Information, Development and Social Change Programs in Information Schools

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Report Objectives:

-The object of this report is to explore opportunity spaces for dynamic research networks and agendas focused on information, development, and social change. Research networks will include faculty, master's and doctoral students across information schools who will generate new paradigms for meeting social challenges through information science, new design methods for community inquiry, and evaluation methods to measure the effectiveness of these initiatives in affecting social change through mechanisms such as efficiency of resource utilization. Development in the context of this report refers to economic, social, and infrastructure capacity building initiatives in both emerging and developed economies.

-Introduce new directions for training information professionals for social impact careers at iSchools

-Identify broad cross-cutting strategies to transform learning and engagement around information, development, and social change across a broad range of iSchool specializations (Community Informatics, Human-Computer Interaction, Archives and Records Management, Information Policy, Incentive-Centered Design, Information Analysis and Retrieval, Library Science, etc;)

-Catalyze further thoughtful discussion and inquiry into how best to take advantage of these opportunities at the University of Michigan School of Information and in the wider iSchool Movement

-Identify short term and long terms strategies for program development and implementation in the social impact arena at the University of Michigan School of Information and other information schools

Report Sections:

Appendices:

Introduction:

Emergent forces and trends across a broad range of societal and cultural arenas suggest that information-facilitated changes in the way community and global life is organized are accelerating at remarkable rates. As , for example, the global recession has deepened, better workforce development, health care restructuring, cyberinfrastructure, and sustainable development practices have become priorities, accompanied by calls to meet the human rights and development challenges of the Global South. These development challenges (of both developed and developing economies) have become so complex and interrelated that it is no longer possible to solve them one at a time. Jones (2009) suggests that "they have become massively scaled, global problem systems- each one a cluster of wicked problems." Concurrently,the efficiency and power of information and communications technologies is reaching a point where these resources can play a modest but important innovation role in modeling, analyzing, and solving problems such as these in ways never before imagined. In response to the emergence of these global problem systems and computing advancements, this report suggests a critical role for information science researchers and practitioners.

This report presents a case for the establishment of research networks and curricular programs housed in information schools that will investigate critical connections between information, development, and social change. The report also identifies roles for iSchool graduates in social impact work that will develop out of these research programs and outlines shifts in training practices needed to develop the necessary skill sets. These roles will require new skill sets in information brokerage and information choreography across fields.

New conceptual frameworks are needed for understanding the social implications of mobile technology, information-driven movements in communities, and collaborative innovation trends. New paradigms are also needed to direct how these trends relate to the training of information professionals in a post-desktop world where information resources are abundant, attention spans are limited, and value is shifting towards information filtration and management expertise. A key driver for this initiative is the premise put forth in Stokes' compelling Pasteur's Quadrant framework, which asserts that "the drive for new knowledge and pursuit of application can be combined in a single effort (Stokes, 1997). "Drawing on this approach, the report makes a case for experimental research agendas that promote the use of applied techniques designed with built-in mechanisms for community transfer . Research priorities in this area could focus on exploring open knowledge infrastructures and information-enabled social change frameworks, seeking to identify ways in which they can be leveraged to meet the challenges of an age of multipolar globalization, climate change, and persistent health and human rights challenges.

Part I: Information, Development, and Social Change Programs: Challenges and Opportunities

Forces, Trends, & Impacts:

Overview:
In this section, forces and trends that inspired the development of this report are discussed. Information innovations in a broad range of arenas are described including cyberinfrastructure, the political sphere, social networks, education, healthcare, the private sector, and organizational forms for social impact work. Research questions relating to these areas are introduced.

Technology:

The role of information technology in individual empowerment through access to learning, medial care, economic resources, and civic participation is fundamentally shifting. This is primarily due to the growing feasibility of pervasive access to technical resources world wide. As Moore's Law predicted (Moore, 1975), technical capacity in computation, communications, and storage continues to double roughly every two years. There is increased investment in, and proliferation of, cloud computing resources that enable virtualized resources and highly scalable infrastructure at low costs. The combination of Moore's Law and cloud computing advancements amounts to exciting potential in the development arena. Technological breakthroughs in networking infrastructure are enabling increased access to wireless networks in remote regions. With cloud computing services reducing start-up costs, sophisticated services can be developed on generic platforms and remixed in a variety of ways, the equivalent of information and communications technology "lego sets". Entrepreneurs in emerging economies can access these resources cheaply or freely. In order for these resources to empower individuals and organizations in developing nations, the appropriate infrastructures (physical, cyber, knowledge, and social) must be in place to support these developments. Broadened participation in development activities is increasingly a viable option now that seamless coordination across time and distance is possible through advanced computer-supported cooperative work (CSCW) tools. CSCW tools support a broad range of "four quadrant" (Lowy & Hood, 2004) work experiences, enabling "different time-same place,""different time-different place" "same time-same place", and same time-different place" collaborations. These advances in access and available resources bring with them associated risks in the form of threats to privacy and

growing concerns about export control of ICTs sensitve to abuse potential.

Government and Civil Society:

In the political sphere, a wide range of initiatives across the globe have appeared that explore the intersections between information and communications technologies and political economy. In the United States, many of these projects are aimed at increasing transparency in the democratic process through technology-enabled access to information. OpenCongress.org is a site that allows users to add meta-data to portions of legislative bills and transmit those contributions to their representatives, shifting the dynamics of how citizens can engage with elected officials. Using a public database, Maplight.com "illuminates the connection between campaign donations and legislative votes," promoting accountability between elected officials and their constituencies. A new breed of civic hacktivists are also emerging on a grassroots level, leveraging access and availability of information to expose truths and to support or deny political claims. Rigorous evaluation is needed to measure the success of these initiatives, exploring the degree to which these programs are effective in meeting their goals, what organizational forms suit which initiatives, the demographics of users, and the implications of social norms and behaviors developing in these systems.

Social Networks:

Virtual communities of activists are rallying around specific causes and ideas, creating rapidly expanding fields of leverage around their work, as prophesied in Clay Shirky's (2008) "Here Comes Everybody: The Power of Organizing without Organizations". The Social Computing for Social Change (sc4sc) movement is a good example of a vastly networked e-community that is quickly gaining ground in the social impact arena. Crowdsourcing is the dominant mode of organizing in many of these communities, which often champion web-based and mobile micro-finance, micro-franchise, and micro-volunteering initiatives. The bulk of these projects employ micro-contributions tactics reminiscent of Weick's (1984) "small wins" approach to social change work.

A web-based trend impacting political economies are cases of political protests and movements organized through social networking sites, most recently through the micro-blogging services Twitter and the social networking service Facebook. The recent acceleration of this trend is frequently attributed to the success of the Obama Campaign (Perlmutter; Haynes & Pitts, 2008). Strong examples of this kind of organizing include a 2008 flash-mob style political protest in Moldova (Rutland, 2009) and the organizing of Iranian young adults and global supporters during the June 2009 contested election.

The Iranian election case offers a key example of a high-impact social change movement that evolved and took root as a viral Twitter trending topic. Within 48 hours, hundreds of thousands of Twitter users worldwide had turned their profile avatar green and their location to Tehran in an effort to express solidarity and provide cover to internal internet users being tracked and arrested by the government. Over 2,000 proxy servers

were shared around the globe in an attempt to assist Iranians in getting around government controls blocking access to the Internet. The U.S. Department of State contacted Twitter and asked that they delay routine maintenance schedule for that day due to the election (Pleming, 2009), raising interesting questions about the role of government in social media. News updates via social networking sites rivaled CNN's coverage of the event, as legitimate sources on the ground sent SMS messages to Twitter and Twitter-based spam continued long after foreign journalists had been expelled from the region (Taylor, 2009) . The Iranian government was accused of Deep Packet Inspection (DPI) to identify and arrest organizers purportedly facilitated by western internet service providers Nokia Siemens Networks. Although ultimately the charges were later rebutted, the case inspired the introduction of legislation in the Senate to sanction companies that export sensitive technologies to Iran (Rhoads & Chao, 2009).

As this dense example illustrates, the development of new forms of civic behavior and the rise of global social movements require that we reassess our understanding of what it means to organize in the information age, what policy redirection and interventions are needed, and how technologically-facilitated movements can be better developed and managed.

