.	The disciplines with the highest download rates, were different from those with the highest citation rates.	Gorraiz, Gumpenberger, & Schlögl (2014)
A cross sectional study of the papers published in the <i>International Review of Research in open and distance learning</i> journal, for the period 2008 to October 2013	A significant and positive relationship between the total number of Google Scholar citations and the number of views or downloads received by the articles.	Significant and positive relationship between the total number of Google Scholar citations and the number of downloads	(Martinez and Anderson 2015)

The contrasting findings reveal that there is no clear and decisive answer to the question whether downloads can predict citations yet. However, there is some inherent logic to the fact that a paper needs to be downloaded in order to be cited and therefore downloads are considered an important usage metric and it will be used in this study towards investigating the metrics that support the sustainability of a CI researcher's profile. Given the increasing impact of social media it is also necessary to consider alternative metrics. In this paper we will consider Mendeley readership as the Alternative metrics indicator with the most significant correlation to traditional citations. In Table 2 a summary of studies comparing traditional citation counts with Mendeley readership is depicted.

**Table 2: Comparison of citations with Mendeley readership**

Comparison detail	Results	Findings	Citation
A sample of 1613 papers published in 2007 in <i>Nature</i> and <i>Science</i> .	The correlations between the Mendeley readership counts, Google Scholar and Web of Science citations showed a nearly perfect relationship.	Statistically significant correlations between the Mendeley readership counts and traditional citation sources.	Li, Thelwall, & Giustini (2012)
1459 articles published in the <i>Journal of the American Society for Information Science and Technology</i> , between 2001 and 2010.	Citation counts from Web of Science, Scopus and Google Scholar were compared to Mendeley readership counts during April 2012.	Significant correlations between Mendeley readership counts and citation counts.	Bar-Ilan (2012)
Random sample of 20000 publications, from all disciplines, published between 2005 and 2011 and covered by the Web of Science compared Mendeley, Twitter, Wikipedia and Delicious.	Mendeley had the highest coverage for Altmetric data.	Mendeley is currently the leading and most important Altmetrics indicator across all research disciplines	Zahedi, Costas, & Wouters, (2014)
Use and coverage of Mendeley among 71 bibliometricians	Moderate correlation between Scopus citation counts and Mendeley Readership.	Mendeley was the most popular citation manager among the bibliometricians surveyed.	Haustein et al. (2014)
Scopus articles published between 2004 and 2014 in five broad fields and 50 subfields in agriculture, business, decision science, pharmacy and social sciences.	Positive correlations between Mendeley readership counts and Scopus citation counts for all years examined.	Correlations between citation counts and Mendeley reader counts for journal articles tend to increase over 5 years and then stabilise.	Thelwall & Sud (2015)

The findings as presented in the third column of Table 2 substantiate the importance of Mendeley as an altmetric indicator for which evidence of correlations with citations have been found. This supports the selection of Mendeley readership as an Altmetrics indicator for investigating the metrics that support the impact of a CI researcher's profile as will be done in the research design of this paper.

## Research Design

### The Journal of Community Informatics

The Journal of Community Informatics (ISSN 1712-4441) is a free open access peer-reviewed electronic journal, launched in 2004 and has been in existence for 13 years. The focus and scope of this international journal is described on the JOCI website <http://www.ci-journal.net> as follows:

“Community Informatics (CI) is the study and the practice of enabling communities with Information and Communications Technologies (ICTs). CI seeks to work with communities towards the effective use of ICTs to improve their processes, achieve their objectives, overcome the "digital divides" that exist both within and between communities, and empower communities and citizens in the range of areas of ICT application including for health, cultural production, civic management, and e-governance, among others. CI is concerned with how ICT can be useful to the range of traditionally excluded populations and communities, and how it can support local economic development, social justice and political empowerment using the Internet. CI is a point of convergence concerning the use of ICTs for diverse stakeholders, including community activists, nonprofit groups, policymakers, users/citizens, and the range of academics working across (and integrating) disciplines as diverse as Information Studies, Management, Computer Science, Social Work, Planning and Development Studies. Emerging issues within the CI field include: community access to the internet, community information, online civic participation and community service delivery, community and local economic development, training networks, telework, social cohesion, learning, e-health and e-governance.”

The target audience of JOCI is academics, CI practitioners and national and multi-lateral policy makers. The readership focus of JOCI is global but also the developing world. No subscription or registration is required to access the full-text articles of the journal. The articles are published in HTML and PDF format. The editorial board and policies can be viewed at: <http://www.ci-journal.net/index.php/ciej/about/editorialPolicies#focusAndScope>.

### Accessibility, Discoverability and Visibility of the Journal of Community Informatics

The Ulrichs Global Serials Directory lists the JOCI, and shows that it is a quarterly publication, published by the Centre for Community Informatics Research in Canada. It is indexed and abstracted in the International Bibliography of the Social Sciences. JOCI is also indexed in the Proquest Business Collection database from 2011 onwards. The JOCI is registered in the Directory of Open Access Journals <https://doaj.org> but notably JOCI is not covered in the Web of Science or Scopus. Google Scholar journal metrics assign JOCI an h5-index of 12 (h-index for articles published in the last five complete years) and an h5-median of 22 (median number of citations for the articles that make up its h5-index).

The lack of coverage of JOCI in the commercial fee based citation enhanced databases and subject specific bibliographic and abstract databases, limits the accessibility, discoverability and visibility of articles and authors that publish in this journal. JOCI is discoverable, accessible and visible via the free non-commercial resources Google Scholar and Mendeley Papers crowdsourced research catalogue. The absence of electronic bibliometric tools and citation data complicates the assessment of scholarly productivity as well as the identification and comparison of popular papers and distinguished authors in the CI discipline.

### Methodology

A single journal analysis was the focus of this research study. All 260 articles published in the 11 volumes of the open access peer-reviewed Journal of Community Informatics (JOCI) for the period 2004 to 2015 were analysed. Only research articles were included, editorial introductions, reports,

points of view, case studies, reviews, commentaries, notes and cases from the field were excluded. All articles were in English, except for 5 articles that were published in 2007 (volume 3, issue 3), that were in Spanish and Portuguese. The data for this study was collected during July 2016.

The citation analysis tools available are the academic citation enhanced databases Web of Science and Scopus, and the free academic search engine and internet resource, Google Scholar. The JOCI is not indexed in Web of Science or Scopus, making these citation enhanced databases unfeasible for a citation study of JOCI. The JOCI bibliographic details for the publication years 2004 to 2015 were imported from Google Scholar into Mendeley.

The bibliographic data retrieved were checked for completeness. The JOCI contents pages on the online e-journal homepage, published on the free, publically available, open access journal archive on the JOCI website (<http://ci-journal.net>), were compared to the bibliographic data downloaded from Google Scholar. Missing bibliographic items were imported from the JOCI website into the Mendeley account. The following descriptive bibliographic details for each article were collected:

- Article title
- Author names
- Source information: journal title, volume and issue
- Year of publication
- Abstract
- Author keywords

The 260 bibliographic records were exported from Mendeley to Refworks and subsequently to an MS Excel spreadsheet for analysis. The number of authors, Google Scholar citations, Mendeley readership and abstract and article views (downloads) were recorded manually and added to the spreadsheet for each article.

This study used free web-based public data sources to record the following article level data:

- Citation data: Google Scholar citation counts (i.e. number of citations per article). This provides an author view.
- Crowdsourced reader data: Mendeley readership scores (i.e the number of Mendeley users that have added a paper to their personal Mendeley library) (Gunn 2013). This provides a reader view.
- Usage data: JOCI downloads statistics or article/abstract views (i.e. number of times an abstract or article was viewed or downloaded from the JOCI website) This provides a usage/user view.

Each article was searched individually in Google Scholar to find the number of citations it received. The Google Scholar citation data for each item was recorded on the spreadsheet.

The journal usage statistics (abstract and article views) that are freely available on the JOCI website <http://ci-journal.net/reports>, were recorded on the spreadsheet. All articles had views, except for one 2015 article published in volume 11 number 1.

Mendeley Readership scores are freely available in the Mendeley Papers Research Catalogue <http://www.mendeley.com>. To access and search the Mendeley Papers Research Catalogue, users need to register for a free online Mendeley account.

A Mendeley Public group was created “Journal of Community Informatics 2004-2015”. <https://www.mendeley.com/groups/9033091/journal-of-community-informatics-2004-2015> The JOCI bibliographic data for the period 2004 to 2015 was shared from a Mendeley account to the public Mendeley group. This enabled the researchers to view and record the Mendeley readership data for each article. JOCI had a 100% coverage in Mendeley, i.e. Mendeley readership statistics were available for all 260 items. The Mendeley readership data was recorded manually on 14 July 2016 from the Mendeley Group for each article and entered into the Excel spreadsheet.

The final article count of 260 items of bibliographic data served as the study population for this study. The investigation is limited to one open access journal and that limit the generalisability of the results.

## Results

### Article Productivity

Table 3 depicts the article productivity for JOCI over a 12 year period (2004 to 2015). A total of 260 journal articles were published in 11 volumes and 33 issues (excluding the editorial introductions, reports, points of view, case studies, reviews, commentaries, notes and cases from the field). The results in Table 3 indicate that the highest number of articles were published in 2013, totalling 40 articles and the lowest publication rate was in 2004 with 9 articles, when the journal was launched. The mean number of articles per year was 21.75

Table 3: JOCI: Annual number of volumes, issues and articles

YEAR	Volume number	Number of issues	Number of articles
2004	1	1	9
2005	1	2	14
2006	2	3	28
2007	3	4	22
2008	4	3	13
2009	5	3	20
2010	6	2	18
2011	7	2	15
2012	8	3	25
2013	9	4	40
2014	10	3	32
2015	11	3	24
Total		33	260

### Authorship

The results for the number of authors per article are depicted in Figure 1. Overall 571 authors were involved in publishing the 260 articles in JOCI between 2004 and 2015. Of those articles 37% had only one author, this was followed by the percentage with two authors (32 %) and that with three authors (19%) etc. Those with more than 6 authors (those with 7, 8 and even 11) were all grouped under 7 which add up to 1% of the papers published. From observation it seems like the number of authors could be inversely related to the number of papers published per number of authors. This means that 37% of the 260 articles were single authored while 165 (63%) were multi authored. This shows that JOCI has a collaborative authorship pattern, with collaboration varying between two and eleven authors. A study by Naude (2016b) of ICT4D research articles, showed similar results, with 34% single authors compared to 66% multi authored articles.

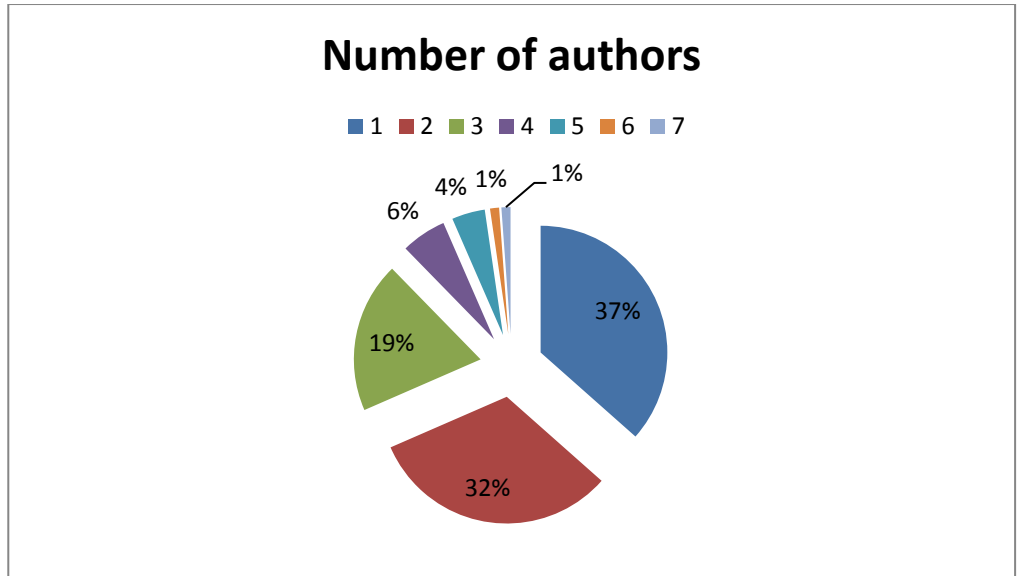


Figure 1: Number of authors per article

### Collaboration

Subramanyam defines the degree of collaboration in a discipline as “the ratio of the number of collaborative research papers to the total number of research papers published in the discipline during a certain period of time” (Subramanyam 1983). Subramanyam’s formula:  $C = N_m / (N_s + N_m)$  = where C = the degree of collaboration,  $N_m$  = the number of multi-authored papers and  $N_s$  = number of single authored papers. This formula was used to calculate the degree of collaboration, as shown in Table 4. The degree of collaboration per year varied between a minimum of 0.48 in 2012 and a maximum of 0.80 in 2011. The average degree of collaboration in the JOCI was 0.63. Therefore, more than 60% of papers involved collaboration between two or more authors and the collaboration trend between 2004 and 2015 shows no obvious signs of changing.

Table 4: Degree of collaboration by year

Year	Single authorship	Multi authorship	Degree of collaboration	Total articles
2004	3	6	0.67	9
2005	5	9	0.64	14
2006	8	20	0.71	28
2007	8	14	0.64	22
2008	6	7	0.54	13
2009	9	11	0.55	20
2010	8	10	0.56	18
2011	3	12	0.80	15
2012	13	12	0.48	25
2013	12	28	0.70	40
2014	11	21	0.66	32
2015	9	15	0.63	24
Total	95	165	0.63	260

### Article level metrics

The article level measures captured were the Google Scholar citations, the Mendeley readership, the abstract views and the article views for the JOCI articles. The descriptive statistics are depicted in Table 5 to provide measures of the central tendencies and spread for the 260 articles.

Table 5: Descriptive statistics on JOCI citation measures

	Google Scholar	Mendeley readership	Abstract views	Article views
Mean	10.70	13.78	3301.83	6415.55
Median	4.00	12.00	2980.50	4369.00
Mode	1.00	13.00	3711.00	2652.00
Standard Deviation	19.39	10.83	2957.13	10087.67
Count	260.00	260.00	260.00	260.00

The Pearsons'  $r$  values of the correlation between the Google Scholar citations, Mendeley readership, abstract views and article views are depicted in Table 6. The effect size of correlations are considered small if the  $r$  value is  $\pm 0.1$ ; medium if the  $r$  value is  $\pm 0.3$  and large if the  $r$  value is  $\pm 0.5$ . Therefore it can be concluded that there is a large positive correlation between Google Scholar citations and Mendeley readership. This implies that the citations and altmetrics are correlated for this dataset. There are medium positive correlations between Google Scholar citations, abstract views and article views respectively. There is a small positive correlation between Mendeley readership and abstract views and also a small positive correlation between abstract views and article views. The implications of these results are discussed and contextualised in the next section.

A similar study conducted on the Electronic Journal of Information systems in Developing Countries, showed that the highest correlations (Spearman correlation coefficient) were between Google Scholar citations and downloads, a slightly lower correlation between Google Scholar citations and Mendeley readership, and the lowest correlation was between downloads and Mendeley readership (Naude 2017).

Table 6: Correlations between Google Scholar citations, abstract views and article views

	Google Scholar	Mendeley	Abstract views	Article views
Google Scholar	1			
Mendeley	0.61	1		
Abstract views	0.43	0.31	1	
Article views	0.41	0.25	0.36	1

The findings provide evidence that altmetrics can be considered as an additional impact measure. Given the complexities mentioned around CI as an interdisciplinary field and the lack of bibliometric data, the addition of altmetrics can make an important contribution to demonstrating research impact by drawing on a wider, richer and more representative data set. The limitation of this study is that it focuses only on JOCI and therefore more research is needed to compare altmetrics measures from related journals.

## Discussion and Conclusion

There are unique challenges that confound the dissemination and impact measuring of CI research. This investigation revealed that JOCI have poor indexing coverage in commercial subject and bibliographic databases, complicating the accessibility, discoverability and visibility of CI research. Focusing on JOCI as the main journal for the dissemination of CI research, it is concluded that traditional citation metrics have limited application in CI, due to the exclusion of JOCI in the sophisticated commercial electronic citation tools (Scopus and Web of Science) used to conduct bibliometric and citation assessments. This is intensified by the shortage of high impact journals in the CI discipline, the open access status of the journal and the interdisciplinary nature of the field (Naude 2016b). The bibliometric analysis presented in this paper shed light on the article production and authorship over a 12 year period and showed that CI is characterized by a collaborative or multi authorship style. Furthermore, the 100% coverage of JOCI in the new and emerging altmetric tools such as Mendeley, shows the increasing importance of new generation metrics, and highlights the significance of a multi metric approach in measurement and evaluation of CI researchers or CI article impact. In response to the question, namely what research metrics should be considered in supporting CI research impact, it was thus concluded that altmetric indicators such as Mendeley readership or article views can be considered.

