Electronic Information Systems and Social Work: Principles of Participatory Design for Social Workers

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Abstract: *The introduction of electronic information systems (IS) to human service organizations has been heavily critiqued, most notably for the ways that IS may undermine frontline social work practice. Socio-technical design has been proposed as one way to redesign IS, and a key element of this approach is the involvement of practitioners in the design process. Social workers, though, may be ill-prepared to engage in such processes. Reflecting on the findings of a program of research which aimed to contribute to future designs of IS that support frontline practice, this article aims to provide some guidance for social workers to help them be active and effective participants in the future development of IS.*

Keywords: *Electronic information system, participatory design*

Problems and limitations of the use of electronic information systems (IS) in social work have emerged from research internationally. Examples include child protection services (Huuskonen & Vakkari, 2013) and psychiatric care (Saario & Stepney, 2009) in Finland and victim and offender mediation in Belgium (Bradt, Roose, Bouverne-De-Brie, & De Schryver, 2011) and Australia (Ombudsman, 2009; Wood, 2008). Some critical literature about the State Automated Child Welfare Information Systems in the USA has also emerged (see Naccarato, 2010). However, the current forms of IS, also known as Management Information Systems or Client Management Systems, being used in England have been mostly heavily criticised (see, for example, Broadhurst et al., 2010; Peckover, White, & Hall, 2008; Pithouse, Hall, Peckover, & White, 2009; Shaw et al., 2009), particularly for how they impair the decision-making of workers and re-order their priorities away from providing services to children and families (see Munro, 2011; White et al., 2009). In a review of child protection services, Munro (2011) concluded that IS present "substantial obstacles to good practice" (p. 114).

The reasons why problems have arisen with IS have been widely debated in the literature. In summary, it has been suggested that IS designers have lacked sufficient knowledge about frontline social work practice (Damodaran, 1996), social work agencies have struggled to define their needs (Senyucel, 2008), the needs of managers have prevailed over those of frontline social workers (Tregeagle & Darcy, 2008), and social workers have not been sufficiently involved in the design of IS (Wagner & Piccoli, 2007). Socio-technical systems design, which follows the core principles of user participation (Gillingham, 2011; Kujala, 2008), minimum critical specification, and the optimization of local autonomy, supported by ethnographic observation of how work is actually achieved (Wastell & White, 2013), has been proposed as a way forward.

Social workers, however, may be ill-prepared to engage in the design processes for IS, yet their participation is vital to ensure that future design meets their needs. There is ample guidance within the literature to assist IS designers (for example, LaMendola & Krysik, 2008), yet there is little to assist social workers. Therefore, the

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 Advances in Social Work Vol. 16 No. 1 (Spring 2015), 31-42

aim of this article is to address this gap in the literature and provide some guidance for social workers to engage in the design processes as active and effective participants in the future development of IS.

The Research

The author is engaged in a program of research which aims to generate knowledge that will inform the future design of IS for use in human service organizations (HSO). Partnerships with child protection agencies in England as well as five Australian NGOs, which are government funded to provide services to a range of service users, are contributing to detailed studies. These studies are examining how agencies are using and transforming current and emerging forms of IS and engaging with information and communication technology more generally. Permission to conduct the research has been provided by relevant ethics committees at the author's university and the agencies.

The research design is ethnographic and has involved participant observation of practice and meetings and interviews with key stakeholders (for full details about research methods see Gillingham, 2011). Theoretically the research is guided by concepts drawn from social informatics, defined broadly as ''the interdisciplinary study of the design, uses and consequences of information technology that takes into account their intersection with institutional and cultural contexts'' (Kling, 1999, p. 205). In this article, concepts and ideas have been drawn from previous research about participatory design and the Joint Cognitive Systems approach developed by Hollnagel and Woods (2005).

Of particular pertinence to this article, the author has been a participant observer in 12 participatory design workshops at two different social welfare agencies. Twenty follow-up interviews with some of the participants, including administrative staff, frontline practitioners, team leaders, and managers, were conducted. During both the periods of observation and interviews, extensive notes were taken and later typed up in a field diary. Drawing from a "grounded theory approach," data were analysed as the research proceeded, with the author using a form of memo writing in the field diary (Lempert, 2007). Emergent themes assisted with focusing subsequent data collection. Identifying, understanding, and interpreting themes in the data was an iterative process in which "ideas [were] used to make sense of data and data [were] used to change . . . ideas" (Hammersley & Atkinson, 2007, p. 159).

Agencies have been recruited on an ongoing basis throughout the research with selection based on their interest in developing, implementing, and evaluating IS. One of the two main agencies referred to in this article provides a wide range of services to children and families, children in state care, people with physical and intellectual impairment, and older people requiring support in their own homes and residential nursing care. This range is typical of non-government agencies in Australia which have diversified as funding has been made available by state and federal governments for services to be provided outside of the government sector. The other agency specializes in supporting adults with intellectual disabilities and provides vocational and residential services.