Science:

Citizen scientist micro-volunteerism initiatives are using similar techniques to mobilize individuals to contribute to the tracking of ecological trends (Zimmerman, 2009), opening up the world of scientific research to a much broader range of participation. Research in this realm is needed to guide what to do with the data collected, how to collaborate and develop appropriate tools to facilitate collaboration, and how to organize e-communities of citizen scientists. On a deeper level, the citizen scientist movement is one among many trends that suggest "rapid transformation- indeed a further revolution- in how we create, disseminate, and preserve scientific and engineering knowledge (Atkins et al, 2003)." Additionally, research is being conducted as to how information is being re-sued across expert fields (Faniel, 2007).

Publishing Platforms and Higher Education:

New publishing models are another force shifting research processes in novel directions. The concept of open and participatory research is a rich area for further iSchool inquiry in the social impact realm. In 2008, Harvard University became the first university to adopt an open-access mandate requiring faculty to allow the university to publish their work for free access online (Guterman, 2008). This decision was a response to the growth of the open access movement rooted in guiding philosophies of the free and open source software movement (Atkins et al, 2007), as well as concerns over the commercialization of higher education publication at the expense of the public good.

Other universities will likely follow suit, gradually shifting the entire academic publishing industry. Open access practices are also gaining momentum in higher education through open education resources initiatives patterned after the MIT OpenCourseWare model. These initiatives utilize open access publishing models such as the Creative Commons licensing system. At the University of Michigan, these types of initiatives are extending their focus to the development context, creating two-way partnerships with Ghanaian universities to exchange medical education materials. Although it is widely understood across social science disciplines that reciprocal interventions are desirable, there is limited awareness of best practices in this area. It is critical for researchers to track both successes and failures of development projects. Information scientists can play an integral role in designing systems for organizing development knowledge infrastructures around this work and providing valuable project evaluation strategies for this field.

In higher education, research centers have developed that focus on the social, economic, and policy implications of the Internet and emerging technologies. Many of the centers developed to date have a policy focus, such as Stanford's Center for Internet and Society and the Berkman Center for Internet and Society at Harvard. Information Schools have often been at the forefront of behind-the-scenes work in the social impact area without declaring a specific space for innovation within their academic structures. To date, no robust research networks focused on information, development, and social change have been established. Roles for iSchools in driving research and development in this area are rapidly expanding and becoming increasingly vital as new web-based and mobile technologies proliferate and inform or fail to inform practice in a wide range of fields from health, to education, to public policy, and beyond.

Healthcare:

In the medical arena, telemedicine interventions that connect health care practitioners to rural and poverty-stricken populations represent another area where deep research investment could lead to innovative solutions. Researchers such as Andrew Clemente and his colleagues at the University of Toronto are pioneering work in this area with rural remote populations in Northern Ontario (Clemente et al, 2004). Mobile technology is increasingly being employed in ICT4D health interventions as well. Here we find difficult problems that would likely benefit from information-driven solutions. A recent General Electric corporate social responsibility project to engineer low-cost ultra-sound machines ran into unforeseen challenges when the designers discovered the culture they were working in did not allow females to administer ultra sounds without the presence of a male doctor. The tradition of having a male doctor present during ultrasound evaluations in rooted in a cultural preference for male children, sometimes even leading to infanticide. This example illustrates the complexity that materializes when "objective" information is introduced in cultures where there is no history of non-government regulated information sources. The challenges inherent in creating culturally relevant interventions to these conflicts are in part information management problems. Health informatics and information policy researchers working on

community-based initiatives in iSchools can take on these questions in partnership with researchers across the social sciences.

Private Sector:

Healthcare and mobile banking micro-franchises in developing countries are two among a host of new organizational structures supporting social change work. There is increasing interest in entrepreneurial investment in developing countries and market based approaches to social impact work, as evidenced by the rapid expansion of the social entrepreneurship movement and the popularity of Base of the Pyramid (BoP) scholarship (Prahalad, 2006) . In some cases low-tech medical innovations designed in the development context are actually more efficient than devices used in conventional medicine, as was the case with the recent invention of a less-invasive device for gynecological exams (Hammond, 2008) . This phenomenon challenges the notion that development processes in the first and third world are on completely different trajectories, suggesting the dichotomy between "development" in emerging economies and domestic development is ripe for deconstruction.

In the commercial sector, software and software-as-a-service initiatives related to politics and development more broadly are now common. Startups such as Ushahidi.com and FrontlineSMS.com have directed mobile social technology towards crisis informatics through aggregation of SMS messages, most recently used by Ushahidi to support the tracking and mitigation of election violence in Kenya. Other new organizational forms include corporate social responsibility initiatives and hybrid nonprofit / for-profit ventures using the newly established low-profit limited liability corporation (L3C) status. Funding models for these initiatives have taken on new forms as well, including venture capital investment in social impact work and the rise of philanthrocapitalism and its critics (Edwards, 2008). In her 2007 Technology Education and Design (TED) conference talk, Katherine Fulton of the Monitor Institute cites mass collaboration, peer-to-peer lending, aggregated giving, innovation competitions, and social investing as five key trends shifting the funding infrastructure of the social impact arena (Fulton, 2007).

In the design world a new breed of hybrid consulting groups is also emerging that combine design with other disciplines, such as ethnography, psychology and anthropology, to tackle social problems as well as commercial ones (Kelley & Littman, 2005). Foundations are supportive of this development, creating partnerships with well-established innovation design firms such as IDEO (Gates Foundation) and Frog Design (W.K. Kellogg Foundation). Program officers for foundations funding this kind of work indicate that the biggest barrier to success in these partnerships is difference in cultural values between designers and nonprofit clients. There are opportunities here for iSchools to generate information theories to guide the direction these partnerships take, providing expertise in how better to ask contextually-relevant questions. Success will require mediating between the problem-driven perspective of the designers and the

mission-centric perspective of the nonprofits.

These initiatives suggest a growing interest in the potential for the development of contextual design tools attuned to local needs. Information professionals and researchers bring to this process an appreciation of the contexts in which people operate, taking into consideration the economic, social, and cultural differences that affect the ability of stakeholders to engage in the co-creation of interventions. iSchools offer fertile ground for the development of user-centered design approaches to social change work that acknowledge the power of grassroots and community organizing knowledge infrastructures.

Public Sector:

Traditionally, the library information science field has contributed greatly to this arena. The Information and Referral (I&R) system, developed in the 1960's in public libraries is a precursor to community information provision. Librarians served as facilitators between social services organizations and the population they served by actively making recommendations on services and ensuring a connection was made between these services and the information-seeker (Long, 1973). Community organizing research over the last decade(Moser, 1998; Saleeby, 1997) has stressed the importance of strength and asset-based community development approaches to addressing pressing human rights, environmental, and socio-economic challenges. This imperative is echoed in Martha Nussbaum and Amartya Sen's capabilties approach, as introduced in "The Quality of Life" and further developed in "Development as Freedom" (Nussbaum & Sen, 1993; Sen, 1999)." The capabilities approach is a functional approach to welfare economics that views poverty as “capability-deprivation” and emphasizes personal freedoms over simplified access to resources and utilities. This approach led to the development of the UN’s Human Development Index (HDI) and has led to rapid expansion of community-based and driven (CBD) initiatives, which have had varying degrees of success. For example, the World Bank has invested heavily in these initiatives, though no studies exist that have established a "causal relationship between any outcome and participatory elements of a CBD project (Mansuri & Rao, 2003)." The field of information science can bring to this process conceptual frameworks for evaluating these projects through an information lens and the ability to focus on re-designing systems of communications rather than "fixing" or "resisting" them.

The Changing Work World

In light of these trends, it is critical for information schools to attune their curricular offerings and training orientation to the challenges of the changing work world that is emerging in response to these forces. According to experts across sectors interviewed for this report, the context of the workforce students will be entering is characterized by…

1. Rapid Change

2. High levels of uncertainty based on abundance of information

3. Breakdown of porous boundaries between social sector, private, and pubic organizations

4. Proliferation of new organizational forms shaping business-societal relations

5. Adaptation to multipolar globalization and multiple competing rule sets and norms

In order to meet these challenges students require new forms of training…

1. to increase adaptive capacity

2. to re-orient approach towards uncertainty away from the 20th century "must reduce uncertainty as fast as possible" to "how can uncertainty be mined as a resource? (Blau, 2009)"

3. to develop the ability to understand outside contexts of systems and the ability to model complexity of systems in non-paralyzing ways using information models and visualizations.