In a single journal bibliometric study on ICT4D research (2000-2013), Naude (2016b) found that single authored papers are cited more often than multi-authored papers. This study did not explore the relationship between citations and the number of authors in this study, but further exploration would be useful. The strong positive correlation found between citations (in Google Scholar) and the altmetric indicator (of Mendeley readership) supports the use of Mendeley as altmetrics measure and also the potential of altmetrics as a measure of research impact in the CI field. Altmetrics can indicate the broader impact of CI research on societies and communities, that cannot be measured by traditional citation metrics (Bornmann 2014). Altmetrics can reveal the engagement of wider non-academic audiences e.g. public, communities, stakeholders, CI practitioners etc. with CI research. Given the complications with visibility of research from developing and emerging economies, this is an important insight towards ensuring equitable representation of research impact. The purpose of this study was to investigate research metrics to support the impact of CI research. Based on the JOCI analysis (2004-2015) and the strong positive correlation between traditional citations measures and altmetrics we propose that altmetric should be considered in measuring CI research impact. However, more research is needed to consider other CI journals and to investigate the correlations between other alternative metric measures (Twitter, Facebook etc.) and traditional citation measures, before the findings can be generalised.



## References

- Agarwal, Ashok et al. 2016. "Bibliometrics: Tracking Research Impact by Selecting the Appropriate Metrics." *Asian Journal of Andrology* 18(2):296. Retrieved (<http://www.scopus.com/inward/record.url?eid=2-s2.0-84957886782&partnerID=tZOtx3y1>).
- Alperin, JP, A. Packer, and E. Aguado-López. 2014. *Open Access Indicators and Scholarly Communications in Latin America*. Retrieved July 27, 2016 (<http://eprints.rclis.org/25122>).
- Alperin, Juan Pablo. 2015. "Geographic Variation in Social Media Metrics: An Analysis of Latin American Journal Articles." *Aslib Journal of Information Management* 67(3):1–19.
- Bar-Ilan, J. 2012. "JASIST 2001-2010." *Bulletin of the American Society for Information Science and Technology* 38(6):24–28. Retrieved (<http://doi.wiley.com/10.1002/bult.2012.1720380607>).
- Bornmann, Lutz. 2014. "Do Altmetrics Point to the Broader Impact of Research? An Overview of Benefits and Disadvantages of Altmetrics." *Journal of Informetrics* 8(4):895–903. Retrieved (<http://linkinghub.elsevier.com/retrieve/pii/S1751157714000868>).
- Chu, Heting and Thomas Krichel. 2007. "Downloads vs. Citations: Relationships, Contributing Factors and Beyond." 1–11. Retrieved (<http://openlib.org/home/krichel/papers/getafe.pdf>).
- Davis, Philip M. 2011. "Open Access, Readership, Citations: A Randomized Controlled Trial of Scientific Journal Publishing." *FASEB Journal* 25(7):2129–34. Retrieved June 6, 2014 (<http://www.ncbi.nlm.nih.gov/pubmed/21450907>).
- Galligan, Finbar and Sharon Dyas-Correia. 2013. "Altmetrics: Rethinking the Way We Measure." *Serials Review* 39(1):56–61. Retrieved (<http://www.scopus.com/inward/record.url?eid=2-s2.0-84875119070&partnerID=tZOtx3y1>).
- Gorraiz, Juan, Christian Gumpenberger, and Christian Schlögl. 2014. "Usage versus Citation Behaviours in Four Subject Areas." *Scientometrics* 101(2):1077–95. Retrieved (<http://link.springer.com/10.1007/s11192-014-1271-1>).
- Gunn, William. 2013. "Social Signals Reflect Academic Impact: What It Means When a Scholar Adds a Paper to Mendeley." *Information Standards Quarterly* 25(2):33. Retrieved (<http://www.niso.org/publications/isq/2013/v25no2/gunn/>).
- Haustein, Stefanie et al. 2014. "Coverage and Adoption of Altmetrics Sources in the Bibliometric Community." *Scientometrics* 101(2):1145–63.
- Kousha, Kayvan; and Mike Thelwall. 2015. "Web Indicators for Research Evaluation. Part 3: Books and Non Standard Outputs." *El Profesional de la Información* 24(6):724. Retrieved (<http://www.elprofesionaldeinformacion.com/contenidos/2015/nov/04.pdf>).
- Less, A. M. 2008. "Community Informatics: A Bibliometric Study of Scholarly Influence." University of North Carolina.
- Li, X., M. Thelwall, and D. Giustini. 2012. "Validating Online Reference Managers for Scholarly Impact Measurement." *Scientometrics* 91(2):461–71. Retrieved (<http://www.scopus.com/inward/record.url?eid=2-s2.0-84859425026&partnerID=40&md5=7bccd302c4d89b7081269763e29dd9f2>).
- Lin, Jennifer and Martin Fenner. 2013. "Altmetrics in Evolution: Defining and Redefining the Ontology of Article Level Metrics." *ISQ: Information Standards Quarterly* 25(2):20–26.
- Martinez, Riadell Avello and Terry Anderson. 2015. "Are the Most Highly Cited Articles the Ones That Are the Most Downloaded? A Bibliometric Study of IRRODL." *International Review of Research in Open and Distributed Learning Volume* 16(3):18–40.
- Naude, F. 2016a. "Country Trends and Scholarly Collaboration in the ICT4D Research Community 2000-2013: A Single Journal Study." *Electronic Journal of Information Systems in Developing Countries* 72(4):1–26. Retrieved January 2, 2016 (<http://www.ejisdc.org/ojs2/index.php/ejisdc/article/view/1630>).
- Naude, F. 2016b. "Electronic Journal of Information Systems in Developing Countries (2000-2013): A Bibliometric Study." *Electronic Journal of Information Systems in Developing Countries* 72(3):1–23. Retrieved January 2, 2016 (<http://www.ejisdc.org/ojs2/index.php/ejisdc/article/view/1608>).
- Naude, F. 2017. "Comparing Downloads, Mendeley Readership and Google Scholar Citations as Indicators of Article Performance (in Press)." *Electronic Journal of Information Systems in Developing Countries* 1–29.

Neylon, Cameron, M. Willmers, and T. King. 2013. "Rethinking Impact: Applying Altmetrics to Southern African Research." *Scholarly Communication in Africa Programme* 1–20. Retrieved ([http://www.healthra.org/wp-content/uploads/2013/12/SCAP\\_Neylon\\_Paper\\_1\\_Altmetrics\\_review.pdf](http://www.healthra.org/wp-content/uploads/2013/12/SCAP_Neylon_Paper_1_Altmetrics_review.pdf)).

Nieder, Carsten, Astrid Dalhaug, and Gro Aandahl. 2013. "Correlation between Article Download and Citation Figures for Highly Accessed Articles from Five Open Access Oncology Journals." *SpringerPlus* 2(261):1–5. Retrieved (<http://www.springerplus.com/content/2/1/261>).

NISO. 2014. *Alternative Metrics Initiative Phase 1 White Paper*. Baltimore, MD. Retrieved ([http://www.niso.org/apps/group\\_public/download.php/13809/Altmetrics\\_project\\_phase1\\_white\\_paper.pdf3809/Altmetrics\\_project\\_phase1\\_white\\_paper.pdf&ei=Pw2lVY6VIomE7QaRtZzoAQ&usg=AFQjCNHTxIS80QjR1L3AHFCtxr1Ye6btaw](http://www.niso.org/apps/group_public/download.php/13809/Altmetrics_project_phase1_white_paper.pdf3809/Altmetrics_project_phase1_white_paper.pdf&ei=Pw2lVY6VIomE7QaRtZzoAQ&usg=AFQjCNHTxIS80QjR1L3AHFCtxr1Ye6btaw)).

O'Leary, Daniel E. 2009. "Downloads and Citations in Intelligent Systems in Accounting, Finance and Management." *Intelligent Systems in Accounting, Finance and Management* 16(1–2):21–31.

Roztock, Narcyz and H.Roland Weistroffer. 2011. "Information Technology Success Factors and Models in Developing and Emerging Economies." *Information Technology for Development* 17(3):163–67. Retrieved March 11, 2015 (<http://www.scopus.com/inward/record.url?eid=2-s2.0-79960341235&partnerID=tZOtx3y1>).

Von Solms, Rossouw and Basie Von Solms. 2016. "Publish or Perish ... but Where?" *South African Computer Journal* 28(1):1–11.

Stillman, Larry and Henry Linger. 2009. "Community Informatics and Information Systems: Can They Be Better Connected?" *The Information Society* 25(4):255–64. Retrieved (<http://www.scopus.com/inward/record.url?eid=2-s2.0-70449556726&partnerID=tZOtx3y1>).

Subramanyam, K. 1983. "Bibliometric Studies of Research Collaboration: A Review." *Journal of information Science* 6(1):33–38.

Thelwall, Mike and Pardeep Sud. 2015. "Mendeley Readership Counts: An Investigation of Temporal and Disciplinary Differences." *Journal of the Association for Information Science and Technology*. Retrieved (<http://doi.wiley.com/10.1002/asi.23559>).

Zahedi, Zohreh, Rodrigo Costas, and Paul Wouters. 2014. "How Well Developed Are Altmetrics? A Cross-Disciplinary Analysis of the Presence of 'alternative Metrics' in Scientific Publications." *Scientometrics* 101(2):1491–1513. Retrieved June 3, 2014 (<http://link.springer.com/10.1007/s11192-014-1264-0>).

## **Inside out: Managing ethical dilemmas with autoethnography in insider participatory research**

Linlin Zhao<sup>1</sup>

<sup>1</sup>Faculty of IT, Monash University, Melbourne, Australia

**Abstract:** In this paper, insider participatory research (IPR) is defined as research projects 1) conducted by researchers who are fully embedded in and enjoy a complete membership of the researched organisation and community, and 2) followed a participatory approach in research inquiry. Due to its complex nature, researchers involved in IPR often are confronted with a range of ethical dilemmas, from balancing role multiplicity, acquiring access to participants and data, managing organisational and professional politics, maintaining friendships and relationships, harmonising pre-existing knowledge and new discoveries, ensuring data integrity and confidentiality, to sharing and communicating research outputs. Taking my PhD project as an example, this paper advocates for the use of analytic autoethnography as a research method to manage ethical dilemmas in IPR. Autoethnography is an approach to research and writing that seeks to describe and systematically analyse personal experiences to understand sociocultural phenomena (Ellis 2004). Situated in the analytic ethnographic paradigm, analytic autoethnography aims to embrace the insider position by encouraging the narrative visibility of the researcher, emphasise the analytic reflexivity in inquiry through engaging with data beyond the self, and commit to improving theoretical understanding of broader social phenomena (Anderson 2006). It provides IPR researchers with an alternative method to systematically document and critically reflect on the participatory model, politics/power relations, role management and data integrity in the research process. One of the main criticism towards existing literature is the lack of methodological frameworks in conducting autoethnographic research. This paper poses a practical model, based on Mezirow's ten phases of transformation and three levels of critical reflection, to guide novice practitioner-researchers in using autoethnography as a research method to manage potential ethical dilemmas in IPR.

Keywords: Analytic autoethnography, Transformative learning theory, Methodology

### **Introduction**

With the increasing popularity of evidence-based research in library and information science, many librarians are embracing the role of 'practitioner-researcher' by actively initiating and engaging with research to improve their professional practice and decision-making (Bowler & Large 2008). Doing research in and on one's own organisation, however, can be very challenging and disorientating for librarians and novice researchers, especially when the research also follows the participatory approach researching with one's own community. This type of research is referred as insider participatory research (IPR), where the researcher enjoys a complete membership within the organisation and community and undertakes a participatory approach to research. One vital challenge in IPR is to manage various ethical dilemmas, with which researchers are often confronted during the research process.

Using my PhD research as an example, this paper firstly demonstrates the complex nature of the insider position and participatory element in IPR. After scrutinising the impact and complexity of researcher role multiplicity in IPR, the paper examines seven common ethical dilemmas associated with role multiplicity. In practice, these ethical dilemmas may occur throughout the research process: from research design, data collection and analysis, and artefact design and theory building, to research communication and sharing. Due to its significance, sensitivity and contingency, ethics management

in IPR needs to be treated as an evolving process integrated into every research stage with demonstrated high-level researcher reflexivity. Based on my own experience, the process of managing each ethical dilemma resembles the process of a personal transformation, through which IPR researchers review and critically reflect on the challenge, develop strategies and actions, learn new skills and, most importantly, formulate new perspectives and profound understandings about the underlying issues.

Analytic autoethnography offers an ideal tool to guide IPR researchers through the transformative process of managing sensitive and contingent ethical dilemmas. As a research method, it allows researchers to 1) embrace their insider position by emphasising their personal narratives of dealing with ethical dilemmas; 2) contextualise ethics management practice and bring subjectivity to research by creating a critical dialogue between personal experiences and broader sociocultural phenomena; 3) ensuring high-level reflexivity throughout the process of planning, developing and implementing ethics management strategies; and 4) produce research products of personal narratives and critical reflections as a form of documentation, evaluation and communication of the ethics management process.

Finally, the paper proposes a nine-step model of using analytic autoethnography as a research method to manage ethical dilemmas in IPR. It is designed to address one of the most critiqued issues associated with autoethnography, i.e., the lack of methodological approaches to conduct autoethnographic research and critical reflection supported by sound theoretical frameworks. The proposed model is based on Jack Mezirow's ten phases of transformation and three levels of reflection. The paper concludes with discussions on the current limitations of the model and future research directions.

## **Insider participatory research**

Insider participatory research (IPR) refers to research projects 1) conducted by researchers who are fully embedded in and enjoy a complete membership of the researched organisation and community, and 2) followed participatory approaches in research inquiry. IPR combines the unique features of insider position and participatory research (See Figure 1).

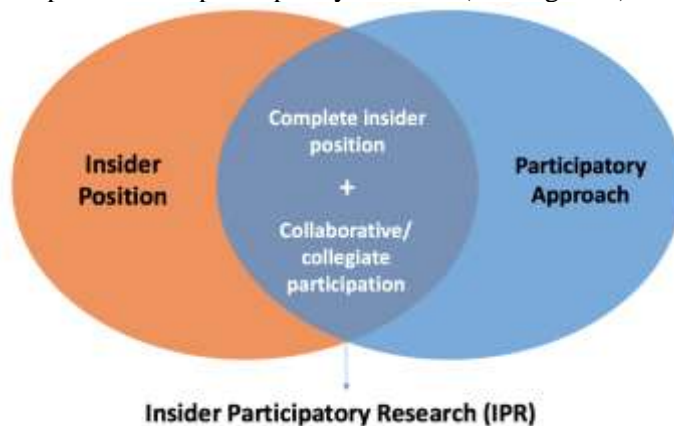


Figure 1: Features of insider participatory research (IPR)

### **Insider position: Researching in and on one's own organisation**

To ensure research validity and credibility, researchers often place themselves as detached and neutral observers in conventional scientific research. Insider research, however, involves researchers

who are immersed actors within the research setting and enjoy a shared identity, culture and experience with the research population (Brannick & Coghlan 2007; Kanuha 2000).

In their seminal work, Adler and Adler (1987) developed a typology of membership roles in field research: 1) peripheral-member-researchers (PMRs) who seek insider perspectives but refrain from participating in the core activities of the group; 2) active-member-researchers (AMRs) who participate in the core business of the group during the course of the research but their academic/research identity takes priority over their membership roles in the group ; and 3) complete-member-researchers (CMRs) who are fully immersed 'natives' demonstrating commitment to the activities, values and goals of the group during the course of the research. With the highest level of 'nativeness', the CMR position best represents the characteristics and complexity of insider research (Bonner & Tohurst 2002).