Though both sets of workshops were described as participatory design, they differed in that one agency aimed to decide on the functionality required of an IS for different workgroups across the agency prior to matching identified need with what

was on offer from vendors. At the other, the IS had already been chosen, and the aim was to map the activities and needs of different workgroups in terms of how they could be molded to fit the functionality of the chosen IS. This article summarizes the findings of this stage of the research with reference to research and theory from disciplines other than social work to provide both practical and theoretical guidance for social workers.

Changing the Dynamics of Participatory Design

Participatory design has long been used as an approach to involve the end users of computer-based technology in its design (Kujala, 2003; Schoech, 1982). Clearly, in terms of socio-technical design, the aim is to match the needs of participants with the IS. However, this may not be the main aim from the perspectives of IS designers and vendors. Participatory design has been used to gain the acceptance of end users in the shift to the use of technology in the workplace (Wagner & Piccoli, 2007) and thereby minimise "technology shock" (Johnson, Hinterlong, & Sherraden, 2001). More cynically, it has also been used as a way to gain end user buy-in for a particular piece of technology, the reasoning being that users have less reason to complain when they have been involved in the processes of design and implementation (Kujala, 2008; Wagner & Piccoli, 2007). Within the literature, it has also been noted that little attention has been paid to whether the participation of end users can actually improve IS, possibly because designers tend to think of themselves as "the experts" (Wagner & Piccoli, 2007). It is also the case that designers, and especially vendors, are attempting to promote and/or sell a commercial product and so cannot be expected to be neutral or critical about the effects of introducing new technology to an agency.

One of the main difficulties for designers has been interpreting the detailed knowledge supplied by end users, particularly in capturing the context for the final use of technology. Kujala (2008) observes that "user involvement is not simple information gathering…users and developers have different vocabularies, interests, and values, which makes the communication and interplay complicated" (p. 458). There is, however, reason to be optimistic that the gap between designers and participants can be closed and that the power imbalance can be shifted more in favor of participants. In the 1990s, social workers' negativity towards adopting digital technology was referred to as "computer phobia," and a key concern of managers and designers was finding ways to get social workers to use computers (Neugeboren, 1996). Nowadays, as laptops, tablets, and smartphones become more ubiquitous in everyday life (Gillingham, 2014a), users are more adept at discussing digital technology. Certainly, designers and vendors, when challenged by participants, may defend themselves with technical language beyond the knowledge base of most social workers. However, this tendency can be countered by adherence to the guidance outlined in the next sections.

Key principle – technology has to amplify the ability of users.

The Joint Cognitive Systems (JCS) approach “offers a principled approach to studying human work with complex technology and provides a conceptual framework for analysis with concrete theories and methods for joint system modelling” (Mouloudi, Morizet-Mahoudeaux, & Valentin, 2011, p. 110). The author has applied these concepts to explore the reasons why problems have arisen generally with IS in human services organizations (Gillingham, 2014b). A key principle from the JCS

approach is that an important measure of success in the implementation of technology is the extent to which it can demonstrably amplify the ability of workers to do their jobs (Hollnagel & Woods, 2005). Although this applies most readily to an evaluation of an IS after it has been implemented, it can also be used by participants during participatory design in the form of a critical question. Speculation about how an IS might amplify or hinder ability is crucial to guard against what Wastell (2011) describes as "magical" thinking: the uncritical belief that technology can only solve, rather than create, problems.

The pitfalls of participatory design

1. *The over-complication of practical tasks*

As Hollnagel and Woods (2005) have stated: "[u]nfortunately, the extensive use of computers has created an equally large number of possibilities for making simple tasks unnecessarily complex" (p. 37). How such possibilities can arise was amply demonstrated in some of the design workshops attended in this research. In both cases, designers or vendors were keen to demonstrate how their IS could be used to record data in a number of situations where, hitherto, no data was being captured. For example, it was proposed by an IT manager that residential and day care staff could communicate about service users via an IS instead of a verbal exchange supplemented with notes. However, this system would require much more staff time and keep staff away from service users at busy times of the day. This example illustrates that attempts to maximize the use of an IS may just create new tasks and layers of complexity with no clear purpose and no amplification of ability.

2. *Solving organisational problems*

Changes within organizations when an IS is introduced have been well documented and have been accepted as inevitable (Mengesha, 2010). However, as the critiques mentioned in the introduction demonstrate, many of these changes may be unintended and unconstructive (Gillingham, 2015a). Markus (2004) proposes that technology can be used as a catalyst for organizational change, but only if it is considered part of initiative to promote organizational change with clear aims and methodology. Therefore, introducing an IS cannot be considered a panacea that will solve organizational problems (Gillingham, 2015a). For example, in one agency, a stated aim of introducing an IS was to "break down silos" between different parts of the agency. An IS that enables transparency across an organization may contribute to this process, but only as part of a more focused strategy to promote greater communication and cooperation between managers and their departments. Another agency aimed to reduce bureaucracy, but unless underlying organizational attitudes changed, the tendency to create forms for every instance might be transferred or even magnified within a new IS.