4. to increase capacity for entrepreneurial social innovation

Part II: Information Schoools in the Social Impact Arena

As business, societal, and governmental relations rapidly shift in an age of recession, multipolar globalization and climate change, a broad range of disciplines have adapted their research agendas and curricular objectives to meet these challenges. At the graduate level, business schools and engineering departments are establishing Corporate Social Responsibility (CSR) and Social Entrepreneurship initiatives. Schools of public policy are supporting public and nonprofit management curricula, moving deeper into study of the organizational forms in the social welfare arena. Schools of social work are developing "macro" specializations based on management of human services and community organizing, furthering the tradition of Jane Addam's "Hull House" (Addams, 1910) economic capacity building model and establishing branches of scholarship that bear little resemblance to clinical social work practice traditions. Schools of natural resources and urban planning are developing interdisciplinary partnerships to advocate for sustainable urban development practices that are conscious of social inequity. Increasingly, universities are offering dual-degrees that cut across these disciplines and enable students to develop a deeper understanding of the opportunity spaces that exist at the edges of disciplines.

What is missing from this space are contextual design practices for tying these disparate approaches together through information design practices. Information researchers and professionals have expertise in how information flows through a system in how its use can be maximized. These practices could lead to the creation of viable models for the formation of coalitions and joint ventures. The information science field has an opportunity to bridge the gap rising in this realm as an emerging awareness of the need to collaborate across fields outruns the mechanisms available for doing so effectively. Information researchers and professionals know how to convene individuals and groups in a distributed fashion, how to ask the right questions about information flows in projects, and how to develop visualizations of complex networks. Information schools have a natural affinity with interdisciplinary paradigms and thus provide a natural space for experimentation in the development of information design methods that facilitate information exchange effectively across fields.

It is critical for iSchools to foster the development of information leaders dedicated to human capacity building. We need collaborative leaders that can draw on theoretical and experiential expertise developed during graduate school to enter the workforce well poised to serve as inter-organizational brokers, technological innovators, and change catalysts. Current forms of training rely too heavily on the assumption that students will intuitively develop strategies for applying the conceptual theoretical knowledge they have developed and learned in research universities. The notion is rendered even less plausible in a climate requiring entrepreneurial behavior. For new information-driven innovations to move from the research realm to practice, a robust strategic and operational infrastructure to maintain these transfers is needed at the university level. iSchools must develop sustainable partnerships with philanthropic, for-profit, public

and non-profit organizations must to be developed and nurtured through consistent engagement opportunities and feedback loops.

The research agendas and institutional norms guiding research universities will need to shift to enable more direct transfers of research-to-practice (praxis) innovations by students. This shift requires an integration of the culture of inquiry that already pervades academe with cultures of experimentation and idea-networking. This integration will breed innovation in academic programs Project-based course work is just one facet of this needed integration. Multi-pronged efforts to encourage the articulation and dissemination of praxis innovations are critical to successful information brokerage for social impact. "Translational Research" in medicine provides a great example of praxis innovation (Zerhouni, 2007). For years, pure researchers studied entities in lab settings with no real concern about transferring results directly to clinics. Translational Research emerged as an area of research focused on getting "bench to bedside" as quickly as possible. Translational Research focuses on getting groups of clinicians and researchers talking, asserting that bridges are necessary between the two settings and that research on how best to take new discoveries to the clinic is itself a form of research, now widely supported. This process does not require radical shifts; instead it continues to ensure that pure research and clinical testing practices remain intact. The logistics of how to manage this kind of research approach in information schools have not yet been mapped out but are necessary steps in our current environment.

Universities that are able to break the bounds of the institutional divide between the realm of pure discovery without application and the world of application of theories will be better prepared to meet the challenges of the 21st century. These schools will be pioneers in the movement to evolve higher education policies and practices. Randy Bass of Academic Commons asks “how do we make any headway in a landscape where applied knowledge about learning is inchoate, where forms of learning are expanding in ways higher education is poorly situated to accommodate, and the technological contexts are shifting rapidly and radically? We need, in short, to merge a culture of inquiry into teaching and learning with a culture of experimentation around new media technologies (Bass, 2009)."Building and maintaining sustainable and radical partnerships between the university and foundations, government agencies, corporations, nonprofits, and communities is the first step in this process. Several models for structuring these partnerships are in early stages of development, including research bounty systems developed by the Social Science Research Council (SSRC) that link academic researchers with questions posed by organizations. There are also models for the development of pedagogically infused applied research and design methods in higher education settings, such as the Charette model (Rhoten, 2009). The following section outlines the basic components of a program focused on information, development, and social change with built-in mechanisms for facilitating the transition from a basic-research driven culture towards an innovation-driven academic culture.

Part III: Components of a Program

1. Research Agenda

2. Curriculum Development

3. Local and Global Partnerships

5. A Day in the Life of a Student in an Information, Development, and Social Change Program

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Overview:
In this section, fundamental building blocks for Information, Development, and Social Change programs are introduced. Research priorities are explored, clusters of sub-topics to include in curricula are presented, and guidelines for the development of local and global partnerships are outlined. Finally, a virtual day in the life of a student in an Information, Development, and Social Change program is described.

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1. Research Agenda for Social Change Work through an Information Lens

Research in the information, development, and social change realm requires eclectic mixed methods approaches that combine robust empirical data and qualitative methods. Applied research in communities often requires qualitative assessments in order to be relevant for professionals in the field. A wide range of scholarship across fields exists that advocates for the promotion of an appropriate synergy between the often-polarized approaches of applied research and quantitative methods. Despite awareness of the need to fuse these approaches, there are few precedents to guide the development of research agendas with built-in community and industry transfer mechanisms. How can we create contextually-relevant collaborative research efforts that have benefits for educators, researchers, and industry partners across sectors and work in symbiosis with the current institutional constraints of a research university? What should partnerships across sectors in the social impact realm look like?

There are a number of barriers to innovation that prevent social impact agendas from moving forward in an academic setting. Faculty at major research universities indicate that policy and applied work is often harder to publish. The time drain away from core research agendas that applied work requires in its current instantiations suggests that junior faculty who engage in this kind of work at the expense of high publication output, are at risk of not achieving tenure. This is counter-productive during a time period when collaboration between higher education institutions and the corporate, public, and

nonprofit sectors is needed more than ever. Partnerships between organizations and higher education are becoming more vital as internal research and design labs in corporations are losing funding, government agencies are seeking new directions for policy interventions, and nonprofits are in dire need of capacity building. Conversely, research universities such as the University of Michigan are increasingly being called upon to account for the economic pay-off of their research. This trend can be viewed both as a threat and an opportunity if partnerships are carefully scoped to honor the core missions of all the stakeholders. Development of praxis innovations that leverage connections between theory and applied work is a critical next-step in engaging universities in more productive ways with the world they inhabit. Tech transfer initiatives are more vital than ever before.

Logistically, there are a number of strategies universities can use to increase their research capacity in this area. Leveraging the master's thesis option to engage master's students more deeply in research is one such mechanism. A selective application process aimed at increasing the prestige of writing theses with social change agendas is another way to attract more students to this area. Schools can also brand themselves to attract doctoral students committed to social impact work who can also provide infrastructure to curricular development in this area through teaching commitments, freeing up social impact-oriented faculty to focus more deeply on their own scholarship. As they have a bird's eye view of what's working and what's not in the social impact realm, foundations can provide support by serving as platforms for discretionary research. They could do so by opening up their data for academic investigation and analysis connected to program evaluation.

2. Curriculum Development:

The following clusters provide topical scaffolding to organize an information, development, and social change curriculum. They are areas of research and practice that iSchools should seek to address in the development of their curricular and research programs because they reflect the vast array of opportunities students interested in social impact work can engage in and in which they can develop professional skill sets.