CMRs generates rich contextualised knowledge of the associated social phenomena, research environment and population (Coghlan 2013). It has also gained increased popularity in disciplines encouraging practitioner research and valuing evidence-based practice (Brannick & Coghlan 2007). CMRs' deep understandings of research problems, insider knowledge of and existing relationships with the research organisation can provide them with an edge over outsider researchers (Coghlan & Brannick 2010). For instance, as an employee of the researched university library, my PhD has been benefited from my CMR position. My research questions are based on a practical problem I observed as an academic librarian. Being a practitioner, I have developed an intimate understanding of the University and the Library's day-to-day work, organisational structures, core values and the explicit/implicit political-culture context (Coghlan 2003). As a researcher, I have been able to leverage my existing relationships within the organisation.

### **Participatory approach: Researching with one's own community**

The other significant feature of IPR is the participatory research element. In addition to researching in and on my organisation, my research involves researching with my own community (i.e., the colleagues, peers and friends with whom I work within the organisation). The participatory element is crucial for a primary research goal that I shared with many participatory researchers: bringing mutual benefits to the organisation and community (Denison & Stillman 2012; Stoecker 2005).

Based on the critical social science theories and participatory worldview, participatory research offers an alternative approach, which values a 'democratic' and 'collaborative' relationship between the researchers and participants (Reason & Bradbury 2008). The shift from researching 'on' to researching 'with' the participants has demonstrated profound impact on research design, data collection and analysis, research communication and application (Evans et al. 2012; Stoecker 2005). Cornwall and Jewkes (1995) affirm that participatory research aims towards, as Biggs (1989) has identified, a 'collaborative' or 'collegiate' level of participation. Collaborative participation involves researchers and participants working together on projects designed, initiated and managed by researchers. Collegiate participation takes a step further to where the researchers and participants act as equals contributing different skills to the research process. To meet a particular research need, the participation mode can move from one to another at various stages of the research process (Cornwall & Jewkes 1995; Downie et al. 2001).

To illustrate, my PhD project comprises four main phases adopting the design-based research methodology (Herrington et al. 2007). At each phase and to a different extent, the Library and participants can contribute to the research process. Thus, the participation mode in my research is designed to be flexible allowing movements along the spectrum between the 'collaborative' and 'collegiate' partnerships to meet the particular needs of each phase and associated activities. At the research planning stage, I initiated and developed the overall research design and research proposal as a PhD researcher. The organisation worked together with me on establishing the research participation agreement. On the other hand, to ensure the validity of the design process and maintain the relevance and sustainability of final artefact, the organisation and participants will play a more 'collegiate' role during the artefact design, development and implementation stages. As planned, a more

'collaborative' partnership will be reassumed at the stage of communicating and applying research outputs.

The combination of the complete insider position and collaborative/collegiate participatory element in IPR brings a challenging complexity to the design, data collection and analysis, communication and application of research.

## **Potential ethical dilemmas in IPR**

In practice, the complex nature of IPR can lead to many ethical dilemmas throughout the research process (Brannick & Coghlan, 2007). These ethical dilemmas potentially have the 'make-or-break' effect on an IPR project. Hence, the effective management of ethical dilemmas is imperative and commands a deep understanding of the challenges of IPR.

### **Role multiplicity**

Coghlan and Brannick (2010) have identified three interlocking challenges in IPR, i.e., preunderstanding, role duality and organisational politics. In my PhD, I have encountered all three challenges which have profoundly shaped my research. However, I argue that the defining and central challenge in IPR is researcher role multiplicity.

This paper defines role multiplicity as the multiple roles among which an IPR researcher must play, balance and switch throughout the research process. To exemplify, at times in my PhD project, I have been a PhD researcher, a practitioner (librarian), an employee, a team member, a leader, a colleague, a peer, a friend, and somewhere-in-between. Role multiplicity extends the idea of role duality (Brannick & Coghlan 2007; Holian & Coghlan 2013). Similar to the notion of 'double insider' (Evans et al. 2012), role multiplicity rejects the dichotomy between and over-simplification of insider and outsider positions. It emphasises the diverse roles of IPR researchers. It also highlights the fluid role-switching that is necessary for IPR researchers at different stages and time of their research. On one hand, role multiplicity can help researchers understand and reveal the richness of their research. On the other, it can result in intensified role conflict and confusion.

### **Challenges and common ethical dilemmas**

Many challenges are associated with role multiplicity in the context of IPR. These challenges can lead to ethical dilemmas throughout the research process, from designing research, collecting and analysing data, to communicating and applying research findings. Table 1 outlines several common and intertwined challenges and potential ethical dilemmas in IPR.

Ethics management typically occurs at two stages: research planning and formal ethics application (Holian & Coghlan 2013). During the research planning stage, researchers critically reflect on their role multiplicity, identify potential ethical issues, and develop a rigorous research design to address these issues. Guided by international, national and university academic ethics frameworks, the formal ethics application is an essential process and a legal requirement that assists researchers to ensure the integrity of their research and ethical treatment of their participants (Denison & Stillman 2012). In reality, however, ethical dilemmas can emerge at any stage of IPR. It demands iterative cycles of planning, implementation, reflection and refinement to warrant the responsiveness of the research design for any emergent ethical issues. Moreover, many community-based participatory researchers have identified gaps in the ethics application procedures, which fail to address some highly sensitive, contextualised and challenging ethical dilemmas (Evans et al. 2012; Hockey 1993).

Table 1: Challenges and potential ethical dilemmas in IPR

Challenges	Potential Ethical Dilemmas
Negotiating access to participants and data	<ul style="list-style-type: none"> <li>The complete insider position may help with permissions to research in the organisation (i.e., primary access), but it may also hinder access to specific organisational divisions (i.e. secondary access), due to real or perceived conflicts of interest (Brannick &amp; Coghlan 2007).</li> <li>How to negotiate and maintain both primary and secondary access ethically and tactfully?</li> </ul>
Maintaining relationships and friendships	<ul style="list-style-type: none"> <li>How to balance the power differentials resulted from existing personal and professional relationships (Hockey 1993)?</li> <li>How to create a safe environment where prospective participants can decline participation without fear of retaliation and embarrassment (Holian &amp; Coghlan 2013)?</li> <li>How to maintain positive relationships and friendships when the research reveals unexpected/unflattering results (David Coghlan, 2003)?</li> </ul>
Handling organisational and professional politics	<ul style="list-style-type: none"> <li>IPR researchers may encounter more explicit and intense organisational and professional politics. The impact is particularly significant for those 'practitioner-researchers' who are employees of the organisation and wish to pursue future career advancements within the organisation after completing their research (Coghlan &amp; Brannick 2010).</li> <li>How to manage competing stakeholder expectations, opposing departmental interests and conflicting personal agendas while trying to maintain the integrity of research (Brannick &amp; Coghlan, 2007)?</li> </ul>
Harmonising pre-knowledge and new discoveries	<ul style="list-style-type: none"> <li>IPR researchers' prior knowledge of the research problem and organisation can be biased by their socio-cultural background and experience.</li> <li>Their closeness to the research problem and data can result in unchallenged assumptions and lead to research bias.</li> <li>How to maintain both closeness to and distance from the data (Brannick &amp; Coghlan 2007)?</li> </ul>
Ensuring data integrity and participant confidentiality	<ul style="list-style-type: none"> <li>A critical challenge in IPR is to ensure the completeness and accuracy of data while safeguarding the participants' anonymity and confidentiality (Hockey 1993).</li> <li>How far should an IPR researcher go to protect their participants' privacy and confidentiality without sacrificing the integrity of research data?</li> </ul>
Managing IP and access to research data	<ul style="list-style-type: none"> <li>If the project is part of the researcher's formal study (e.g., doctoral education), what are the implications of Intellectual Property (IP) and data ownership to the researcher, the host university and the researched organisation and community?</li> <li>If the organisation has invested interest in and provide support to (e.g., access, facility, financial support, etc.) the research project, what type of claims in IP and data would they have (Denison &amp; Stillman 2012; Evans et al. 2012)?</li> </ul>

<p>Sharing and communicating research findings</p>	<ul style="list-style-type: none"><li>• Instead of scholarly publishing, the organisation and community may prefer other organisational or professional-based reporting channels (Holian &amp; Coghlan 2013).</li><li>• The organisation and community may seek to control the communication and sharing of research findings if they are perceived to be commercially sensitive or have an adverse impact on their reputation or image.</li><li>• The collaborative nature of IPR also challenges researchers to consider who should be acknowledged in research publications (Evans et al. 2012).</li></ul>
--	---



Hence, I believe that effective ethics management in IPR requires continuous actions beyond research planning and formal ethical application. It needs to be treated as an evolving process integrated into every stage of IPR. Additionally, it is critical to demonstrate a continuous high-level reflexivity in IPR (Holian & Coghlan 2013). This reflexivity needs to be observed and highly evident in two parallel processes of ethics management: 1) planning, developing and implementing the ethics management strategies as part of the research process, and 2) documenting, monitoring and reporting these strategies as a research product. I propose the use of autoethnography as a research method to manage ethical dilemmas in IPR as both a research process and product.

## **Autoethnography**

Autoethnography is an approach to research and writing that seeks to describe and systematically analyse personal experience to understand sociocultural phenomena (Ellis 2004; Ellis, Adams & Bochner 2011; Sparkes 2000). Situated in the postmodern philosophy, autoethnography presents a non-traditional form of research inquiry highlighting the interlocking links between personal experiences and sociocultural phenomena (Wall 2008).

Combining features of autobiography and ethnography, autoethnography is defined by the following criteria (See the centre/orange circle in Figure 2):

- ‘auto’: the self, which focuses on the researcher as primary data;
- ‘ethno’: the socio-cultural connection, which seeks to understand the sociocultural phenomena in which the self is embedded;
- ‘graphy’: the methodological approach, which scrutinises autobiographical data through a critical lens as part of the research process (Chang 2008; Shinnars-Kennedy & Fincher 2015); and
- the duality of autoethnography as a research method: autoethnography functions as both a research process and product (Ellis et al. 2011; Humphreys 2005).

These unique characteristics distinguish autoethnography from other autobiographic and ethnographic research methods. In essence, autoethnography is about using the ‘self’ as primary data to examine the associated sociocultural phenomena through critical self-exploration, introspection and interpretation. It aims at understanding the external social and cultural experiences through contemplating intimate personal experiences (Le Roux 2016).

Although sharing a focus on personal experiences in research, different schools of thought exist regarding the emphases, scopes and perspectives of autoethnography, which is captured by Le Roux's (2016) continuum of autoethnography. With evocative autoethnography and analytic autoethnography positioned at the two opposite ends, the continuum encapsulates the richness of conceptual frameworks, assumptions and techniques in autoethnographic research (Acosta, Goltz & Goodson 2015).

The approach adopted in this paper is analytic autoethnography. Analytic autoethnography criticises the overemphasis on emotion provocation and the artistic style of ‘free-form’ writing in evocative autoethnography (Acosta, Goltz & Goodson 2015; Ellis & Bochner 2006). It is argued that the lack of objectivity in evocative autoethnographic research can lead to of ‘self-absorption’ (Le Roux 2016). Calling for returning to the analytic ethnographic paradigm, analytic autoethnographers emphasise the analytical style of writing and analysis in research.

## **Managing ethics dilemmas with analytic autoethnography**

Figure 2 illustrates the connection between the defining characteristics of analytic autoethnography (outer blue circle) and the four autoethnographic criteria (inner orange circle). As elaborated in the companion text in Figure 2, these characteristics of analytic autoethnography make it an ideal methodological choice to guide the management of ethical dilemmas in IPR:

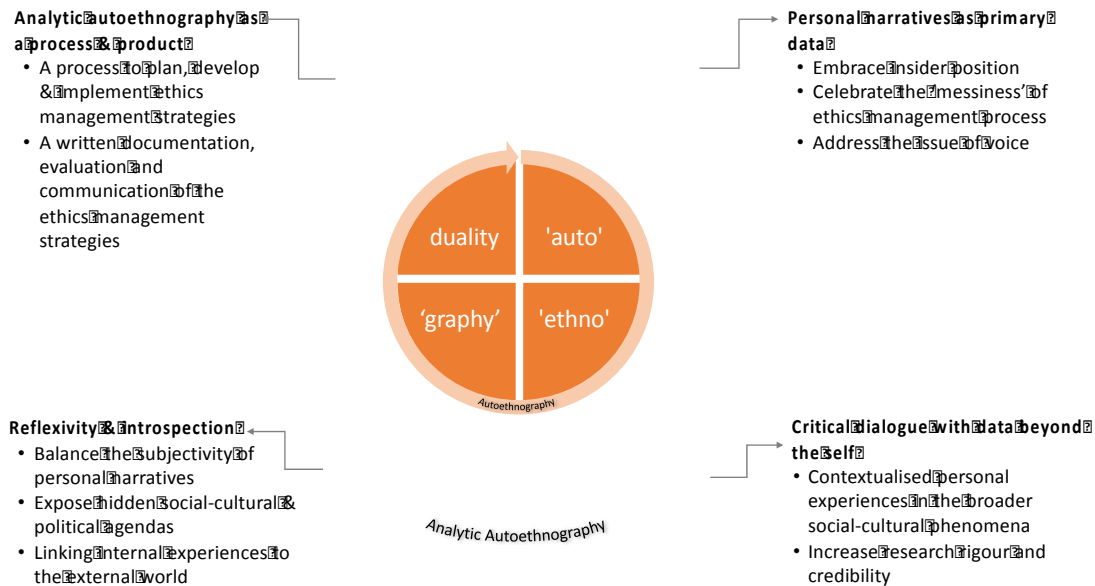


Figure 2: Analytic autoethnography as method for ethics management in IPR

- **Researcher as primary data:** Linked to the ‘auto’ criteria of autoethnography, it refers to the key feature of analytic autoethnographic research using personal narratives as the primary data source. It allows IPR researchers to embrace their complete insider position (Coghlan 2003) and document and reveal their intimate experiences of managing ethical issues (Acosta, Goltz & Goodson 2015). It also celebrates the ‘messiness’ of ethics management process and addresses the issue of voice and style of writing when reporting the process and results in IPR (Evans et al. 2012; Wall 2006).
- **Multiple sources of data:** Connected to the ‘ethno’ element in autoethnography, it distinguishes analytic autoethnography from other autoethnographic approaches (Anderson 2006; Chang 2008). By collecting and integrating data beyond the self through interviews, observations, external documents and peer-reviews, analytic autoethnographers create a critical dialogue between their personal experiences and the external world. When dealing with ethical issues in IPR, this critical dialogue contextualises the personal experiences in the broader sociocultural phenomena. It also increases the rigour and credibility of the research process (Acosta, Goltz & Goodson 2015).
- **Reflexivity:** Rooted in the ‘graphy’ of autoethnography, it is one cornerstone of analytic autoethnography. As a method, analytic autoethnography demands multi-layered high-level researcher reflexivity to balance the subjectivity of personal narratives (Le Roux 2016). Through critical self-examination and introspection, reflexivity helps expose the complex (and sometimes hidden) sociocultural and political agendas in the writing (Anderson 2006; Humphreys 2005), which is critical when managing ethical dilemmas in IPR.
- **Analytic autoethnography as a process and a product:** Traced back to the duality of autoethnography as a research method, the analytic autoethnographic approach to research and writing fulfils the needs of managing ethical dilemmas in IPR as both a research process and product (Ellis et al. 2011). As a research process, researchers can use analytic autoethnography to plan, develop and implement ethics management strategies through writing personal narratives, reflecting critically on personal experiences and engaging in dialogic discussions with external data. As a research product, the personal narratives and critical reflections can be presented as a form of documentation, evaluation and communication of the ethics management strategies used in the research process.

## Challenges in using analytic autoethnography

Whereas presenting a promising methodological approach for ethics management in IPR, analytic autoethnography can be one of the most challenging qualitative research method in reality (Wall 2008). Chang (2008 p. 54) suggests several common pitfalls in autoethnography including 1) excessive focus on self in isolation from others; 2) overemphasis on narration rather than analysis and cultural interpretation; 3) exclusive reliance on personal memory and recalling as data source; and 4) negligence of ethical standards regarding others in self-narratives.

The biggest challenge, though, I believe, is the lack of methodological models for using analytic autoethnography in practice. Most examples of autoethnographic studies focus on the abstract principles of using autoethnography (cf. Holt 2003; Le Roux 2016; Sparkes 2000; Wall 2006, 2008), promote the use of collaborative autoethnography (cf. Acosta, Goltz & Goodson 2015; Chang 2008; Shinnery-Kennedy & Fincher 2015), emphasise certain data collection and analysis techniques rather than overall methodological process (cf. Duncan 2004), or treat autoethnography as a retrospective research product rather than a product and process (cf. Humphreys 2005). Most importantly, due to the lack of practical models on 'how' to conduct critical and analytical reflections in autoethnography, novice researchers can find it extremely challenging to determine whether the desired level of reflexivity has been realised in autoethnographic studies.