What information, why and who and how

A particular challenge in the workshops, especially for frontline practitioners, was deciding what information should be recorded, why, who should record it, and how it should be recorded. Given previous restrictions about the amount of information that could be recorded in paper files, the default position, encouraged by managers and administrators, was to record everything. This was reinforced in one of

the agencies by the representative of the IS company constantly repeating “you can’t report on what you don’t record.” However, as noted in the critiques of IS, a particular problem with IS has been that the amount of time that practitioners are required to spend entering data on IS has become disproportionate to time spent with service users. In both this and other research (see Gillingham, 2009; Parton, 2008), some participants have estimated that they spend up to 80% of their time engaged in data entry. It was also clear to the author and participants that insufficient time had been allocated to make decisions about information in the workshops, as this task was never completed. The suggestion here is that the process of deciding how information should be categorized should be finalized well in advance of participatory design processes. It is to be expected that there will need to be some trade-offs between the needs of management and administrators and those of practitioners. The following is a summary of the key points to be considered in the process.

What Information?

Clearly, there is a base level of information about service users and service activity that needs to be recorded, but the amount of detail required in relation to service activity is less clear. Both external and internal factors may influence what is required to be recorded. A key external factor that affects how much information needs to be recorded in an IS is accountability. In the Australian context, this involves how non-government agencies report on their activities to their main funding bodies (State and Federal governments). According to participants, this process can be time consuming. Organizations expect that IS can make this task less onerous by drawing together in one system all information about service users and user activity. However, while IS can make reporting easier, they also raise expectations about what can be reported on. As Munro (2011) has argued in the context of England and Wales, this can lead to an "audit culture" which distracts from professional practice. There is also the danger that the reporting abilities of IS distract from the fact that the reports are only as good as the data that exists within them (Carrilio, Packard, & Clapp, 2004). Frequent and detailed reports require the consistent and timely entry of accurate and reliable data. Negotiating required levels of reporting to funding agencies may be considered beyond the remit of a participatory design process, but the need to do so may arise from reflection on how much detail about service activity needs to be recorded in a new IS. This may be an important strategy in addressing the potentially ongoing tension between time spent entering data about service activity and time spent working with service users. The other key external factor is that professional associations have both ethical and practical guidelines about what they expect their members to record about service users and their activities in relation to them (see British Association of Social Workers, 2012; National Association of Social Workers, 2008).

Internal factors which affect what information needs to be recorded may be agency guidelines or organizational culture governing how tasks are carried out and how various organizational roles are enacted (Jones & May, 1992). A participatory design project, in offering the possibility of recording new or different information, prompts reflection on these particular aspects of organizational culture. However, the scale of organizational change that might be required at the same time that a new IS is being implemented should not be underestimated.

By whom?

The advent of desktop computing has changed the role of both social workers and administrative staff within HSOs (Gillingham, 2014c). Much of the administrative work that was previously done by clerks and secretaries, such as typing letters and reports, filing and arranging paperwork, and minuting meetings, is now being done by social workers, to the detriment of direct work with service users. Given the problems associated with making social workers primarily responsible for administrative tasks, a participatory design process may be an opportunity to reconsider who should adopt those responsibilities.

For example, one agency decided that only team leaders, managers, and administrative staff would engage with the IS. Team leaders and administrative staff were responsible for uploading, organizing, and summarizing the casenotes emailed to them by frontline staff. Similarly, in the London Hackney borough, a new approach to organising social work practice involved small teams of practitioners, each with an administrative officer designated to support data entry into the IS (Cross, Hubbard, & Munro, 2010). Social work staff in these units report that they spend significantly less time on administrative tasks than previously (20% rather than 70%) (Cross et al., 2010, p. 21), leaving them more time to work with children and parents.

Encouraging and supporting service users to contribute to the information about their participation in an intervention is not new, as participatory approaches to social work practice have demonstrated (see for example, Tregeagle & Mason, 2008). The advent of Web 2.0 and the ability to access IS through the Internet may create new opportunities for such engagement for service users. Giving service users access to their electronic case files is clearly on the agenda in Australia. From their survey of social service agencies, Grundy and Grundy (2013) found that there was a "mixed response" to such a development, though "most were positive." Overall, agencies believed that service users might benefit from being able to follow their progress and receive reminders about appointments and meetings. The main concerns expressed were service user access to computers, security of information, and the potentially damaging misinterpretation of information by service users.