I. Community Inquiry: Methods, Ethics, and Evaluation

Work in the social impact arena from an information perspective requires thorough information translation and knowledge choreography of broad networks with a wide range of stakeholders. It also requires the development of next practices, rather than best practices. iSchools provide ideal grounds for aggregating research and fostering the development of these skill sets in the next generation of collaborative social impact leaders. Exposing students to the range of possibilities in this sphere is not enough. New forms of training are needed to prepare change agents to work effectively at the intersection of information, development, and social change.

Students need exposure to human-centered innovation initiatives like those in place at the IIT's in India, the business + design movement, and systems thinking school practices such as idealized and dialogic design strategies (Jones, 2009). Inter-disciplinary partnerships with Schools of Social Work with community organizing and power analysis expertise are critical to ensuring that new and compelling information design processes are culturally aware, sensitive to unique affordances of the developing world, and conscious of forces of oppression and diversity. Students must be well versed in empathically-driven intergroup relations skills rooted in improvisation methods that would not intuitively be included in an iSchool curriculum. As a recent iSchool grad working in this area noted, her position required a deeper understanding of "facilitation of group process. Helping a group reach a solution together rather than you imposing a solution. But rather guiding the process, learning from feedback and coming up with new questions that will lead them to discovery. I have found putting a solution out there, fully formed, is difficult for people to understand. But if I don't have a solution and invite them into my process for figuring out what needs to be done, they also get confused and need you to give more guidance. "

What is needed in iSchool curricula in this area are action research initiatives and catalyst design methods that strike the right balance between provision of expertise and facilitation. iSchool grads can play a key role in the progression towards Design 3.0, defined as "a perspective that requires a social, inclusive design process. A multidisciplinary design approach that reimagines systems and takes leadership towards change in social and organizational structures and systems" (Jones, 2009). Design 3.0 is also described as Transformation Design. This process goes beyond the value creation approach used in user-experience design methods, beginning to take on messier problems that require new forms of reciprocal engagement and forces designers to "trust the inclusion of nonexperts" (Jones, 2009).

Essentially, iSchools have the opportunity to generate social innovation brokers that are adept at harnessing information design methods and models and leveraging them towards the successful management of social impact work. On the human side of information, social innovation brokers require skill sets in intergroup relations, improvisation, and facilitation skills. On the technical side, social innovation brokers require rigorous training to leverage tools for computer-supportive cooperative work (CSCW) to facilitate more efficient communication on teams, particularly geographically and culturally dispersed teams. iSchools are natural incubators for the development of web 2.0 and CSCW skills that can be directed towards social impact agendas. Researchers in information schools are already exploring the social impacts of access to distributed resources, distance collaboration, and data sharing. In addition, "prior work on computer-supported collaborative work and social dimensions of collaboratories needs to be better codified, disseminated, and applied in the design and refinement of new knowledge environments for science based on cyberinfrastructure" (Atkins et al, 2003). This line of inquiry can be extended to examine how these tools impact social inequity and how they can evolve to bridge these gaps.

Cross-sector communication increasingly involves elements of translation, as the lexicons of specialized fields become more sophisticated and the need for collaboration

strategies more and more evident. Building trust in community work has long been touted as critical to successful development projects, but more scholarship is needed to identify successful strategies for building social capital in these settings. Lack of tacit knowledge plays a role in the success or failure of these projects (McNamara, 2003). Nongovernmental and public organizations have long recognized the need to develop organizing methods that transform tacit knowledge to explicit knowledge resources, an area where information scientists have a natural affinity. Information experts are aware of sense-making advancements that may offer solutions to these long-held coordination problems. iSchools can capitalize on the advancies that information experts have made in this field to facilitate cross-sector communication.

Emerging practitioners can also be trained to integrate methods for information architecture design with pedagogical frameworks that foster awareness of power dynamics and social change theories. These practitioners must be trained to ask the right kind of questions. iSchools are unmatched in their ability to generate cutting-edge research on design thinking methods such as participatory design research strategies for gathering user requirements. Combining this competency with methods for determining best-cultural fit technologies could produce significant innovations.

II. Organizations and Institutions

Infrastructures (physical, cyber, knowledge, and social) play critical roles in determining what organizations and institutions are able to accomplish in the social impact arena. Organizations and institutions can act as change agents in communities by serving as incubators for innovation, development of resource sharing practices across institutional boundaries, and development of creative policies. There are a wealth of opportunities to provide students with background on the role that information plays in shaping organizations and institutions. New organizational forms are materializing that combine incubation and resource sharing strategies to build infrastructure.

Information institutions and professions such as libraries and community centers have a rich history of community engagement practices that can be extended to the work of other fields moving into the social impact arena. Students can be exposed to innovations emerging from library science such as Living Libraries, a service that loans out people for dialogues initiatives that spread cultural awareness and combat stereotypes, or job searching and economic capacity building programs run through libraries. Libraries are also playing critical roles in orienting immigrants to their communities, aggregating community resources, and serving as neutral ground where underserved populations can be reached. Through these activities, public libraries are becoming civically engaged partners in the creation and maintenance of community activity that enhances community quality of life. Archives housed in libraries are also playing critical infrastructural roles by serving as collective memory knowledge infrastructures.

The infrastructure supporting health professions in the United States is undergoing a period of drastic change. There is much work to be done at the intersection of information and community health. Digital health grids are now possible that track the

prevalence of diseases and monitor health trends. Health informatics specializations are developing both in information schools and in schools of public health and nursing. From the iSchool vantage point, it is important for students to have in-depth exposure to some of the privacy issues inhibiting rapid development of systems for online medical records, the role of social networks in health information exchange behaviors in communities, and technological-support for information exchanges between medical practitioners in developed countries and doctors and community health workers in developing countries.

III. Information Movements, Openness and Social Change

The open access movement plays a critical role in the eco-system surrounding information, development, and social change. As the web is beginning to play a new infrastructural role in the way that highways and roads once did, open access strategies advocate for wider levels of access to that infrastructure. A deep understanding of public goods and how they function in the economy should be foundational knowledge for students studying social impact work. Students should be exposed to the breadth of materials available through Open Educational Resources (OER) initiatives so that they are in a position to spread awareness of these tools and leverage them to build capacity among populations, both domestically and globally.

It is also important that students develop an understanding of the open publishing models that facilitate access to these resources. Background should be provided in the history of the copyright system and the evolution of alternative models (i.e. Creative Commons Licenses, General Public Licenses). The history of the free and open source software movement also offers critical foundational knowledge in this area. Another related trend important to include in information, development, and social change curricula is the rise of the new media movement (web-based citizen journalism) and the decline of the printed press.

Policy and governance issues are another important area in which iSchools are active. The civic hacktivism movement is comprised of a range of grassroots projects that engage in technology development for public or civic ends without strong institutional backing. They share a common mission of transparency of information related to political economy. As the rallying cry for greater government transparency grows ever louder, students will require an understanding of the tensions and dynamics that both inhibit and promote government 2.0 strategies. Barriers to transparency and innovation in this sphere include lack of universal service, bureaucratic lag, and a lack of policy infrastructure to support these changes. The intersections between information policy and social change promotion or inhibition are just beginning to be explored. Michigan's iSchool has foundational courses in digital government and information policy that provide theoretical background on trends in telecommunications policy, low-power FM, white spaces, and deliberative democracy.

IV. Community, Technology, and Global Development (I4D, ICT4D)

The development arena provides rich grounds for interdisciplinary collaboration. Research groups in this area have started at the University of California at Berkeley, Carnegie Mellon University, several of the IITs in India, and at the University of Washington. Researchers in these contexts are exploring information policy issues in developing countries, knowledge infrastructures and development, and the role of emerging technologies in shaping the development landscape. Beyond these current activities, conceptual approaches are also needed at iSchools to develop theoretical social change frameworks for organizing around information systems in development and social change contexts.