Therefore, there is an inherent need for a practical model which can guide novice researchers like me to maximise the full potential of analytic autoethnography for the effective management of ethical dilemmas in IPR.

## A practical model

This paper proposes a practical model, based on Mezirow's ten phases of transformation and three levels of critical reflection, to guide the use of autoethnography as a research method for managing potential ethical dilemmas in IPR.

As Anderson (2006) highlights the critical interrogation of the self and other in analytic autoethnography may transform the researcher's beliefs, actions, and sense of self. In other words, the process of managing ethical dilemmas in IPR through analytic autoethnography can be seen as a learning experience, which facilitated by critical reflection and leads to a profound internal transformation, i.e., a transformative learning process. To gain insights into the process of personal transformation and identify a practical approach to critical reflection, I resort to Jack Mezirow's transformative learning theory.

## Mezirow's transformative learning theory

Based on the work of Jack Mezirow, the transformative learning (TL) theory provides a deep insight into the internal and profound changes, i.e., 'transformations', within individuals (Mezirow 1981, 1997; Mezirow & Taylor 2011).

As an adult learning theory, TL explains how adult learners make sense of their prior experience; how they construct the experience within social, economic, political and cultural structures; and how a 'transformational' shift in paradigm occurs when they are confronted with a 'disorienting dilemma' challenging their prior experience, understanding and even underlying assumptions of the social, economic, political and cultural structures in which they function (Christie et al. 2015; Levkoe, Brail & Daniere 2014; Mezirow 1991). When applied in social sciences, TL can help individuals identify and develop strategies, based on their prior experience, to cope with challenging life events (i.e., disorienting dilemmas). Through their active engagement with the dilemmas and critical self-reflection during the process, individuals may be able to transform/improve their assumptions and beliefs.

There are three key constructs in TL: frame of reference, critical reflection and reframing.

- A *frame of reference* refers to a person's cognitive collection of assumptions that underpin how they make sense of experiences and the world. It consists of *habits of mind* ("abstract

but habitual ways of thinking”, including culture, education, or socio-economics) and a *point of view* (“perspective from which something is viewed and considered”) (Mezirow 1997, p. 6). According to Mezirow, a person’s points of views are continually altered based on their new experiences, but their habits of mind are resistant to change. Once a frame of reference is established, a person can become unconsciously repellent towards things sitting outside of their frames of reference (Beaupre 2011; Bouchard 2008).

- To change a person’s frame of reference, i.e., *reframing*, involves a disorientating dilemma which causes a person to critically self-reflect on and alter their deeply held assumptions (habits of mind) (Stevens-Long, Schapiro & McClintock 2012).
- There are three levels of *critical reflection*:
  - *Content reflection*: reflecting and evaluating the nature of a problem;
  - *Process reflection*: contemplating solutions for the problem; and
  - *Premise reflection*: questioning the significance of and the assumptions underlying the problem. Premise reflection is the only type of reflection that can lead to reframing, which in turn contributes to transformations (Christie et al. 2015; Cowan, Neil & Winter 2013).

To achieve transformations, an individual needs to go through ten critical phases (Mezirow 2009, p. 19):

1. A disorienting dilemma;
2. Self-examination;
3. A critical assessment of assumptions;
4. Recognition of a connection between one’s discontent and the process of transformation;
5. Exploration of options for new roles, relationships, and action;
6. Planning a course of action;
7. Acquiring knowledge and skills for implementing one’s plan;
8. Provisional trying of new roles;
9. Building competence and self-confidence in new roles and relationships; and
10. Reintegration into one’s life from conditions dictated by one’s new perspective.

### **A nine-step model**

Mezirow's transformative learning theory provides theoretical insights into to the nature of IPR ethics management as a transformative learning process. His ten phases of transformation and three levels of critical reflection, in particular, lay a sound methodological foundation for the development of a much needed practical model.

Based on my research and experiences, I propose a nine-step model (See Figure 3). It is designed to guide novice practitioner-researchers through the process of using analytic autoethnography to manage ethical dilemmas in research process and, simultaneously, producing autoethnographic texts as research data. The nine steps include:

#### **Step 1: Identify a challenge**

Researchers identify the nature and key features of the challenge, with which they are confronted. In the context of IPR, it could be any potential ethical dilemmas, e.g., negotiating primary and secondary access, maintaining positive relationships; handling organisational and professional politics, ensuring data integrity and participant confidentiality, harmonising pre-understanding and new discoveries, managing IP and research data and sharing and communicating research findings.

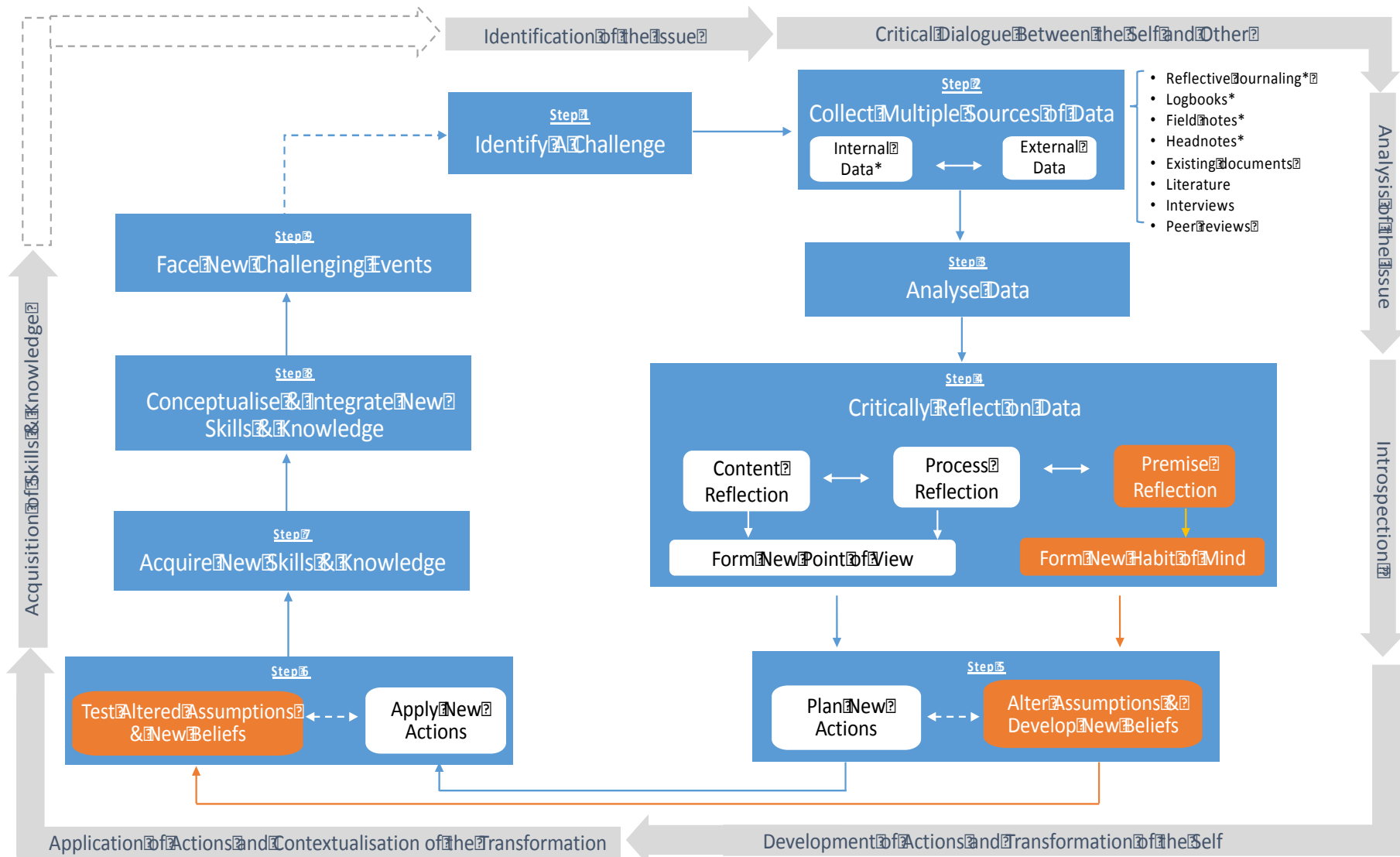


Figure 3: Nine-step model for using analytic autoethnography to manage ethical dilemmas in IPR

**Step 2: Collect multiple sources of data**

Once a challenge has been identified, the next step is to gather data related to the challenge. In addition to personal narratives (i.e. internal data), the use of external data in analytic autoethnography to contextualises personal experiences within the broader sociocultural phenomena. As a result, a critical dialogue is created between the internal and external worlds affected by the challenge. Common types of internal data include reflective journals, log books, field notes, headnotes (memories). Examples of external data sources are existing documents, literature, interviews and peer-reviews.

**Step3: Analyse data**

To gain a deeper understanding of the underlying issues, IPR researchers analyse the collected data and draw out the divergence and convergence between internal and external data.

**Step 4: Critically reflect on data**

The most challenging and vital step is to conduct a systematic critical reflection on the findings from Step 3. As shown in figure 3, Mezirow’s three levels of critical reflection are adapted to provide a methodological guidance and checkpoint questions on how to conduct critical reflection (See Table 2) (Coghlan & Brannick 2010; Cranton 2006). Content and process reflection help IPR researchers develop a deep understanding of and new perspectives on the challenge and likely solutions, i.e., forming new points of view. However, as the most challenging and intimate type of self-reflection, premise reflection is imperative for the development of new habits of mind contesting their deep-rooted assumptions and beliefs. In Figure 3, the activities directly linked to premise reflection are marked in orange colour to indicate the significance and challenges of these activities in the context of managing ethics in IPR.

Table 2: Three levels of critical reflection in IPR

Type of Reflection	Purpose	Reflection Questions	Outcomes
Content Reflection	Understand the issue	<ul style="list-style-type: none"> <li>What is the ethical dilemma (including associated issues)?</li> <li>What did I know (i.e., prior knowledge, experience, and underlying assumptions)?</li> <li>Which parties have been involved?</li> </ul>	Form new point of view
Process Reflection	Understand the solutions and strategies	<ul style="list-style-type: none"> <li>How have things been done?</li> <li>What are the solutions/strategies for this issue?</li> <li>Which parties will be involved?</li> </ul>	
Premise Reflection	Critique underlying assumptions and beliefs	<ul style="list-style-type: none"> <li>Why is this issue important to me?</li> <li>Why should I believe in the solutions/strategies?</li> <li>What has changed in my understanding of the issues?</li> <li>Why should I change (or not change) my assumptions and beliefs?</li> </ul>	Form new habit of mind

**Step 5-6: Develop and test new actions, assumptions and beliefs**

Based on their newly formed points of view, IPR researchers plan and apply a course of actions to address the challenge and, simultaneously, test their altered assumptions and beliefs based on their new habits of mind. Take my PhD as an example, I have developed and implemented a key stakeholder communication strategy to negotiate access to participants and internal documents from different divisions of my organisation. These actions are the result of the challenge and alteration to my previous assumption that a blanket endorsement from senior management was sufficient enough to guarantee me access to participants and permission to use internal documents required in my research.

**Step 7-8: Acquire, conceptualise and integrate new skills and knowledge**

Through applying the actions and testing their altered assumptions and beliefs, IPR researchers can acquire a new set of skills and knowledge regarding the particular challenge and associated sociocultural phenomena. They are, then, at the position to conceptualise and integrate their new skills and knowledge into their existing knowledge base and skill set.

**Step 9: Face new challenging events**

Finally, with their new body of knowledge and skill set, IPR researchers form a new sense of self and emerge into a new sociocultural agent adhere to their new perspectives, assumptions and beliefs. This new position help prepare IPR researchers with knowledge and experiences for the next challenging ethical dilemmas should they occur during the process.

## **Conclusions and future directions**

Exemplified by my PhD research, this paper explores the combined nature of insider position and participatory element in IPR. After carefully examining the complexity of researcher role multiplicity and the high sensitivity and contingency of other associated ethical dilemmas, it is argued that IPR ethics management needs to be treated as an evolving process integrated into every research stage. A multifaceted high-level reflexivity is imperative to the effective management of ethical dilemmas and overall success of IPR. Pinpointing the underlying personal transformations that a researcher undergoes during the process of ethics management, the paper advocates for the use of analytic autoethnography as a method to manage ethical dilemmas in IPR. To address the issue of methodological approaches, the paper proposes a nine-step model to guide novice practitioner-researchers in using analytic autoethnography to manage the process of dealing with ethical dilemmas and produce research outputs contributing to the theoretical understanding of ethics and ethics management in IPR. The model is based on Jack Mezirow's well examined transformative learning theory, the ten phases of transformation and three levels of critical reflections in particular, to ensure its validity, reliability and practicality,

As an initial concept, the proposed model is developed based on my understanding of existing literature and personal experience of dealing with ethical dilemmas in my ongoing PhD research. As new ethical dilemmas emerge during the PhD project, I would like to test the model and gather more evidence for further improvement of the model.

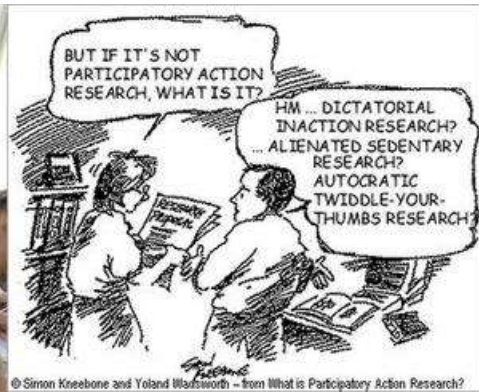
## **References**

Acosta, S., Goltz, H. & Goodson, P. (2015). Autoethnography in action research for health education practitioners. *Action Research*, 13(4), 411-431. doi:10.1177/1476750315573589

- Adler, P. A. & Adler, P. (1987). The history and epistemology of fieldwork roles *Membership Roles in Field Research* (pp. 9-37). Thousand Oaks, CA: SAGE Publications, Inc.
- Anderson, L. (2006). Analytic Autoethnography. *Journal of Contemporary Ethnography*, 35(4), 373-395. doi:10.1177/0891241605280449
- Beaupre, C. P. (2011). A Multidisciplinary Approach to Transformative Higher Learning. *Journal of the World Universities Forum*, 4(1), 81-91.
- Biggs, S. (1989). Resources-poor farmer participation in research: a synthesis of experiences from nine national agricultural research systems. The Hague, Netherlands, International Service for National Agricultural Research
- Bonner, A. & Tohurst, G. (2002). Insider-outsider perspectives of participant observation. *Nurse Researcher*, 9(4), 7-19.
- Bouchard, J. (2008). Transformative Learning: Great Neck Publishing.
- Bowler, L. & Large, A. (2008). Design-based research for LIS. *Library & Information Science Research*, 30(1), 39-46. doi:http://dx.doi.org/10.1016/j.lisr.2007.06.007
- Brannick, T., & Coghlan, D. (2007). In Defense of Being “Native”: The Case for Insider Academic Research. *Organizational Research Methods*, 10(1), 59-74. doi:10.1177/1094428106289253
- Chang, H. (2008). Autoethnography as method (Developing qualitative inquiry). Walnut Creek, Calif.: Left Coast.
- Christie, M., Carey, M., Robertson, A., & Grainger, P. (2015). Putting transformative learning theory into practice. *Australian Journal of Adult Learning*, 55(1), 9-30.
- Coghlan, D. (2003). Practitioner Research for Organizational Knowledge: Mechanistic- and Organistic-Oriented Approaches to Insider Action Research. *Management Learning*, 34(4), 451-463. doi:10.1177/1350507603039068
- Coghlan, D. (2013) Messy, iterative groping in the swampy lowlands: The challenges of insider scholar-practitioner inquiry. *Research in Organizational Change and Development*. 21, 121-147.
- Coghlan, D. & Brannick, T. (2010). *Doing action research in your own organization*: Los Angeles, Calif. ; London : SAGE, 2010. 3rd ed.
- Cornwall, A. & Jewkes, R. (1995). What is participatory research? *Social Science & Medicine*, 41(12), 1667-1676. doi:10.1016/0277-9536(95)00127-S
- Cowan, P., Neil, P. S. & Winter, E. (2013). A connectivist perspective of the transition from face-to-face to online teaching in higher education. *International Journal of Emerging Technologies in Learning*, 8(1), 10-19.
- Cranton, P. (2006). Understanding and promoting transformative learning : a guide for educators of adults: San Francisco, CA : Jossey-Bass, c2006. 2nd ed.
- Denison, T. & Stillman, L. (2012). Academic and ethical challenges in participatory models of community research. *Information, Communication & Society*, 15(7), 1037-1054. doi:10.1080/1369118X.2012.656138
- Downie, J., Orb, A., Wynaden, D., McGowan, S., Zeeman, Z. & Ogilvie, S. (2001). A practice-research model for collaborative partnership. *Collegian*, 8(4), 27-32.
- Duncan, M. (2004). Autoethnography: Critical appreciation of an emerging art. *International Journal of Qualitative Methods*, 3(4), 28-39.
- Ellis, C. (2004). The ethnographic I: A methodological novel about autoethnography: Rowman Altamira.
- Ellis, C., Adams, T. & Bochner, A. (2011). Autoethnography: An overview. *Forum: Qualitative Social Research*, 12(1). Retrieved from <http://www.qualitative-research.net/index.php/fqs/article/view/1589/3095>
- Ellis, C. & Bochner, A. (2006). Analyzing analytic autoethnography: An autopsy. *Journal of Contemporary Ethnography*, 35(4), 429-449. doi:10.1177/0891241606286979
- Evans, J., Faulkhead, S., Manaszewicz, R. & Thorpe, K. (2012). Bridging communities. *Information, Communication & Society*, 15(7), 1055-1080. doi:10.1080/1369118X.2012.704062
- Herrington, J., McKenney, S., Reeves, T. & Oliver, R. (2007). *Design-based research and doctoral students: Guidelines for preparing a dissertation proposal*. Paper presented at the World Conference on Educational Multimedia, Hypermedia and Telecommunications