For what purpose?

As observed in the workshops, there is a tendency to design IS in ways that capture ever more information, with the underlying rationale that more information is better than less (Gillingham, 2014c). This practice may lead to frontline practitioners spending a disproportionate amount of their time entering data. To counter this tendency, the rationale for capturing data about service activity and service users must be made explicit in the design of IS. Aside from the need to account for public expenditure, there may be other rationales that can capitalise on the abilities of IS to collate and organise information. In particular, these abilities might sit well with increasing demands for social work and social care practice to be evidence based or evidence informed (Littell & Shlonksy, 2010) as IS can be powerful tools in both the formative and summative evaluation of service delivery (O'Connor, Laszewski, Hammel, & Durkin, 2011). However, a plan for what to evaluate and how to go about evaluating must be clearly articulated to guide the design and implementation of an IS.

The workshop discussions provided another purpose for recording data: the importance that participants attached to the case files for children in the care of the state. As Goddard, Murray, and Duncalf (2012) describe, it is common for adults who were in the care of the state to request access to the case files held by the organizations that cared for them. Creating meaningful case files for children and meeting the needs of a range of stakeholders is clearly a complex task, but research-based approaches have been developed (see Kertesz & Humphreys, 2013).

How is information to be recorded?

How information about service users is recorded is an important consideration. As mentioned above, IS can now be accessed through the internet. With the advent of mobile internet technology, there is less need for social workers to return to the office to enter data. Decisions therefore need to be made about staff members' mobile access to an IS. O'Connor et al. (2011), for example, found that the use of mobile devices by practitioners to enter data about children and families in a home visitation program saved time (and money) and led to a more complete set of data. Making these decisions in the agencies in this research has proved to be difficult as concerns have been raised about data security and how accessing the IS from home might upset the work/life balance of workers. After the IS has been fully implemented, future research can explore how the resolution of these concerns will affect both frontline and management practice.

At a more abstract level, how information about service activity and service users is recorded affects how staff at all levels understand and think about their work. As Aas (2004) and Parton (2008) have argued, the demands of current forms of IS have undermined the traditional narrative approach that has been used in social work. This has led to significant effects on how decisions are made and what interventions are offered to service users.

Categorization

Having decided what information needs to be captured in an IS, a number of decisions need to be made about how the information is categorized within it (Gillingham, 2015b). This caused much debate in the workshops, reflecting the observation that the significance of descriptive language in shaping the behaviour and experiences of those to whom it has been applied has been a long-term concern for social work (Heffernan, 2006). Labeling people in particular ways has consequences for their construction of identity, how they are treated by others, and the expectations placed on them (Barn & Harman, 2006). More broadly, the language used to describe social problems and those who are experiencing them reflects and reinforces the ideology that guides how we understand problems and subsequently respond to them (Vojak, 2009).

For example, an agency which employs a range of professions experienced considerable debate about whether service users would be known in the IS as clients, patients, or, as suggested by the IS vendor, customers. Another challenge was how information should be arranged and labelled within an IS. Each profession reflected its own orientation in suggesting different labels, and it was clear that ambiguity between different tabs or folders, such as “health” and “medical,” might lead to data being entered incorrectly. At a finer level of detail, there were myriad decisions to be made about drop-down lists and automatically populated areas of case files, both to

describe the attributes and problems of service users and the types of intervention that were offered. Though such functionality can save much time and effort, participants questioned whether binary choices about whether a service user is experiencing a particular problem, such as mental illness or illicit drug use, were really helpful.

Conclusion

Reflecting on the insights provided in this article, participatory design for social workers emerges as a complex and perhaps daunting activity and, most certainly, not a task to be taken lightly. It is essential that social workers make a significant contribution to, and, increasingly take the lead in the design of technology that will shape, guide, and ultimately support their practice. The insights provided in this article will promote greater preparedness in social workers to engage with participatory design, but no claim is made that they are exhaustive. The implementation of IS raises both ethical and moral concerns which are beyond the scope of this article, and future technologies will present new opportunities and challenges. The main contribution of this article is the promotion of a critical and constructive stance in relation to the adoption of digital technology in social work practice. This approach includes raising questions about whether and how digital technology amplifies the abilities of social workers, how it is related to organizational change, and how information about service users and service activity is handled and categorized. Social workers taking a more informed, proactive, and assertive stance will alter the dynamic in participatory design processes and ensure that IS functionality is developed to meet the specified needs of practitioners, rather than practice being fitted to available functionality. In turn, greater clarity about the needs of practitioners will assist designers in their task of developing tailored and situation-specific IS.

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Funding statement
The research that informed this article was supported by the Australian Research Council through a Discovery Early Career Research Award (DE13010004).

Acknowledgements
The author wishes to acknowledge the contribution of the participants in this research.