3. Local and Global Partnerships and Applied Experiences:

While the benefits of complex interdisciplinary and cross-sector initiatives are touted in higher education, there are numerous indications that these programs are often problematic to some if not all stakeholders involved. For example, this warrants questioning of how these partnerships are formed and sustained, who benefits and who doesn't, and how insights gained through research can have applied impact. A necessary element of an iSchool curriculum that creates professionals is that of applied experiences that teach by doing. Applied projects enable students to "learn to do" rather than just to "learn to think", as discussed in Stokes' (1997) "Pasteur's Quadrant." These projects should be generalizable and extensible, reinforcing classroom learning around portable expertise they can bring to their post-master's positions.

i. Complex Interdisciplinary and Cross-Sector Projects

The development of social entrepreneurs and changemakers can be nurtured in a number of ways in higher education settings. Students who have entrepreneurial "big ideas" and are striving to work at the bounds of their disciplines should receive institutional support at a level tailored to the breadth of their vision. Pitching process initiatives for summer internship funding should be developed in this area.

ii. Community and Global Citizenship Experiences

A number of organizations are available that serve as third-party managers of student global service-learning and social enterprise experiences. Organizations rooted in the service model have a longer institutional history in the United States, though there are sustainability concerns with the models they use to promote voluntary engagement. More recently, third party managers of MBA Service Corps models have gained popularity. Institutional experts interviewed for this report tout the value of these

services, claiming these organizations are experts at project scoping.

4. A Day in the Life of a Student in an Information, Development, and Social Change Program

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Overview:
This section is a scenario planning exercise that explores what a student's day might look like if the research and curricular recommendations described above were implemented.

It is 2013. A student is entering their second semester in an iSchool Information, Development, and Social Change program. Based on her interest in cross-sector partnerships and social capital, the student has been assigned to a start-up social enterprise incubator led by second year students whose mission is to engage highly talented individuals with high-impact development projects. The enterprise is developing ways to connect retired high-level professionals with medical technology projects for use in Zambia. The idea for the design of their social enterprise developed when students were connected through a projects clearinghouse to a medical nurse working in Zambia for Doctors without Borders. The nurse submitted a request for research on how to develop low-cost medical equipment for the refugee camp where he works. Students pitched their idea for an online community to engage retirees in developing this equipment to foundations and venture capitalists sponsoring a social innovation competition at the university. During the first year of the project, iSchool students were sent to Zambia with an advisor to work with the nurse to define user needs and establish local partnerships.

The new student is joining the project in its second year. Mechanisms for transferring projects from second to first year students are in place to systematize how new students are brought onto projects. The first year student's first assignment is to direct information management and flow for a pilot team of retired mechanical engineers who are working on a design for a simple pump for a medical device formulated from the requirements gathering process the prior year. She is tasked with developing a system for connecting the engineers to retired parts distributors who know how and where to find recycled and reconditioned pumps. Retired professionals have been identified through the university's alumni association and will soon be joining the venture's online community under development by a team of second year students. Students from various graduate schools have been brought in to consult on the project and a partnership with business students that are interested in scaling the distribution of the device is under development.

The student spends the morning in a coordination workshop facilitated by a second year

student on the project. The attendees include representatives from the alumni association, a retired engineer, a retired parts operator, a Zambian social work student, and a program officer from a foundation playing a consulting role. After the workshop, the student meets with her faculty adviser to brainstorm about a potential capstone project that she may undertake to further study the online community design process through a master's thesis. Her research will involve evaluation of current efforts in relation to the problem, a comparative analysis of current providers and alternatives of similar services, and the development of a process for mediation with the involved parties to generate a sustainable information flow practices. She has an understanding that the improved efficiency or performance of the venture after the information broker has intervened needs to be measurable, and the process to arrive at the solution needs to be describable. The faculty adviser will help the student establish metrics for measuring progress on the venture. At this same time, the faculty member is evaluating information issues emerging from the social enterprise for a book chapter on health informatics and development. There is cross-over between the faculty member's research goals and the student's research interests.

To support the project there are several course options for this student to engage in, including courses on design of e-communities, information and communications technologies for development, a design course that uses charettes to engage users in the design process, a course on next generation evaluation methods, and a seminar on adaptive tools for 21st century leadership.

Part IV: Buiding on History at the University of Michigan School of Information; Focusing, Deepening, and Extending our Social Impact

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Overview:
In this section, the history of social impact work at the UM School of Information is reviewed, current challenges are described, and a vision of success approach is introduced. A strategic assessment of current resources is summarized and logistical recommendations, ideas, and opportunities for the UM iSchool's response are presented. Recommendations are broken down into subtopics; Research strategy, curriculum development, local and global partnerships, affinity group, and career development.

At the University of Michigan School of Information, the Community Information Corps (CIC) has served as a productive nexus at the intersections between theory and action. For over a decade, an eclectic range of students have been drawn to the CIC seminar and affiliated student group. These students have backgrounds in political science, anthropology, psychology, social work, computer science, library science, sociology, and consulting. According to Souden and Keith (2003), the CIC "grew out of SI's interest in applying librarianship in new ways to benefit all parts of society," and "grew out of desire to strengthen the connection between existing public interest research and projects, to create a sense of cohesion and identify around community information efforts at SI, and to identify a core theoretical framework for those activities."The Community Information Corps was originally established using a service model that attracted students who were interested in spending their spare time engaged in capacity-building projects primarily in the nonprofit sector. Students interested in pursuing this kind of work often elected a tailored specialization in the school which allowed them to branch out and take a diverse set of courses both within and outside of the department. Over time, momentum grew to advocate for a more sustainable home for this kind of work within SI. The result was a specialization in community informatics that was rolled out in the fall of 2007.

In the two years that followed, students who elected the specialization have been interested in the intersections between information science, the library as a venue for social change work, and macro social work practices related to community organizing and nonprofit management. These students often had a wide range of interests that did not naturally lend themselves to work on joint projects. One student might be interested in establishing immigrant education programs at a local library, another in providing open source software resources to a nonprofit, and a third might be interested in the intersections between information science and education reform in Detroit. During some terms, students were able to find a theme they could all support. For the winter 2008 term, for instance, the Open Access Movement and Michigan's Open

Education Resources project became that outlet for the then-cohort of students.

Over time it has become apparent that students across a broad range of specializations had an interest in doing social impact work, though they don't naturally correlate that interest with the work of the CIC. Human-computer interaction students often address social issues in their design submissions for the annual CHI (Computer-Human-Interaction) conference. Students in archives and records management are currently working on projects exploring social justice challenges inherent in work with South African Apartheid archives. Library information science students advocate for community capacity building resources developed through libraries. It is important to identify ways to link these initiatives together, encouraging cross-specialization innovations in social impact work.

Reviewing and Renewing Our Mission at SI:

An excerpt from the SI Mission Statement:
"Unprecedented change in the use of information is reshaping our personal activities, our community and organizational practices, and our national and global institutions. In managing these transformations, our society too often focuses narrowly either on extending technology or on revising social policies...The University of Michigan School of Information School of Information is pioneering the development and application of these principles and is educating professionals to lead in the information age."

As the economic crisis has deepened the state of Michigan has called upon the University of Michigan to account for the role that it will play in rehabilitating the economic health of the state. The School of Information at the University of Michigan has an opportunity to take up that call through information organizing around Michigan's critical challenges: access to jobs, affordable health care, and education. An enormous amount of potential exists, across all SI specializations, to invest in impactful research and training initiatives in this area.

Broad Vision of Success Approach

This report takes a broad cross-cutting approach to social impact work at SI, rather than focusing specifically on programmatic form. The approach is designed to take advantage of opportunity spaces that extend beyond the current infrastructure supporting the CIC program. The intent is to establish a clear sense of what elements are needed to foster the pervasive development of societal changemakers across specializations, initially de-emphasizing specific organizational forms this kind of work could take in the school (i.e. specialization, research center, certificate program). This approach assumes that strategic plans should involve generating an ideal state for the program and then outline intermediate strategies in the process to getting there.

Strategic Assessment of Current Resources and Recommendations for Next Steps

1. Research Strategy

2. Curriculum Development

3. Local and Global Partnerships

4. Affinity Group Support

5. Career Development

Overview:
This section presents challenges and assets within the current context of the Community Informatics specialization, as well as short-term and long-term ideas for modifying the specialization model and developing alternate models to promote social impact initiatives at the School of Information. Some of the recommendations are by necessity SI-wide and would be beneficial for the entire academic community.