- Hockey, J. (1993). Research methods - researching peers and familiar settings. *Research Papers in Education*, 8(2), 199-225. doi:10.1080/0267152930080205
- Holian, R. & Coghlan, D. (2013). Ethical Issues and Role Duality in Insider Action Research: Challenges for Action Research Degree Programmes. *Systemic Practice and Action Research*, 26(5), 399-415. doi:10.1007/s11213-012-9256-6
- Holt, N. (2003). Representation, legitimation, and autoethnography: An autoethnographic writing story. *International Journal of Qualitative Methods*, 2(1), 18-28.
- Humphreys, M. (2005). Getting personal: Reflexivity and autoethnographic vignettes. *Qualitative Inquiry*, 11(6), 840-860. doi:10.1177/1077800404269425
- Kanuha, V. (2000). "Being" Native versus "Going Native": Conducting Social Work Research as an Insider. *Social Work*, 45(5), 439-447. doi:10.1093/sw/45.5.439
- Le Roux, C. (2016). Exploring rigour in autoethnographic research. *International Journal of Social Research Methodology*, 1-13. doi:10.1080/13645579.2016.1140965
- Levkoe, C., Brail, S., & Daniere, A. (2014). Engaged Pedagogy and Transformative Learning in Graduate Education: A Service-Learning Case Study. 44, 68-85.
- Mezirow, J. (1981). A Critical Theory of Adult Learning and Education. *Adult Education Quarterly*, 32(1), 3-24. doi:10.1177/074171368103200101
- Mezirow, J. (1991). *Transformative dimensions of adult learning*. San Francisco: Jossey-Bass.
- Mezirow, J. (1997). Transformative Learning: Theory to Practice. *New Directions for Adult and Continuing Education*, 1997(74), 5-12. doi:10.1002/ace.7401
- Mezirow, J. (2009). Transformative learning theory *Transformative learning in practice: insights from community, workplace, and higher education* (pp. 18-32). San Francisco: Jossey-Bass.
- Mezirow, J. & Taylor, E. W. (2011). *Transformative Learning in Practice: Insights from Community, Workplace, and Higher Education*. New York, NY: Wiley.
- Reason, P. & Bradbury, H. (2008). *The SAGE handbook of action research: Participative inquiry and practice*. London: Sage.
- Shinners-Kennedy, D. & Fincher, S. (2015). *Scaffolded Autoethnography: A method for examining practice-to-research*. Paper presented at the 6th Research in Engineering Education Symposium: Translating Research into Practice, REES 2015.
- Sparkes, A. (2000). Autoethnography and narratives of self: Reflections on criteria in action. *Sociology of Sport Journal*, 17(1), 21-43.
- Stevens-Long, J., Schapiro, S. A. & McClintock, C. (2012). Passionate Scholars: Transformative Learning in Doctoral Education. *Adult Education Quarterly*, 62(2), 180-198. doi:10.1177/0741713611402046
- Stoecker, R. (2005). *Research Methods for Community Change: A Project-based Approach*. Thousand Oaks: SAGE Publications, Inc.
- Wall, S. (2006). An Autoethnography on Learning about Autoethnography. *International Journal of Qualitative Methods*, 5(2), 1-12.
- Wall, S. (2008). Easier Said than Done: Writing an Autoethnography. *International Journal of Qualitative Methods*, 7(1), 38-53.



**PROCEEDINGS: PDFs of  
POWERPOINT  
PRESENTATIONS**

**13th Prato CIRN Conference 2-4 November 2016, Monash Centre, Prato Italy**

**INCLUDED ARE PDFS OF THE FOLLOWING PAPERS/PRESENTATIONS**

Battley, Belinda	The Critical Insider: Membership, ethics, and trust	Graduate Paper
Forester, Liz; Gonick, Lev	Connecting the Unconnected - At-Risk Community Engagement in the Digital Economy in Cleveland, Ohio	Non-refereed paper/practitioner report/talk
Jarvie, Katherine	Radical recordkeeping for activist communities	Graduate Paper
Matyila, Muzi Botha, Adele; Sibiya, George	The facilitation of adoption and use of text intensive mobile services by low literate users	Refereed Papers
Stillman, Larry	PROTIC: Participatory Action Research and DI	Refereed Papers

**Publication Data**

Conference Proceedings- CIRN Community Informatics Conference - 2-4 November 2016, Privilege, Information, Knowledge and Power: an Endless Dilemma, Monash Centre Prato, Italy.

ISBN 978-0-9874652-5-2  
Centre for Community Informatics, Faculty of IT, Monash University  
Eds. Larry Stillman, Tom Denison, Misita Anwar  
Publication date: 2017





# What is the place of records in maintaining collective memory?

## A grounded theory

Belinda Battley, Centre for Organisational and Social Informatics, Monash University, Australia

E: bjb2@student.monash.edu M: +6421 055 2325

Supervisors: Dr Joanne Evans, Prof. Sue McKemmish, Dr Gillian Oliver

How does a community with distributed archives maintain the records of its collective memory?

### Why this research?

In a complex, interconnected world, records of communities are scattered between a wide range of custodians and formats.

Communities struggle to engage with the records of their collective memory, managed according to others' needs and perspectives.

### Project aims

This research critically examines the interface between community collective-memory maintenance and archival models and processes. Together with an outdoor club community we have co-created a model of collective memory maintenance.

The next step is to consider the implications of this model for existing archival models and processes.

### Research questions

- What part is played by records and recordkeeping in a community's construction, maintenance and use of its collective memory?
- Can the place of records and recordkeeping in a community's collective memory construction be represented using existing archival and recordkeeping models?
- How can the archival and recordkeeping community be enablers of community collective memory maintenance?
- How is it possible to reflect a participatory ethos within the bounds of an academic research project?

### Significance

A transformation is needed in archival practice and theory for increasingly digital and distributed records of collective memory.

Communities need to become participants to maintain their own interpretations

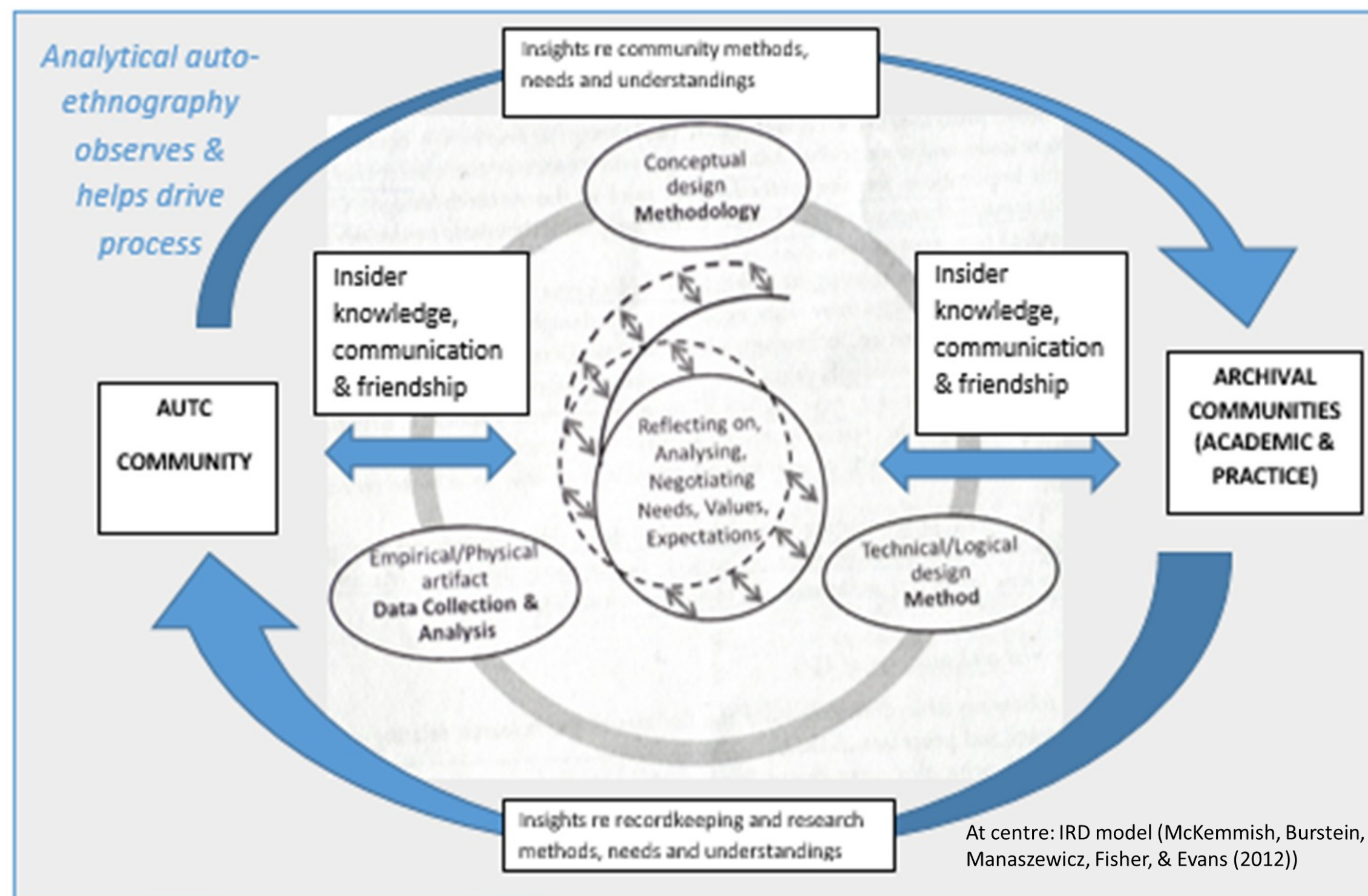
This project

- develops a new model of the use of records in collective-memory maintenance
- assesses its implications for existing archival models
- explores a new model of community participation in archival processes
- empowers community with skills and knowledge to manage their essential records into the future.

"The nature of what we do tends to generate stories, and these stories are part of what glues us together...there's shared identity, shared events, shared interpretation of things"

- Andrew, 1980s era

### Research design



### Maintaining collective memory in the AUTC



### Records: Both written and embodied

Records provide information to run events, are embodied in and shared at events  
 Events are recorded in records  
 Values / mandates / aims influence and are recorded in records  
 Records show how mandates / aims / values are being met  
 Records enable access to places  
 Places influence the creation of, contain, embody and enable sharing of records  
 Club structure supports creation, maintenance, sharing of records

Records are embodied in and support maintenance of club structure  
 Club members create, influence, embody, manage and share records  
 Records support growth of individual members  
 Records reinforce identity, memory, trust, unity of club members  
 Trust, unity of members support creation, maintenance and sharing of records  
 Records may be shared outside club; may be kept by external agents  
 Records aid in creation, maintenance, use and interpretation of other records

"These are the elements [of] club spirit, that nebulous creature that lingers and grows through the years as individual faces change"<sup>2</sup>



### References:

1. McKemmish, S., Burstein, F., Manaszewicz, R., Fisher, J., & Evans, J. (2012). Inclusive Research Design. *Information, Communication & Society*, 15(7), 1106-1135. <http://doi.org/10.1080/1369118X.2012.707225>
2. Wayne Erb (2007). Introduction. In: *Auckland University Tramping Club Jubilee History 1932-2007*. Auckland: AUTC, pp.4-5

Photo credits: Mark Battley / AUTC; Peter Jenkins / AUTC; Andrew Poole / AUTC; Dave Jenkins / AUTC; Belinda Battley







# Connect the Unconnected

**At-Risk Community Engagement in the Digital  
Economy in Cleveland, Ohio**

**A Presentation to CIRN Commons**



# Agenda

- DigitalC Overview
- Big Idea: *Connect the Unconnected & Re-Start Tech Collaborative*
- Questions & Feedback

# DigitalC Overview



We are DigitalC. A civic tech collaboration that partners with the community to design technology-driven programs and services.

# DigitalC as Catalyst

We have three focus areas



## NEW CIVIC AGENDA

We partner with technology and civic leaders to design 21st century digital strategies for your city.



## NEXT GEN APPS & SERVICES

We accelerate access, adoption, and use of civic analytics and data-driven solutions to enable smart communities.



## PLACE-BASED ACTIVATION

We develop inclusive programs and intentional neighborhoods that spur innovation through technology.



# Why We Do This Work?

Changing the way we:

- communicate
- learn
- organize
- work



# Why We Do This Work?

- Information technology is transforming the pace of innovation.
- Ensuring access for all to keep pace

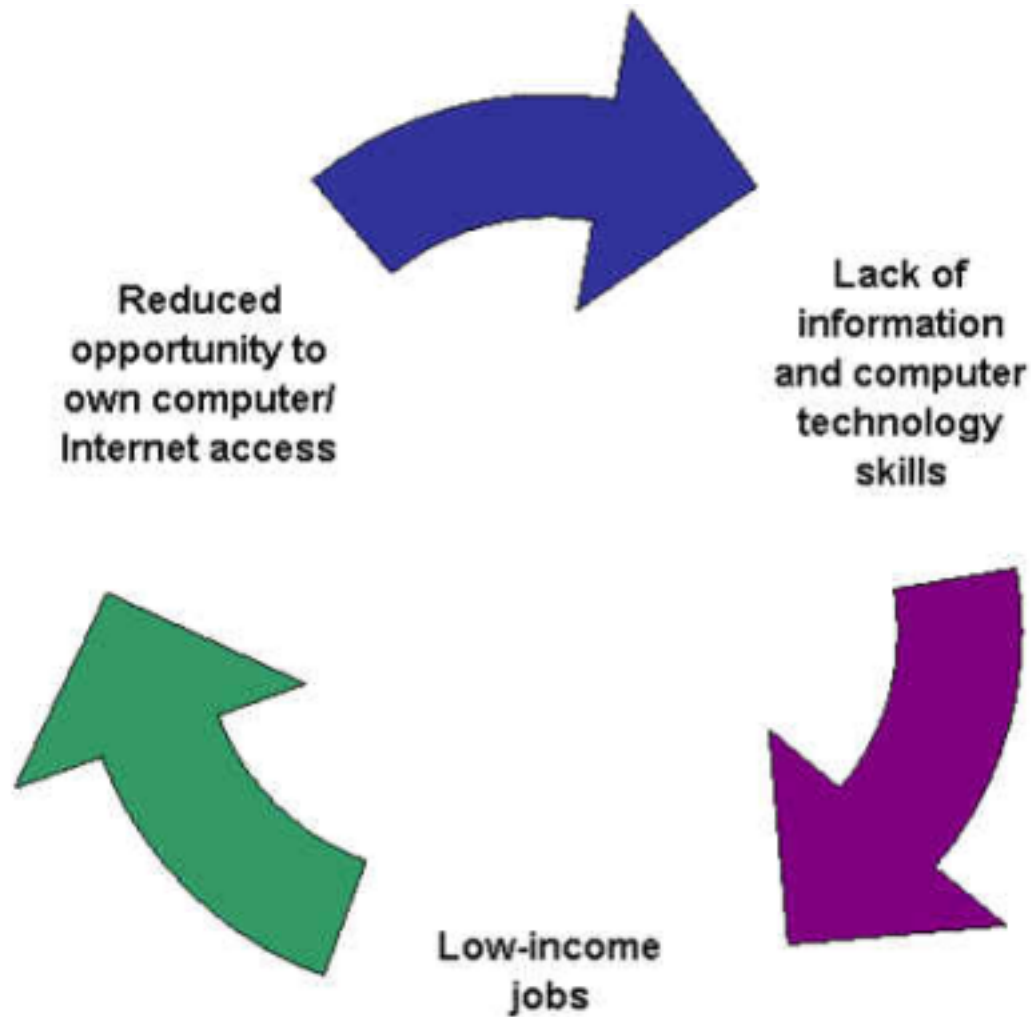


# The Story of Glenville

- 70% of children live below poverty
- 66% graduate high school
- 14% unemployed
- \$22K median hh income
- 209% higher crime rate
- 20% home internet access