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1. Research Strategy

Challenge: How to draw on current research strengths to innovate in the applied engagement arena?

Current Approach:

SI currently has a number of faculty who use mixed methods research methods that have intervention-based benefits for communities (exp: Tiffany Veinot's Community AIDS Information Exchange research). Faculty are engaged in research related to ICT4D and information policy (Jackson), public goods (Chen), information use in communities (Durrance), social computing for social change (Resnick), cyberinfrastructure (Aktins), and citizen science initiatives (Zimmerman), etc. Research agendas at the School of Information currently include Human-Computer Interaction, Human-Information Interaction, Information for Re-Use, Technology-Mediated Collaboration, Incentive-Centered Design, Models of Information in Use, and Information Use in Communities.

Short-Term Strategy:

1. Strengthen support for ICT4D Research Initiatives at SI by hiring more ICT4D focused faculty.

Rationale: This goal is aligned with the recent grant received by the School of Information to hire a junior faculty member in this area.

2. Strengthen support for mixed methods research projects that contain applied approaches

Rationale: Research agendas with built-in community transfer mechanisms require mixed methods approaches that account for both tacit and explicit knowledge development.

3. Strengthen research partnerships with University of Michigan entities working in the social innovation arena: The Center for Entrepreneurship, The William Davidson Institute, The Tauber Institute, and the Erb Institute

Rationale: These units on campus have missions that address social impact and there is a great deal of cross-over in the topical subjects they research.

Long-Term Strategy:

1. Establish a semi-formalized research network of diverse academics whose work is poised at the the intersection of information, development, and social change.

Rationale: No others universities have created an institutional home to support collaboration across schools in this area.

Logistics:
Potential Partners include the "Youth, New Media, and Public Participation Research Group" headed by Joseph Kahne, Mills College and the University of Washington's "Value Centered Design Research Group"

2. Create an annual conference event to convene the researchers in the

network

Rationale: Annual events build sustainability into the research network and ensure that there is an outlet for new ideas and sustained engagement. An example of an institution and community partnered conference is eChicago, co-sponsored by the Library and Information Sciences schools at the University of Illinois at Urbana-Champaign and Dominican University (http://www.echicago.illinois.edu/).

3. Establish a research bounty aggregation system, which is a matching system that links needs of organizations to research interests of faculty

Rationale: In order for practice innovations to be relevant they should be based on information needs as expressed by organizations and institutions in communities.

Logistics:
This requires establishing mechanisms for embracing case study models of research generation that benefit faculty research agendas and
Also enable skill building for professional degree students (The Social Science Research Council Research Bounty Model is one example)

4. Develop alternative metrics for tenure that measure and provide credit for demonstrated social impact work.

Rationale: Many faculty members shy away from applied projects that have no demonstrable benefit for their research. This is a contextual design problem in which the needs of faculty and their priorities are incongruent with the training needs of students in terminal master's programs. Metrics would need to be concrete measures of progress. It would be every bit as tough to succeed in this realm as in “publish or perish” academics. In this system it would be “progress or perish."

Questions for Faculty Consideration:

1. What are the difficulties of expanding the scope of academic involvement and research in this area?

2. What are the challenges of incorporating master's students more deeply in research in this area? How can they be mitigated?

2. Curriculum Development

Challenge: How best to balance synthetic activity, theoretical background on social inequity, and strategies for socially competent practices?

Current Approach:

Students who elect to take courses in the community informatics specialization are offered a range of courses that fall heavily on the social theory side. Under the current system, students can and often do avoid taking more technologically rigorous course work and are not required to take a statistics course.

Short-Term Strategy:

1. Promote faculty ownership of a contest based cross-specialization course that prepares submissions for an ongoing social change related technology or information challenge

Rationale: Social innovation contests have generated a great deal of support from foundations and venture capitalists in the past several years. They provide a venue for students to expose their work and develop an entrepreneurial mindset.

2. Require students who elect to specialize in Community Informatics to take more statistics and human-computer interaction courses. Expose and counsel students on the benefits of development of more technically rigorous skill sets.

Rationale: Several alums interviewed indicated that more technical skills would be useful in the work they are doing now. Sample response when an alum was asked what was missing from their training:

"More technical skills. I would like to have been more exposed to the software implementation / development process so that I could work better with tech people and so that in cases where I was the only tech person I would be more prepared. I feel like SI did a good job getting me started with networked computing, design of complex websites and database design. I would probably have taken one more class on enterprise IT / document management systems to give me a better idea about the issues one faces when designing and implementing them."

3. Develop a cross-specialization curriculum that centers on Information, Development, and Social Change

Rationale: As discussed in the "Components of a Program" section of this report, there is a wide range of evidence suggesting that this area is ripe with possibilities for curricular innovation and research engagement.

4. De-construct the community informatics specialization and establish an Information, Development, and Social Change Research Center with affiliated courses requiring a prestigious capstone social impact project

Rationale: In its current form, the CI specialization is not able to draw a large enough cohort of students to develop a substantial community of practice at the intersection of technology and the public interest.

5. Hire more clinical non-research faculty working in the social impact arena to fill gaps in learning due to the research-practice divide

Rationale: In the short term, applied skill set training in the social impact arena could be more robust. Although the ultimate goal is to support a culture of innovation that deeply engages research faculty, clinical faculty can provide vital expertise in terms of practice.

Long-Term Strategy:

1. Develop a contest-driven project-based "learn to do" Foundations Course

Rationale: There is growing awareness of the success of prized based approaches versus grant-based approaches to social problem solving (mentioned in interviews with Andrew Blau, Paul Resnick, Tom Reiss, and Diana Rhoten)

Logistics:
-Target time frame: Course in place by Fall 2010
-Majority of application cycles have submission deadlines that would fall at the beginning of the winter term. For this reason it makes sense to host the course in the Fall.

Course Branding:
-Course should be targeted towards second year students
-Branded to attract at least some students that have already taken 682
-Could be built into the structure of the CIC Seminar, if the credit allocation was three, the name changed, and the structure involved both a speaker series and a lab or recitation component.

Course Components:
Participatory design training on ethno-methodological methods for grappling with problems at the intersection of information, development, and social change. This would be a required foundations course if the specialization remains in place. The Charette Method being used by Diana Rhoten may be incorporated into this course. Theoretical

components should include frameworks for justice using an information lens.

Poster Development Process:
Information Visualization Component: Strategies for displaying information that presents compelling evidence for where to direct scarce social welfare resources are increasingly sought after by foundations and nonprofits. Learning to do this work is critical to the training experiences of MSI's seeking work in the public interest.

Next Practices Component:
Speaker presentations showcasing examples of exemplary projects that fuse design and pedagogy well

Examples of Relevant Contests:
1. Netsquared Mashup Challenge
2. Apps for America
3. Microsoft Mobile Challenge for Development
4. USAID Development 2.0 Challenge
5. Vodaphone Wireless Innovation Challenge

2. Develop a Graduate Level Course or Seminar on Next Generation Evaluation Models

Rationale: The changing work world students will be entering requires new forms of evaluation that are designed to fit with emerging hybrid organizational forms such as L3C organizations.

Course Components:
Scenario planning and the learning organization as described in Senge's "The Fifth Discipline" (Senge, 1994) as applicable foundational knowledge

3. Sponsor a Rackham Interdisciplinary Seminar on Adaptive Tools of 21st Century Information Leadership:

Rationale: Frequent and intensive interdisciplinary engagement at the graduate level will better prepare students to innovate across sectors

Logistics:
-Potential Graduate Schools that would partner: ROSS School of Business, Ford School of Public Policy

Course Components:
-Train students to do other forms of sensemaking by drawing students across disciplines into a participatory seminar
-Expose students to collaborative and facilitative leadership techniques

-Expose students to new organizational forms out there and what leadership styles are well suited to them (based on the premise that sets of skills useful at one level are not at another level)
-Include training on new forms of organizational design: themes like changing business-societal relations
-Leverage virtual environments for learning (VEL's) to develop game-based simulations that foster development of fast adaptability to change and ability to navigate uncertainty in functional ways (Second Life may be one avenue for exploring this)

Questions for Faculty Consideration:

1. What skill sets that are taught in your classes can be applied to social change and innovation work? Can these connections be made explicit through language in the syllabus?