# Cycle of Exclusion





# THE “BIG IDEA”



# The “Big Idea”

## Who?

- 4 populations

## Where?

- CMHA



# The “Big Idea”

## DigitalC Programs:

### Connect the Unconnected

- Infrastructure
- Devices
- Training

### Re-Start Tech Collaborative

- On-ramps to stable, 21<sup>st</sup> century jobs



# Connect the Unconnected

- Focused on:
  - access
  - devices
  - digital literacy
- Pilot project underway







# Connect the Unconnected Pilot Partners

- Partners:

- DigitalC (fiber and Internet)
- CMHA (participants & locations)
- Siklu (antennas)
- Zenith (integration)
- Actelis (connectivity)
- RET3 (devices and WiFi)
- Ashbury Senior Computer Community Center/CYC (training)



Ashbury Senior Computer Community Center



# Siklu

- Wireless Gigabit equipment provider, mm wave technology



**60GHz V-Band Link, 1 GigE/Sek.**

# Zenith & Actelis

- Fiber connectivity from rooftops to demarc
- Distribution to individual residential unit connectivity



# RET3

## Devices:

- WiFi routers
- laptop
- desktop
- net book





# ASC3 & CYC

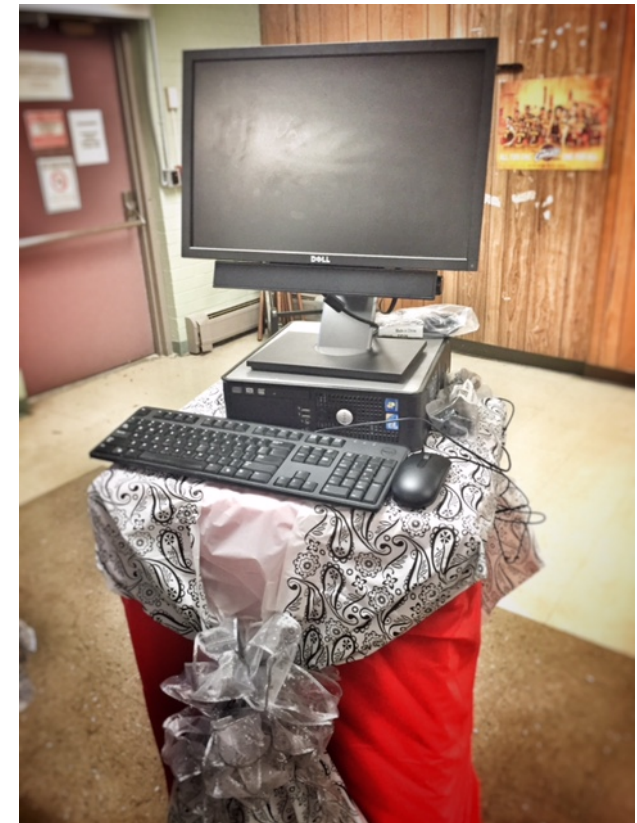
## Curriculum and Training Partner:

### Program Components:

- Computer Literacy (mouse, keyboard, Windows OS, browser use, email, data storage, Microsoft Office)
- Digital Literacy (search techniques, evaluating online sources, virus/spyware, online identity, online privacy)
- Home Connect (computer maintenance, downloading and installing software)



# Connect the Unconnected Outcomes



# On Ramp's to the Digital Economy

## The Re-Start Tech Collaborative

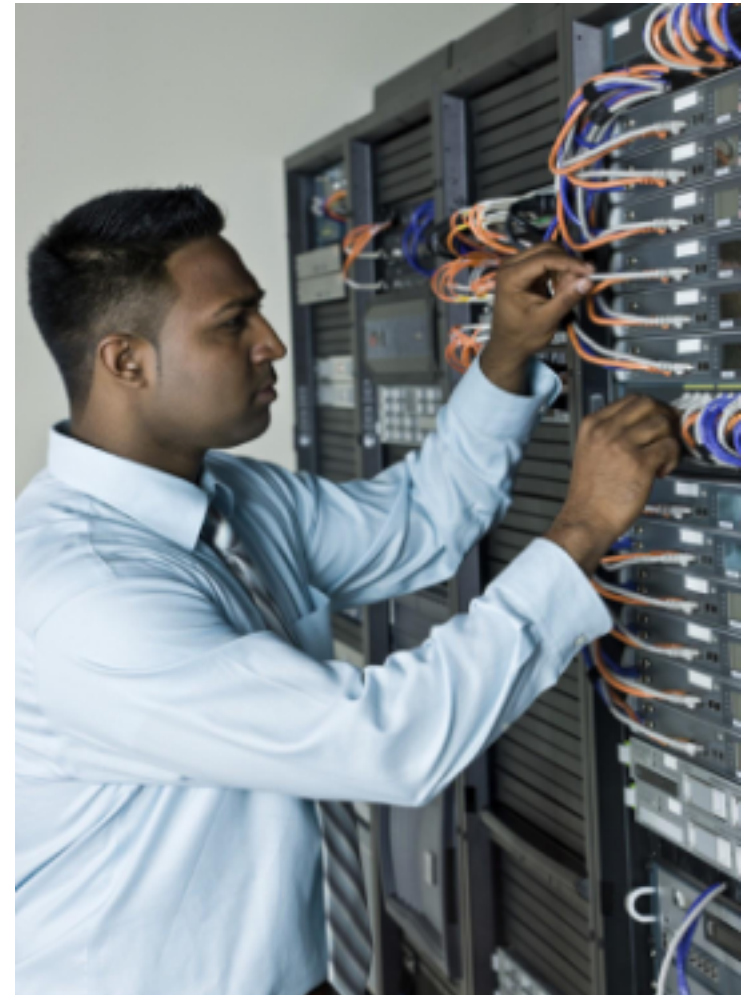
With a foundation of infrastructure and training in place, DigitalC and partners can provide on ramps to the digital economy for these at-risk populations

- Youth timing out of juvenile systems
- Veterans returning from service in the military
- Mom's receiving public assistance
- Men and women in the re-entry community



# Re-Start Tech Collaborative

- Micro-credentialing for non-traditional and at-risk persons:
  - condensed
  - hands-on
  - skills-based
  - market driven
- Credit & non-credit participation



# Re-Start Partners

**Global** Corporate College®

Your Partner in Corporate Education

- Based in NEO
- Outcomes focused, Employer Guarantee
- Last Mile/soft skills, workforce readiness curriculum
- Curriculum offerings include, but not limited to
  - Break/fix (computers, mobile phones, wireless)
  - Network design & configuration
  - Software certification and training
  - Medical data records management
  - Scanning/imaging/ETL (Extract, Transform, Load)
  - Basic data literacy & analytics
  - Quality assurance testing



# Re-Start Partners Continued

- Network of community anchor institutions joining together to provide
  - Training facilities
  - Participant referrals
  - On-ramps to additional certification and degree programs (Tri-C)
  - Employment opportunities for Re-Start participants



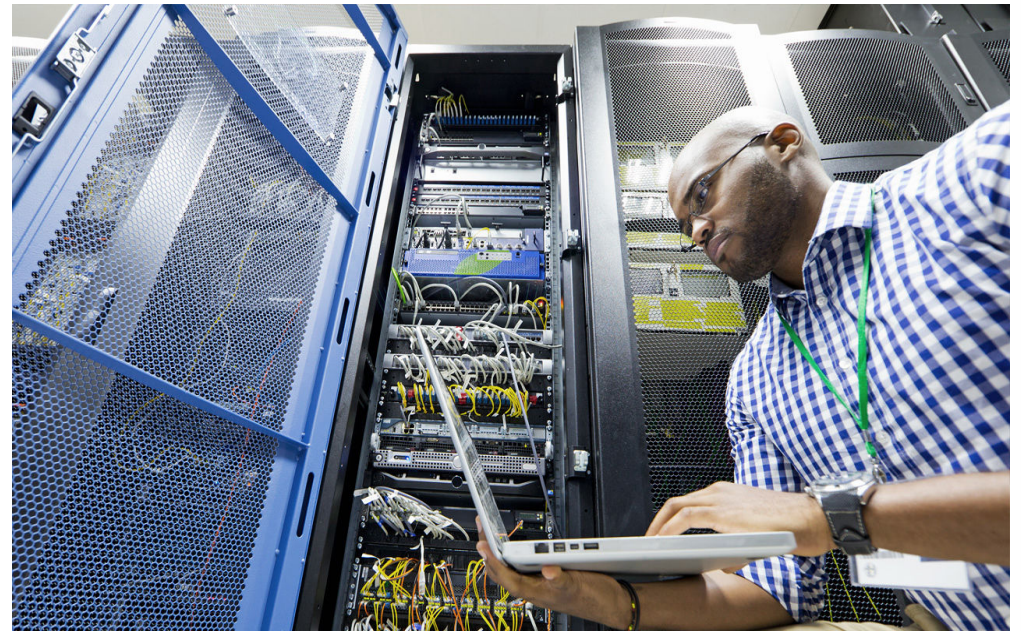
Cuyahoga County  
Public Library

**COUNCIL FOR ECONOMIC OPPORTUNITIES**  
in Greater Cleveland

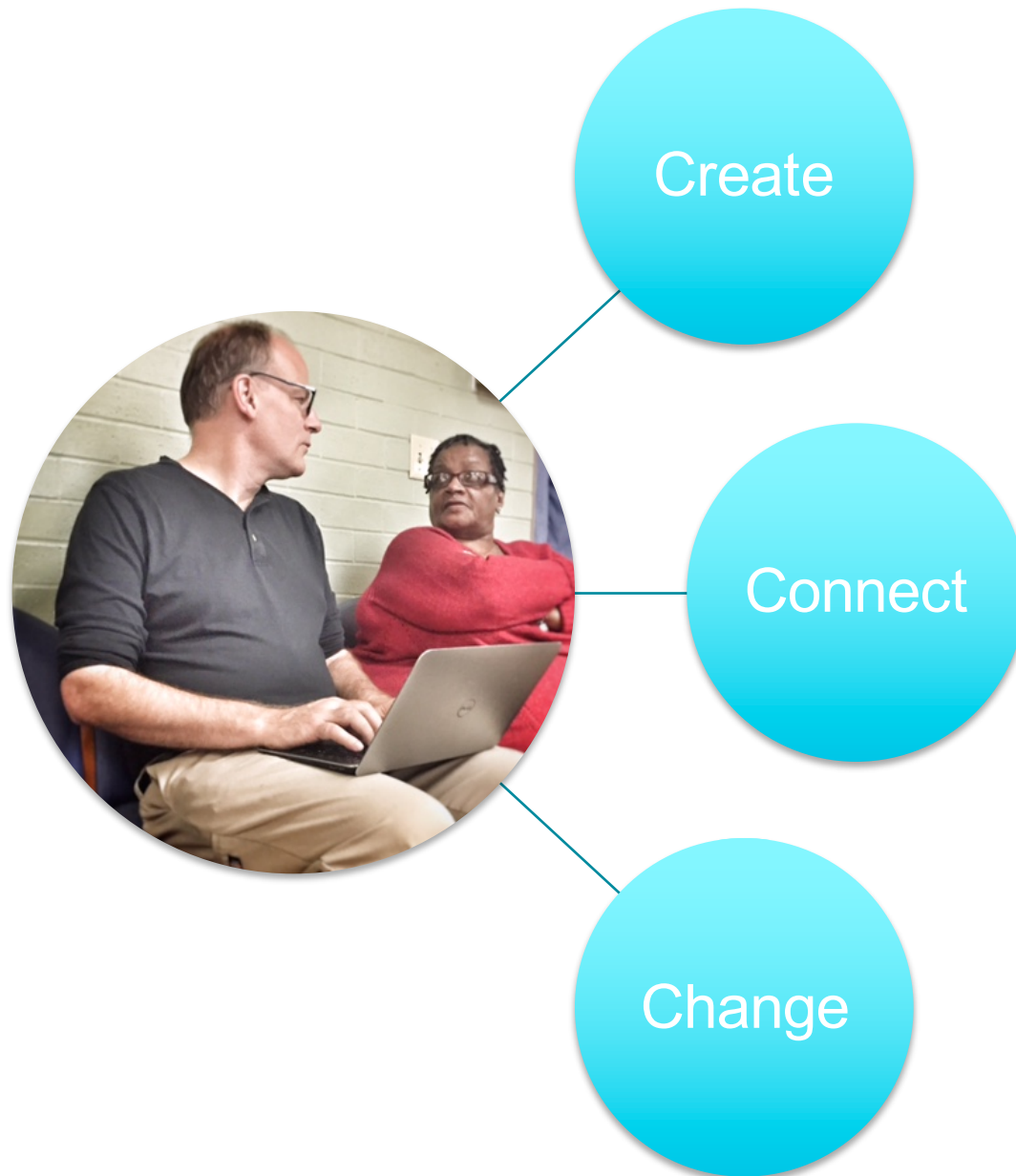


# Re-Start Outcomes

- **Entry-level skilled jobs**
- **Continuing education**
- **Re-Star Employment** (train the trainer)
- **Entrepreneurship/Geek Squad's:** neighborhood based, worker owned co-ops offering competitive IT services to community anchor institutions, non-profits, etc.



# Community Engagement Continuum





# Questions & Feedback



# Thank You!!

[Liz.Forester@digitalc.org](mailto:Liz.Forester@digitalc.org)

Cell: 440-915-3377

Twitter: @litt222

[www.digitalc.org](http://www.digitalc.org)



# Radical Recordkeeping for Activist Communities

Katherine Jarvie  
PhD Candidate

Prato, November 2016





# Activism and Animal Rights

- Making Change
- Recording Change?



Marc Bekoff Ph.D.  
Animal Emotions

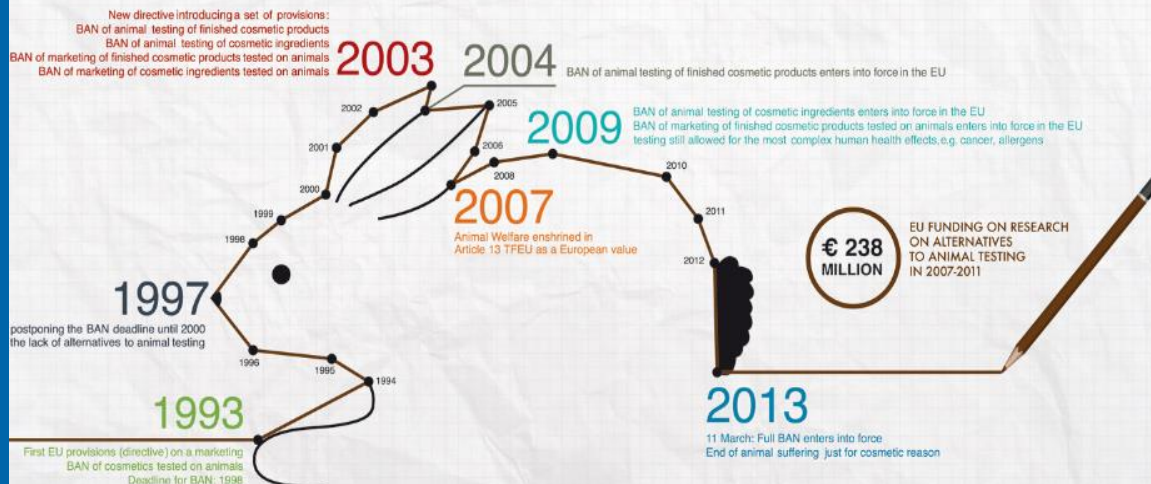
## Why Justice for Animals Is the Social Movement of Our Time

Reflections from a human rights doctor (guest essay by Dr. Hope Ferdowsian)

Posted Mar 19, 2016

Source: *Psychology Today* [online], Accessed 10/10/2016

### CONNECTING THE DOTS FOR ANIMALS: HISTORY OF THE EU BAN ON ANIMAL TESTING FOR COSMETICS



Source: European Commission website, accessed 19/10/2016



Katherine Jarvie  
@KathyGallen

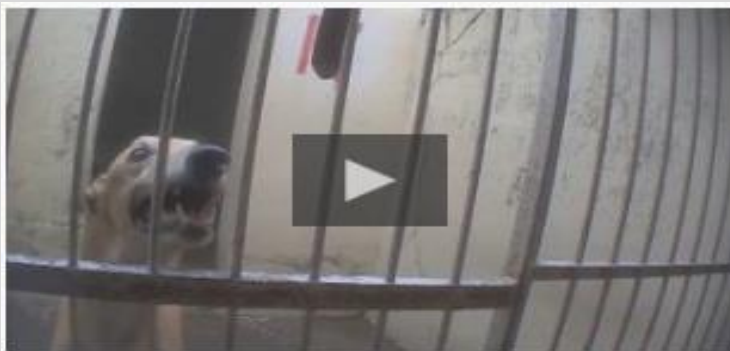
The Netherlands take a HUGE step for animal rights! Thank you @martijnvdam for working to phase out ALL animal experiments!

#StopAnimalTests

12:25 AM - 30 Sep 2016



# CASE STUDY: Banning Greyhound Racing in Australia



**VIDEO: WARNING - DISTRESSING IMAGES:** Undercover vision shows healthy greyhounds bred from exported Australian dogs being euthanased in Vietnam (ABC News)

**PHOTO:** Covertly recorded vision shows a greyhound languishing at Macau's Canidrome race track. (Supplied: Animals Australia)

**RELATED STORY:** Piglets, possums and rabbits used as live bait in secret greyhound training sessions

**RELATED STORY:** Greyhound trainers facing jail for live baiting

**RELATED STORY:** Using feral animals to lure greyhounds 'less serious', live baiting case hears

Source: ABC News, <http://www.abc.net.au/news/2015-12-09/greyhounds-exported-to-macau-china-against-industry-rules/7014434>, 9/12/2015

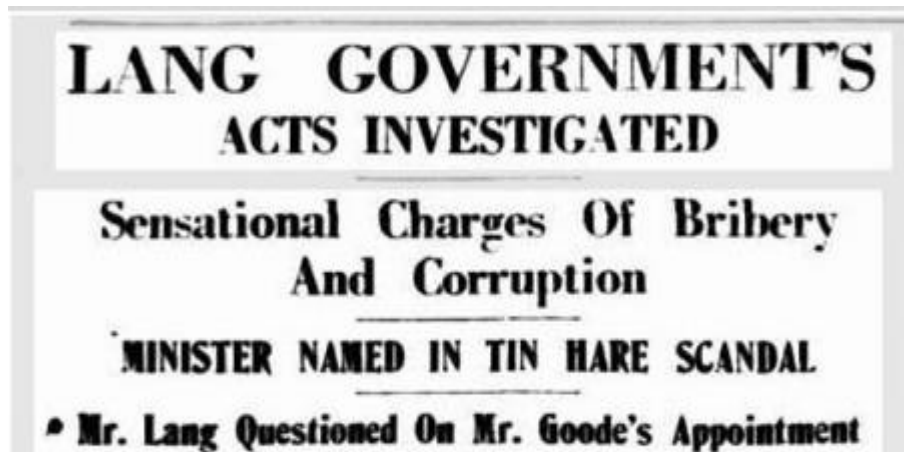


Dogs at a racetrack in Shanghai where they are raced against cheetahs. Picture: Animals Australia



**SYDNEY, AUSTRALIA :** Greyhounds leave the starting gate in the Appin 31st Anniversary Cup at the Appin Way race meeting on October 27, 2007

# Timeline of Events



Source: *Sydney Morning Herald*, 8/7/2016

Clipping from June 21, 1932





# The Activist Outsider

## Vegetarians, vegans 'hated and bullied in Australia', author says

ABC News Breakfast By Patrick Wood

Updated 2 Aug 2016, 1:22pm

**Vegetarians are bullied and hated in Australia and our culture is caught in a cycle of overreliance on meat, self-confessed meat-lover and writer Richard Cornish says.**



### The imbalance of voices in the archive ...

*illustrate imperatives for advocacy and activism in support of the 'archival autonomy' of communities*

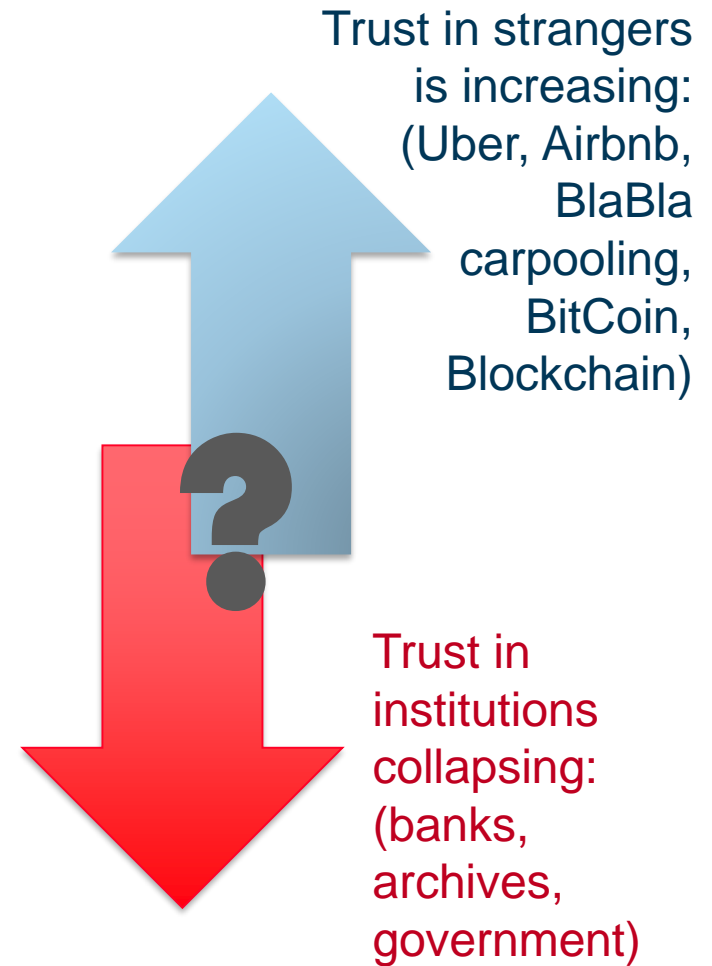
- Evans, J., McKemmish, S., Daniels, E. & McCarthy G. (2015)

# The Activist Archivist – Let's Redress

***Archivists who give a damn about freedom (like really give a damn, and not just freedom for your personal self) should consider remaining free of an archive so that you can:***

- 1) own your labor,***
- 2) use your labor to make archives about freedom, and***
- 3) distribute freedom-driven archives to the public to access free of charge.***

- Drake, Jarrett M (2016)



# What are the Gaps?

“I don’t care about dead rabbits. The issue of money is more my concern.”

— Tony Gannon, NSW Greyhound trainer

Animals Australia  
the voice for animals

“The beauty is with cats and possums they will fight for their lives.”

— Former NSW greyhound owner

Animals Australia  
the voice for animals

*we’ve known about this complex problem for more than 20 years, and haven’t been dealing with it effectively*

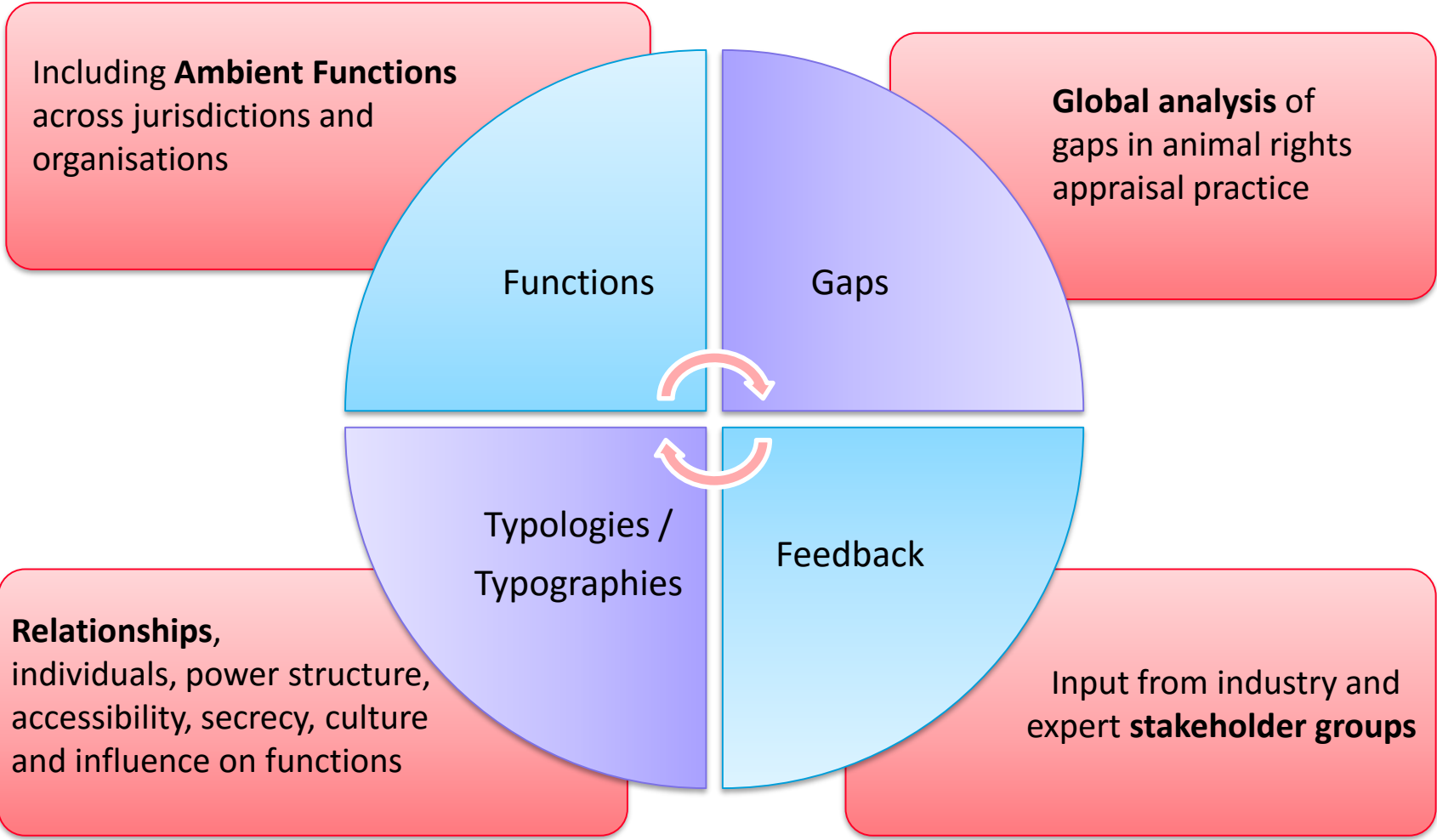
- Barbara Reed on appraisal, Oct 2016



*Is there any other field of information gathering that has such a broad mandate with a selection process so random, so fragmented, so uncoordinated, and even so often accidental*

- F. Gerald Ham, 1975

# Developing a Critical Functional Analysis



# Questions?

 @kathygallen



Maurizio Cattelan  
*View of the exhibition KAPUTT, 2013*  
Maurizio Cattelan: Kaputt, Fondation Beyeler, Riehen/Basel, 8 June – 6 October 2013



# References

Cook, Terry. "'We are what we keep; we keep what we are': archival appraisal past, present and future." *Journal of the Society of Archivists*, vol. 32, no. 2 (2011): 173-189

Drake, Jarrett M. "Archivists without Archives: A Labor Day Reflection", on *Archivy* [online], Medium, published and accessed 2/9/2016.

European Commission, "Connecting the Dots For Animals: History of the EU ban on Animal Testing of Cosmetics" [flyer] on *Ban on Animal Testing* [online], [https://ec.europa.eu/growth/sectors/cosmetics/animal-testing\\_en](https://ec.europa.eu/growth/sectors/cosmetics/animal-testing_en), 2013, accessed 19/10/2016.

Evans, J., McKemmish, S., Daniels, E. & McCarthy G., "Self-Determination and Archival Autonomy: Advocating Activism', *Archival Science*, 15:4 , 2015.

Ferdowsian, Hope, *Why Justice for Animals is the Social Movement of Our Time*, <https://www.psychologytoday.com/blog/animal-emotions/201603/why-justice-animals-is-the-social-movement-our-time>, 19/3/2016, accessed 10/10/2016.

Ham, Gerald F, 'The Archival Edge', *American Archivist*, Vol. 38:1, Winter 1975, p.326.

Jarvie, Katherine. #StopAnimalTesting [tweet], *Twitter*, <https://twitter.com/KathyGallen/status/781756917223874560>, posted 30/9/2016.

## References (Cont'd)

McKemmish, Sue & Piggott, Michael. "Toward the Archival Multiverse: Challenging the Binary Opposition of the Personal and Corporate Archive in Modern Archival Theory and Practice", *Archivaria*, [S.l.], p. 111-114, Nov. 2013.

Reed, Barbara [quoted on Twitter] at the *Australian Society of Archivists Conference*, "Forging Links", Parramatta, Australia, 17-21 October 2016.

Rolan, Gregory. "Towards Archive 2.0: Issues in Archival Systems Interoperability", *Archives and Manuscripts*, Vol. 33:1, October 2014.

Rolan, Gregory. "Agency in the Archive: A Model for Participatory Recordkeeping", *Archival Science*, July 2016.

*Sydney Morning Herald*, <http://www.smh.com.au/nsw/the-history-of-greyhound-racing-in-nsw-after-mike-baird-announces-ban-20160708-gq1ai2.html>,

Wood, Patrick. "Vegetarians, Vegans 'Hated and Bullied in Australia' Author Says", *ABC News Breakfast* [online], <http://www.abc.net.au/news/2016-08-02/vegetarians-vegans-hated-bullied-australia-richard-cornish/7680900>, published and accessed 2/8/2016.

# The facilitation of adoption and use of text intensive mobile services by low-literate users.

Muzi Matyila, Adele Botha, George Sibiya



Engaging with Participation,  
Activism, and Technologies,  
13<sup>th</sup> Prato CIRN Conference  
November 2 - 4, 2016 · Monash Centre,  
Prato Italy



# Introduction and Background

- Current state of mobile phones in relation to other telecommunication technologies
- What are mobile services and what is the significance of text intensive mobile services?
- Current use of mobile services by low-literate users
- How do text intensive mobile services impact low-literate users?
- What tools can be explored to facilitate the use of text intensive mobile services by low-literate users?

- Mobile phones transcend classical person to person communication
- Mobile phones eclipse fixed line telephones in communication
- Mobile phones enable knowledge and information sharing
- Mobile phones facilitate and support mobile services
- Smart phones provide extensive support of mobile services

- Voice communication, messaging and data services supported simultaneously facilitating knowledge sharing and dissemination
- Mobile services facilitate socio-economic participation among individuals
- Text provides simple and direct access to information with impact on socio-economic facilitation
- Literacy challenges foster the emergence of illiterate individuals and individuals with different degrees of low-literacy

- Technology acceptance models investigated for facilitating use of text intensive mobile services by low-literate users
- TAM adopted in light of proven validity among competing models
- PRISMA used to identify an appropriate version of TAM for use toward low-literate user acceptance of mobile services

## Related work

- Literacy requirements of mobile services
- What are low-literate users in the context of the current study?
- Challenges experienced by low-literate users with text intensive mobile services
- Potential benefits of designing text intensive mobile services accommodating low-literate users



- Mobile services inherently contain text – posing challenges to low-literate users
- Mobile services require some degree of literacy – low-literate users impeded from fully utilizing them
- USSD and SMS extensively used in most sectors inherently posing challenges to low-literate users
- Typical challenges of text intensive mobile services to low literate users
  - Cognitive overload
  - Accessibility problems discerning numerous text

- Interface designed for low-literate individuals may benefit other user groups e.g., aging populations
- Technology available for facilitating mobile services accessible to low literate users
- Practitioners need to play a role in this regard

# What do other researcher say – literature review

- Low-literacy
- Mobile services
- The technology acceptance model (TAM)

# Low-literacy

- What is low-literacy?
- The significance of literacy

- Classical definitions based on the ability to read and write
- Definitions based on the acquisition of intellectual skills associated with basic competencies in reading, writing and other educational measures
- Literacy plays a significant role in socio-economic participation putting low-literate users at a disadvantage

# Mobile services

- What are the different categories of mobile services?
- Where do mobile services fit in M4D?
- The accessibility of M4D services to low-literate users
- What tools may be explored to facilitate the use of text intensive mobile services by low-literate users?