3. Local and Global Partnerships

Challenge: How to balance the needs and expectations of organizations for consulting with academic engagement models focused on student educational experiences?

Current Approach:

SI's relationships with industry and nonprofit organizations are managed both formally through the Career Development Office and informally, through the social networks of individual faculty members.

Short-Term Strategy:

1. Buy 25% of the time of an experienced community organizer in the Washtenaw County area to look for bridges between SI research and the community and serve as a key informant on community needs to both SI and the community at large.

Rationale: This is one way that SI could develop a unique information brokerage process with local organizations.

2. Develop a coherent partnership with Michigan's Detroit Center.

Rationale: Detroit's economic woes are coming to a head, and the University of Michigan is already engaged in an attempt to engage sustainably with Detroit through a permanent presence in the city in the form of the Detroit Center. SI is currently listed as a partner but no current student engagement projects are in place.

3. Create a scoping system for matching client expectations and outcomes. Use failed partnerships from past work to guide development of the scoping process.

Rationale: Faculty interviewed for this report suggest that there have been scoping problems with projects in the past, but no systematized way of tracking these conflicts is in place. Examples include instances where external partners believed they were getting a formal "consultant" and student and faculty understanding was based on learning objectives.

Long-Term Strategy:

1. Establish a Clearinghouse Model for Managing Partnerships with NGOs, Social Enterprises, CSR Initiatives, and the Public Sector

Rationale: The career development staff at SI already have robust connections with community and national organizations through project-based partnerships, and are working on developing international connections. A clearinghouse would provide insights as to how organizations doing social impact work would like to connect with SI. Organizations could opt into membership in the clearinghouse after hosting a project-based course group, or alternately through direct interest in SI or a relationship with an SI affiliate. A database would be developed of organizations, the history of their relationship with SI and their future goals and interests for engagement with SI students and alumni.

2. Establish a Formal Global Citizenship Program

Rationale:
-In line with the University's Commitment to Global Citizenship
-SI has numerous strong ties around the globe
-Align with Ghana / South Africa Focus Mary Sue Coleman has established. This would also aligns well with the internaitonalization focus for the 2010 reaccreditation for the university as a whole. There are potential funding opportunities through the International Institute for initiatives in this area.

Logistics:
-This would ideally be a required element for MSI students seeking to work in ICT4D arenas

-Orientation materials for each specialization should contain information about global opportunities
-Start in the spring before students get diverted to jobs
-Ideally participants would earn both money and Practical Engagement Program (PEP) credits for participating

Models:
1. Ford School of Public Policy Spring Break Program (Alternative Spring Break (ASB) Would be the Organizing Mechanism here)
2. ROSS School of Business MAP Program
3. Citizen Development Corps MBA Enterprise Corps Program : Matching Entity used By the IBM Service Corps

Questions for Faculty and Staff Consideration:

1. What is an appropriate balance between internal SI projects (501) and external SI projects (PEP)?

2. What mechanisms for supporting student-initiated entrepreneurial CIC activities can be created?

IV. The Affinity Group

Challenge: How to create continuity and community between and within cohorts in a two year two-year master's program?

Current Approach:

The Current CIC Affinity Group ranges in size from 5-15 members who organize pot lucks and brainstorming sessions for projects (including the development of this report). There are roughly 90 CIC Alumni of the School. Alumni interviewed for this report (Garin Fons, Liz Keith, and Sara Naab) expressed a desire to maintain a strong connection to the CIC and encouraged the development of more formal mechanisms for alumni engagement. Wenger, McDermott & Senger's (2002) book on "Cultivating Communities of Practice," provides a good description of the contextual challenge we currently face:

"Communities often begin with a spike of interest and energy particularly in the community has a highly visible launch event. However after the first event the reality of community work, networking, sharing ideas, maintaining the website typically sets in and people's energy for the community can fall off sharply. Other commitments pull people away from participating; leaders don't really know what to do to keep the energy alive; people expect and don't always find great immediate value. They often interpret this loss of interest as a lack of real value and become impatient with the community"

Short-Term Strategy:

1.Recommendations for formal roles within the student group laid out in the Keith and Souden (2003) strategic assessment should be adopted

Rationale: Students have been re-inventing the wheel every year because an effective knowledge management system has not been selected and communicated across the affinity group.

2. Engage undergraduates in the informatics program in community organizing initiatives with MSI students interested in social change work

Rationale: Students at the MSI level often are seeking leadership development skills at a higher level, thus many are more interested in directing their own projects rather than volunteering to work on someone else's project. At the undergraduate level students are in a better position to engage in project-based work on a participant level. The current undergraduate informatics program is technically rigorous, empowering students with the capacity to create and develop information systems. Applied project partnerships between graduate and undergraduate student would present a great opportunity for students to harness those skills and practice their application.

3. Develop protocols for knowledge management practices that aggregate insights from current students, prospective students, and alumni

Rationale: Stakeholders repeatedly seek insights on how best to manage the community of practice that has developed around the CIC affinity group and specialization. What are translation issues for different communication platforms? A first step would be to organize the meta-topics surrounding CI into a wiki and solicit alumni input on what resources to include.

4. Re-establish a CIC Commons lab space

Rationale: Shared spaces foster creativity, and shared space is something that has worked in the past.

5. Establish a semi-formal mentorship program with alumni by requiring CI students interview 3 alumni who have opted in to the program

Rationale: Although the career development personnel at SI encourage current MSI students to contact alums, creating a formal partnering system could ease student discomfort with informal networking processes. If alumni are contacted and express willingness to engage in informational interviews, students should be encouraged to complete three such interviews, potentially as a requirement for the CIC Seminar.

Logistics:
Mentorship experiences must be focused and have some specific topic or artifact to discuss.

Long-Term Strategy:

1. Develop a robust alumni engagement strategy-

Rationale: The Alumni interviewed in the process of developing this report have expressed strong interest in connecting with CIC students in more systematic ways.

2. Leverage Virtual Environments for Learning (VEL) to engage alumni in systematic, regular ways in a process of co-creating the program

Rationale: The use of virtual environments for learning facilitates students "learning to do," though regular exposure to the tools required for distance collaboration

Questions for Faculty and Staff Consideration:

1. How do we maintain diversity yet create coherence from all the divergent interests involved? Can we? Do we want to? (If we don't, how do we still articulate a core set of ideas/values/etc. that the field can coalesce around?)

V. Career Development

Challenge: How best to encourage and promote the development of a social entrepreneurial mindset among students in information schools through career development services?

Current Resources:

1. Alternative Spring Break (ASB) Program: The Career Development Office at SI has developed a number of partnerships with nonprofit organizations engaged in social

impact work. They are looking to increase the number of placements they offer that have a social justice component and are in the process of developing reflection exercises for students that participate in these programs that encourage development of social consciousness and enthusiasm for social change work.

2. CIC Alumni Network: There is a strong group of CIC alumni who maintain close contact with the school and are eager to play a more active role in engaging with current CIC students.

Short-Term Strategy:

1. Establish pitch-based funding program for entrepreneurial summer internship ideas and a start-up incubator for social enterprise and nonprofit development

Rationale: Numerous philanthropic and venture capital funds exist that seek to fund initiatives focused on social impact and community and international development. Students often do not have time to develop their independent ideas when they are engaged in time-intensive course work. Supporting students investment of summer time engaged in entrepreneurial activities by providing funding and work space has numerous benefits for the school. Students whose projects are successful will bring recognition to the program as a social change innovation hub, serving as a recruitment gem and a potential driver for alumni to invest financially in the future of the school.

1. Establish a mission-based portfolio development training program:

Rationale: Work in the public good increasingly requires entrepreneurial thinking and ventures. Providing personal mission-development training will empower students to think deeply about who they want to be and how to get there. This kind of training can be combined with personal branding training initiatives already in place in the Career Development Office.

Models:
School of Social Work Portfolio Model (Faculty Oversight: Beth Reed & Dale Fitch)

Long-Term Strategy:

1. Require students to generate a capstone project which they display at the annual ExpoSItion.

Rationale: Students should develop comprehensive portfolios during their time at SI. Capstone projects provide a great way for students to go through a project development process from incubation to final product. Although many students create projects for

ExpoSItion through their work in courses like SI 682, these projects are not required. Even within the human-computer interaction specialization, students are advocating for more design courses and faculty are discussing the potential of a capstone project design course.

Part V: Summary of Findings

This report was designed to serve as a starting point to spark conversations among iSchool faculty about the role of information schools in social impact work. This assessment finds that there are ample opportunity spaces for information schools to engage in critical research and curricular initiatives to support the development of white space social innovations across sectors and disciplines. Numerous forces and trends suggest that the challenges of the 21st century are complex global systems problems that could be met with information science research and design methods. Shifts in organizational structure and culture in information schools are needed for iSchools to engage in this kind of work. A diverse range of faculty across information school specializations can participate in vital ways. The strategies and tactics presented here represent a starting point for outlining research and curricular priorities in this area. Further work is needed to refine these ideas and support their evolution and translation into practice.

Appendix A: About the Report

Data Collection Methods:
-Interviews

-Benchmarking
-Literature Reviews

Interviews

Internal and external stakeholders were interviewed who work in different domains (academia, industry, nonprofits, philanthropy)

Faculty interviewees were asked to described intersections between their research interests and social impact work. They were asked to describe what a social impact program would look like in at SI if they were the designer. A broad range of faculty were consulted across all nine SI specialization areas.

A range of graduate students within and outside of the UM School of Information were consulted, both at the PhD and Master's levels.

External interview subjects were selected on the basis of their expertise in social impact work across sectors. Subjects included thought leaders from the W.K. Kellogg Foundation, IBM's Service Corps, the Global Business Network, independent NGOs, and the Social Science Research Council (SSRC).

Benchmarking

Academia

Twelve universities were included in the benchmarking study. Criteria included depth of experiential programs and external partnernersips across sectors, competitiveness with SI at attracting students, and extent to which the programs had established cultures of experimentation and innovation.

Stakeholders interviewed included faculty and staff from other graduate schools at the University of Michigan, other iSchools, universities with innovative social impact initiatives related to information science, and industry benchmarks in research, partnerships, and curriculum development. Types of programs where the most relevant research and teaching initiatives were taking place in this area include community informatics programs, iSchools with ICT4D initiatives, human-computer-interaction design communities, and business schools.

Other Graduate Schools at the University of Michigan:
UM College of Engineering
Ford School of Public Policy
ROSS School of Business
UM School of Social Work

iSchools:
University of California at Berkeley
University of California at Irvine
University of Illinois at Chicago
Indiana University
University of Toronto
University of Washington

Universities with Innovative Social Impact Initiatives related to Information Science:
Arizona State University
University of California at Berkeley
Carnegie Mellon University
Massachusetts Institute of Technology
Princeton University
Stanford University
University of Washington Department of Communication
Yale University

Private Sector Benchmarks:
Global Business Network (GBN)
IBM Service Corps Program
Social Science Research Council

Curriculum Development Benchmarks:
(Organized by Sub-Topic)
Information and Development: Berkeley, MIT, University of Washington

Organizations and Institutions: University of Illinois at Chicago

Research Agenda Benchmarks:
ICT4D: TIER group at Berkeley, Change group at University of Washington, the TechBridgeWorld group at Carnegie Mellon University, Saman Amarasinghe and Sandy Pentland at MIT, Randy Wang, Margaret
Martonosi and Vivek Pai at Princeton
Design for Digital Inclusion Research Group, University of Wasington

Local and Global Partnerships Benchmarks:
University of Michigan College of Engineering
Stanford University: Center for Social Innovation

Affinity Group Benchmarks:
ROSS School of Business:
The Net Impact Student Group at the ROSS School of Business (#1 Net Impact Chapter for the past three years).

Appendix B: Program Name Cases

The Challenge of Terminology

For a program in this arena to be successful, a brand needs to be established that attracts students from a range of backgrounds well versed in social justice, and simultaneously attract students with technical and quantitative skill sets. A shared language must be created to appropriately describe social impact information brokerage and choreography to students with diverse world views and understandings of social change work. Faculty, students and staff interviewed for this report had diverse views about what a program of this nature should be named.

Potential Names:
Information, Development, and Social Change
Information for Social Innovation
Information for Community Innovation
Information for Social Change

The Case for "Information, Development,and Social Change"

The report in its current iteration favors "Information, Development, and Social Change" for programs developed in this area. This name choice captures a focus on economic and infrastructure capacity building combined with inclusion of social change frameworks. One potential drawback to the name is that it may give the impression that programs are focused solely on the developing world.

The Case for "Information for Social Innovation"

Over the past decade, the word innovation has taken on a life of its own. In business, this life has been inspired by buzz around the dawning of disruptive, game changing products like iPods and smart phones; in services, models like Netflix that have shaken up the supply chain and reinvented the dvd rental market. Many of these products and services are IT-mediated or enabled, utilizing information technology and information flows either to generate new products and services, or to deliver old products and services in new ways. In recent years, a large number of useful syntheses have been introduced that tie innovation studies to social change work.

The organizational structures that have supported social impact work are in a period of flux. Social change enterprises are now supported by a range of structures, from

nonprofit, to private, to hybrid forms such as the recently established L3C, Low-profit Limited Liability Corporation. Micro-franchise, micro-volunteerism, and micro-finance initiatives are proliferating as mobile phone use proliferates even in areas where living conditions are devastating.Obama recently announced that he will be seeking $50 million in funding for the establishment of an Office of Social Innovation. As a result, social Innovation initiatives have recognized meaning to government grantmakers, the private sector, and within the social computing for social change movement.

The Case for "Information for Community Innovation"

Many students and faculty gravitate towards the Community Information Corps specifically due to the focus on community. Faculty that focus on the community as the unit of analysis are attracted towards the maintenance of this term in the framing of the CIC. Community innovation is a construct just beginning to appear in literature on education reform and scalable innovations for communities (Plastrik and Cleveland, nuPolis). In the LIS world, "Community Information" is a term that has been used since the 1970s to address library user's information needs that solve community and personal barriers.

The Case for "Information for Social Change"

Highlighting the relationship between social change and information, and omitting a specific avenue for that work (i.e. development, community-based) leaves the agenda open-ended and allows for room to grow.

Appendix C: Glossary

Civic Hacktivism:

Technology development for public or civic ends without strong institutional backing (Resnick)

Cyberinfrastructure:

Infrastructure based upon distributed computer, information and communication technology (Atkins et al, 2003)

Design 3.0:

Also referred to as Transformation Design. A design perspective that requires a social, inclusive design process. A multidisciplinary design approach that reimagines systems and takes leadership toward change in social and organizational structures and systems. Design as transforming (Jones, 2009)

Innovation Brokers:
Innovation brokers help to mobilise innovations identify opportunities that the current system undervalues and they broker relationships between disparate parts of the system.... In particular they broker relationships between 'innovation creators' 'innovation seekers' (such as commissioner of services) investors and policy makers. (Horne, 2009)

Knowledge Infrastructures: enduring widely shared sociotechnical systems consisting of (at minimum): communities organizations and institutions; languages and other sign systems (e.g. mathematics); standards norms and values; theories frameworks and explicit or implicit worldviews; mechanisms for the production dissemination and storage of information (hardware and software high tech or low); and 'non informational goods and spaces like classrooms laboratories and local markets. Thus knowledge infrastructures constitute robust networks of people artifacts and institutions that generate share and maintain specific knowledge about the human and social worlds. Knowledge infrastructures can help routinize and facilitate the collection, organization, presentation, and distribution of technical and cultural "data." They can help validate and stabilize knowledge allowing for wide and efficient sharing and reuse. By supplying template and frameworks for the interpretation and use of new information they can enable rapid propagation across disciplinary, institutional, sectoral, and potentially cultural divides. Appropriately constructed they can activate and connect local sites of knowledge and creativity, growing new collective capacities for

endogenous and locally appropriate information." (Jackson et al, 2008)

Virtual Environment for Learning (VEL) :
definition taken from NSF/MacArthur/Hewlett VEL Summit Report Glossary: Specific spatialized 3D environments that enable learning experiences that are not bounded by a particular institutional community or setting.

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