- Mobile services entail all applications on a mobile phone towards the user
- Mobile service categories
  - Basic services – voice calling, messaging services
  - Advanced services – mobile web, email, social media
- Social and community based interventions; self-expression and articulation; consumption services (games, etc.)
- Part of M4D initiative providing information and knowledge based services across different sectors
- Some M4D services are text intensive and inaccessible to low literate users excluding these users in socio-economic participation

- Acceptance models may shed light on the use of text intensive mobile services by low-literate users
- The most popular and extensively validated of the acceptance models is the technology acceptance model (TAM)
- TAM has been a model of choice for some time – potentially elevating its status among competing models



# The technology acceptance model (TAM)

- How credible is TAM?
- How does TAM facilitate (new) technology use?
- How do users generally adopt a technology?
- Is there a version of TAM that can be used to explain the use of text intensive mobile services by low literate users?

- TAM has been used in a number of studies to understand and explain new technology acceptance, adoption and use
- Acceptance precedes adoption and non-adoption is unlikely to lead to use
- User acceptance explaining is matured in contemporary Information Systems

- The attributes of TAM; perceived ease of use and perceived usefulness determines the intention to use which affects actual usage
- The acceptance of a technology may be affected by its attributes, characteristics and general appeal to the user
- Users will adopt a technology if it adds value to their day to day activities
- The preferred reporting items for systematic reviews and meta-analyses (PRISMA) will be used to select the appropriate version of TAM to be adopted in the study

# Selecting a version of TAM appropriate for low-literate users

- What is PRISMA, its origins and motivation?
- How was PRISMA used in the current study?
- What were the results of using PRISMA on TAM?

- A systematic literature review is necessary on TAM to identify an appropriate version applicable to the study
- The PRISMA statement is the evolution of the Quality of Reporting of Meta-analyses standards (QUOROM) statement and generally provides weight to literature reviews
- The PRISMA statement was used to guide the selection of a version of TAM appropriate to the study

# Outcomes (Discussion)

- What were the results of PRISMA use on TAM?
- Are there particular attributes of TAM which are significant in explaining the use of text intensive mobile services by low-literate users?
- What are the next steps?

- The original TAM contains attributes necessary to understand and explain the needs of low literate users in adopting, accepting and using text intensive mobile services
- PRISMA enabled the filtering of relevant articles on TAM from 178 to 17
- From the 17 articles, detailed analysis revealed that perceived ease of use and perceived usefulness are significant in the use of text intensive mobile services
- Subjective norm and social influence united theory of acceptance were elicited from other versions of TAM as significant, but were not considered in the study

- TAM studies analyzed paid insignificant attention to user diversity due to bias on mainly developed countries where literacy generally poses an insignificant challenge
- PRISMA showed that despite the popularity and power of TAM little attention is given to mobile services particularly for low-literate users



# Conclusion

- Significance of mobile services
- The challenges of text intensive mobile services to low literate users
- What are the next steps – possible future research?

- Mobile services, particularly text intensive mobile services play a significant role in socio-economic participation
- Challenges relating to cognitive overload and discerning numerous text inhibit text intensive mobile service access by low-literate users
- TAM provides an approach that can be used to facilitate access for low-literate users
- Practitioners need to consider user diversity when designing applications especially text intensive mobile applications.

...Thank you...

# Larry Stillman –PAR workshop Prato 2016

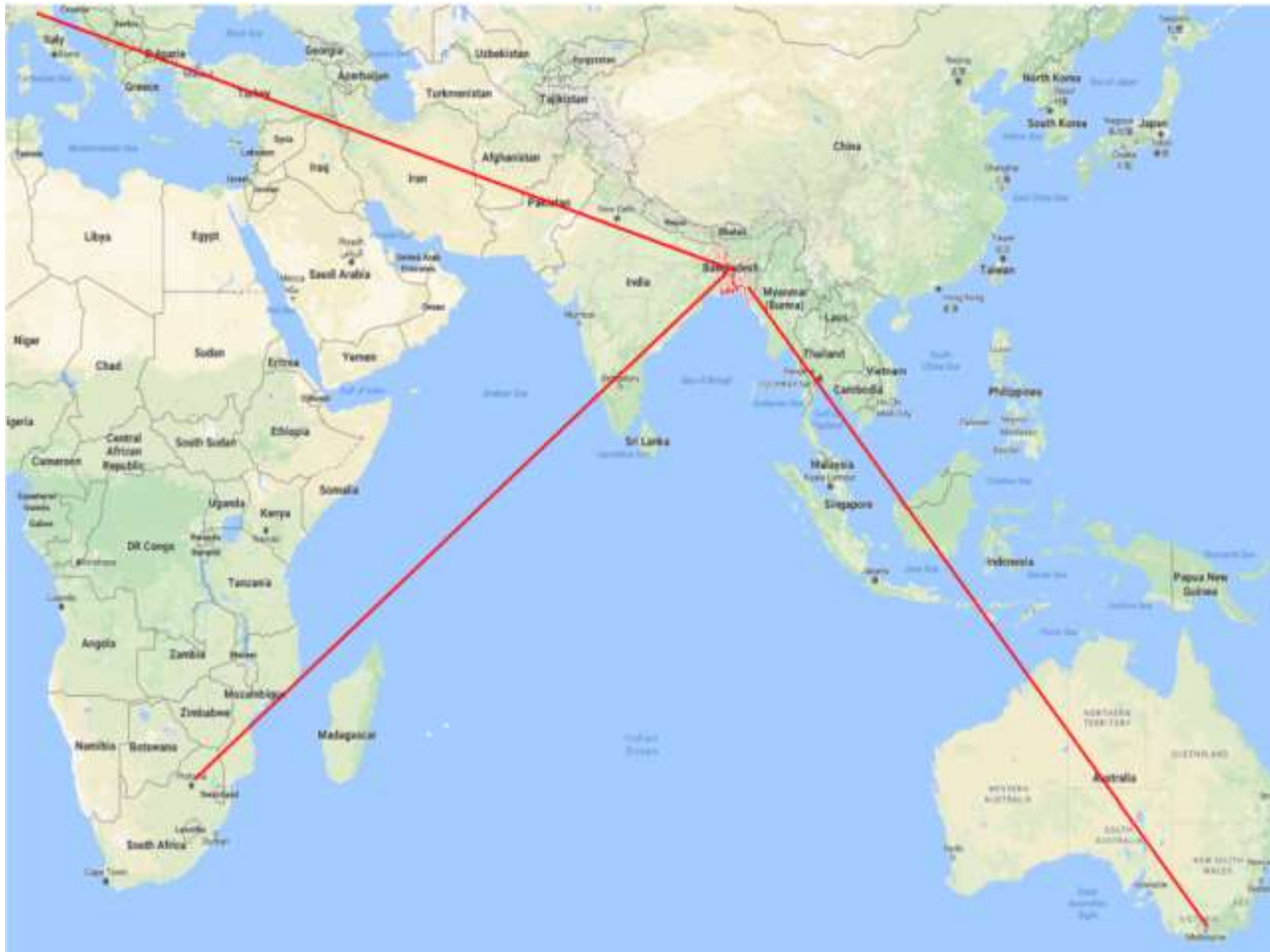
## সাক্ষাৎকার গ্রহণ : শেখ রোকন







অস্ট্রেলিয়ার মনশ বিশ্ববিদ্যালয়ের সিনিয়র রিসার্চ ফেলো ড. ল্যারি স্টিলম্যান ওই প্রতিষ্ঠানের সঙ্গে ২০০০ সাল থেকে যুক্ত। এর আগে ১৯৯৭ সাল থেকে তিনি অস্ট্রেলিয়ার প্রথম পাবলিক ইন্টারনেট সার্ভিস ভিসনেটের সামাজিক-প্রযুক্তি বিভাগে কাজ করেছেন। ১৯৯০ সাল থেকে তিনি কাজ করেছেন এথনিক কমিউনিটিস কাউন্সিল অব ভিক্টোরিয়ার কমনওয়েলথ অ্যাডমিনিস্ট্রিটিভ রিভিউ কাউন্সিলে। মনশ বিশ্ববিদ্যালয়ের পক্ষে তিনি ইউনিভার্সিটি অব সাউথ আফ্রিকায় অতিথি অধ্যাপক হিসেবে গবেষণা করেছেন এবং যুক্ত ছিলেন সেখানকার ডিজিটাল ডোরওয়ে প্রকল্পে। বাংলাদেশে তিনি অক্সফাম ও মনশের যৌথ উদ্যোগে বাস্তবায়নাত্মক 'প্রতীক' প্রকল্পে শীর্ষ গবেষক হিসেবে এখন দায়িত্ব পালন করছেন। ল্যারি ২০০৬

সালে মনশ বিশ্ববিদ্যালয় থেকে প্রযুক্তির সামাজিকীকরণ বিষয়ে পিএইচডি ডিগ্রি লাভ করেন। এর আগে তিনি অস্ট্রেলিয়ার মেলবোর্ন বিশ্ববিদ্যালয় থেকে স্নাতক ও যুক্তরাষ্ট্রের হার্ভার্ড বিশ্ববিদ্যালয় থেকে স্নাতকোত্তর সম্পন্ন করেন। তার সম্পাদিত সর্বসাম্প্রতিক বই 'সোস্যাল থিওরি ফর কমিউনিটি অ্যান্ড সোস্যাল ইনফরম্যাটিক্স' (২০১৪)

# A global project



## Intervention strategy

 <p><b>INTERACTIVE INFO/ KNOWLEDGE SERVICES</b></p>	<p><b>COMMUNITY ACTORS</b></p> <p>Associations, Information Mediators and Info Leaders, participant families</p>	<p><b>'INSTITUTIONAL STAKEHOLDER' ENGAGEMENT</b></p> <p>a) Project design &amp; implementation</p>
 <p><b>Mobile &amp; other media</b></p>	<p><b>INSTITUTIONAL ACTORS</b></p> <p>Focus on communications development/response with the target communities</p>	<p>b) Social/technical processes outcomes, learnings &amp; effectiveness</p> <p>Bottom-up Community Engagement</p>
 <p>Based on recursive info cycle of community needs structures/politics</p>	<p><b>OXFAM BD INFO WORKERS</b></p> <p>Action Research Agents Field Partner NGOs</p>	<p><b>TECHNICAL R &amp; D FOCUS</b></p> <p>Monash 'technical research' Higher Degree students Mobile platforms &amp; applications</p> <p>Bangladeshi Universities Field and research strategies with Oxfam [Field and research strategies with Monash]</p>
 <p>Voice/Data/ Interfaces Sending and Receiving to &amp; from the community in response to their needs</p>	<p>Mined for evaluation /tech research/ project design</p>	<p>Practical Outcomes for Oxfam; incountry, 'corporate' &amp; beyond Research outcomes for Monash. Social-technical and technical. Benefit Higher degree students</p>

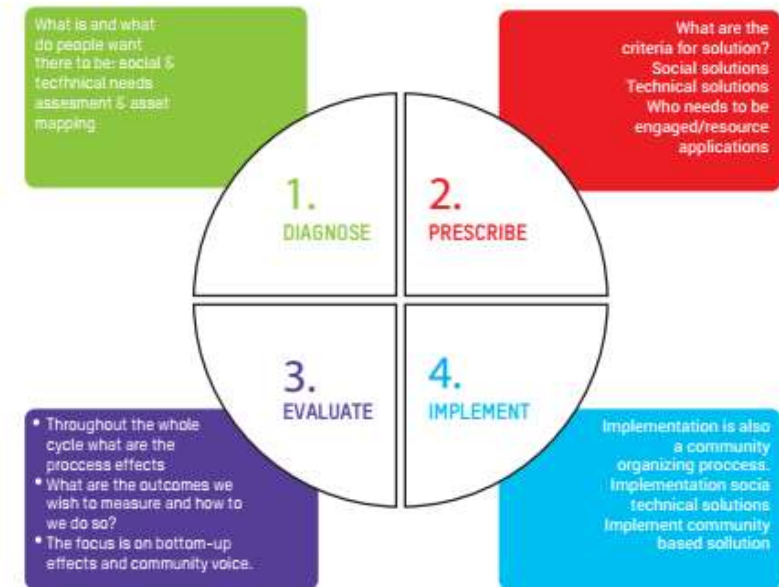


There are two overarching research questions that PROTIC seeks to investigate in the context of PAR as a process, but also an outcome:

- To what degree has a Par plan resulted in ICT-related outcomes?
- What “degrees of empowerment” have been achieved? Collaboration? Co-journey?
- What do these mean from a NGO perspective?
- What do these mean from an academic perspective:
  - There is an ongoing ‘creative’ tension.

### Participatory Action Research

‘[The] first goal of the overall participatory and action-oriented research process is to support action on a specific issue—the first form of social change ... [The] second form of social change ... is to transform the social relations of knowledge production so that people who have only been passive recipients of knowledge become participatory knowledge producers whose knowledge can inform action and build power’.<sup>2</sup>



# The practice reality is far more complex



- In a multi-levelled, multi-partner project, it is impossible to achieve participation in all levels and power translations/transformations.
- Symbolism is important in Bangladesh (performatives).
- For example, conducting field research interviews is a complex chain of people and data to manage (across languages, time, space)
- More like a highly conscious form of inclusive and collaborative research which aims for ongoing critical reflection by key (higher level) intermediaries on the nature of inclusion and participation and ongoing project adaptation. Even «co-creation» is not always achievable, though there has been as much consultation as possible despite the security situation that has restricted field engagement.
- We are getting a knowledgeable and community voice despite this, despite the lack of transformation of the relations of information production (so far)

Tinkler, B. (2010). Reaching for a radical community-based research model: two community-based research experiences lead to a conceptual model that puts control in the hands of the community. *Journal of Community Engagement and Scholarship*, 3(2)

# What does this mean for a major internationalizing research-oriented university (or at least academics trying to make sense)?

- Putting words into practice:
- For Monash University its global engagement , “From international research opportunities to global community relationships, we focus on how we can empower people to make a positive impact globally.” <http://www.monash.edu/international>
- Creative manipulation of academic and administrative processes
- Not all academics are on the same plane (social and technical world views and goals are very different); not just cultural differences withwith faculty, but of course, between countries
- Developing partnerships with incountry NGOs and incountry universities is challenging and 7x24; the real world (terrorism, earthquakes etc)
- Data %\$&\*\$^!!!
- Related and more distant fields exist in silos and reinvent intellectual wheels around core texts and problems ( dead white men: Adorno, Horkheimer, Marx, Foucault) and still-alive Habermas, Amartya Sen, Marta Nussbam .
- Information Systems has an abstruse and highly-constructed literature on ‘emancipation’ that has an increasingly barrier for ‘amateurs like us’. What should we do?
- And complexities of post-modernist post-colonial, feminist, brown, (anti)-subalternist intersectionalist paradigms taken up in Development Studies and elsewhere. Becoming educated (and liberated) is highly demanding.  
  
Do these add more to the superb chapter in the Handbook of Qualitative Research 3 on PAR by Kemmis and McTaggart?
- If you are trying to run a practical grass-roots project in a very complex environment, and it is 40C, and you are 300 miles from Dhaka, other than in the most general ways is any of this relevant?
- Positivist /traditional research & publication outcomes can become problematic.



# Jocelyn Williams in NZ has a good take of the issue

- The ways in which we think about our part in co-construction as multiple co-authors, actors, participants and passersby is fundamentally important for the process and products. Our involvement, the parts we play and how deeply we think about these, both determines the value of the products of this process, and interacts with the outcomes via multiple audience reception and engagement with the product.
- The product of the co-creative effort gives the story new form as it makes its way in the media ecosystem. Thus, in facilitating ... a deeply ethical commitment is implied.