Ecologies of interests in social information systems for social benefit

Nick Letch
UWA Business School, The University of Western Australia, Perth, Australia

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Abstract

Purpose – The purpose of this paper is to explore a class of social information systems which are purposefully designed to address wider social objectives. Specifically, the paper investigates the embedding of ICTs into the wider networks of social policy action and explores issues associated with the integration of social information systems into complex problem domains.

Design/methodology/approach – A case study of a social information system and its integration into networks of actors with an interest in the underlying social concern is presented. The system under analysis is first described in terms of the emerging characteristics used to define this class of social information system. The wider policy network in which the social information system is implemented is then described and the integration of the social information system into the wider network is discussed.

Findings – The case study illustrates that for complex social problems, there can be multiple interests embedded in an ecology of sub-networks. Each sub-network can make use of the social information system in different ways which creates difficulties in the social information system gaining sufficient legitimacy to be institutionalised into the wider policy network.

Originality/value – The paper extends understanding of social information systems by proposing that a class of social information systems are developed to pursue human benefit. Recognising the context in which these systems are integrated as an ecology of interests, shifts the focus of social information systems design from examining the requirements of a relatively homogenous community of actors to understanding how social information systems can be developed to enable information exchange within and across heterogeneous communities.

Keywords Network analysis, Knowledge integration, Collaboration, Case study, Community, Social computing

Paper type Research paper

1. Introduction

The recent explosion of social media applications has led to wide-ranging discussions of how these technologies can be integrated into more traditional information systems. Concurrently, there has been a rise in the use of the term "social information systems" to describe systems that facilitate collaboration through the use of social technologies (Schlagwein *et al.*, 2011). This perspective of social information systems focuses on the capabilities of various technologies in enhancing social activity and collaboration among a community of actors – typically on a digital platform. An alternative perspective of social information systems, however, can be adopted. This focuses attention on the pursuit of social endeavours and illuminates a class of social information systems in which various technologies are applied to address concerns in wider society.

There are an increasing number of initiatives which deliberately make use of information and communications technologies (including social media) to pursue or enhance some form of social benefit. For example, education, healthcare, e-government, green IT, social accounting and not for profit organisations have been identified as key areas that can benefit from the application of ICT (Venable *et al.*, 2011). In this vein, social information systems can be conceived of as systems which are purposefully

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designed to improve the well-being of society. Such systems differ from traditional forms of IS through a focus on socially oriented goals and objectives rather than being largely efficiency driven.

In any social information system, designers and users of such systems must pay attention to how the digital platform fits within the networks of actors involved. However, complex social problems such as social exclusion and disadvantage, unemployment, poverty and homelessness can comprise several overlapping subsets of problems and span multiple policy domains, both the public and private interests, and different levels of government. Therefore, the implementation of social information systems to address such problems may well need to meet the requirements of several communities and a heterogeneous range of interests.

Investigations of the interplay between digital information platforms and social networks of interested actors can address a variety of concerns including the behaviour of individual actors, the development of social capital across networks, knowledge exchange and questions related to the role of network structures. Given that such phenomena are qualitatively different from those in traditional organisations, foundation research needs to focus on "documenting, describing and making sense of the novel phenomena" (Agarwal *et al.*, 2008, p. 249). This is the approach adopted in this paper in which the objective is to investigate the embedding of ICTs (including social media) within wider networks of social action and to explore issues associated with the integration of social information systems into complex problem domains. In this paper a case study of a social information system which has been implemented to support the collaboration of policymakers and practitioners working in the field of indigenous health in Australia is presented. This revelatory case (Yin, 2009) provides the opportunity to describe the features of a social information system within a complex social problem, as well as to investigate issues arising from the interplay between the digital information platform and the social networks of interested actors.

The analysis of the case study presented in this paper is not intended to directly develop theory in relation to this class of social information system but to identify and circumscribe the contexts in which such systems will emerge. To frame this analysis, the concept of policy networks is introduced and an institutionalist lens is used to assess the integration of social information systems in this context.

In the following section, two definitions of social are contrasted to highlight alternative approaches to understanding social information systems. On one hand are systems designed to enhance collaboration through social technologies and on the other, systems which enhance social benefit by applying ICTs to complex social problems. The focus of this paper is on the latter perspective and so to frame the investigation of this form of social information system, the next section outlines concepts drawn from public policy literature and institutional theory. The case study methodology and approaches taken to analysing the case data are then detailed. The case study of the Australian Indigenous Healthinfonet is then described followed by a discussion of the key findings from the case.

2. Social information systems

All information systems are by definition, social systems in that they involve people communicating and taking action based on meaningful information. Therefore when referring to social information systems it is important to be clear about the meaning ascribed to the word social. "Social" can take several forms as an adjective but two distinct definitions are particularly relevant to defining social information systems.

First, social can refer to the communicative aspects of information systems and how technologies facilitate interaction and communication within networks of participants – for example systems which make predominant use of social media. This technology-driven perspective has gained momentum with the rise of social software and the Web 2.0 paradigm. Such terms describe a broad range of technologies which essentially move away from the broadcast information approach of the first generation of web applications to applications that promote users to generate and share content, encompassing a loose classification of technologies including blogs, wikis, podcasts and social networking tools such as Facebook, Twitter (Lai and Turban, 2008). The benefit of using these technologies as the basis of social information systems is derived from characteristics and capabilities such as: having a focus on connecting people for collaboration; the enabling of user-generated content; drawing together data and functionality from multiple sources for presentation on web pages as "mash-ups"; and the harnessing of the collective intelligence which emerges from collaboration (O'Reilly, 2005; Anderson, 2007; Ostergaard and Hvass, 2008; Schlagwein *et al.*, 2011). Social information systems in this sense can therefore be characterised and differentiated from traditional information systems according to features of sociality, openness, contributions, technology and location (Schlagwein *et al.*, 2011).

A second use of the term "social" refers to society at large rather than interaction and communication. Social policy for instance is concerned with the systems through which human well-being can be promoted (Dean, 2012) and provides a useful metaphor for an alternative perspective of social information systems. That is, those information systems primarily designed and developed to promote aspects of human well-being. Information systems which are purpose designed and built to address social concerns are evident throughout the IS literature and have in several instances coalesced into identifiable research themes (Venable *et al.*, 2011). For example, applications of ICT in developing countries which address a variety of issues associated with social and economic development (Avgerou, 2010); IT in healthcare (Braa *et al.*, 2004), social services (Huber *et al.*, 2013) and IT applications aimed to improve environmental sustainability and Green IT (Chen *et al.*, 2008) are becoming established as themes in practice and research. Emerging forms of social media and ICTs which facilitate collaboration can also be core components of this class of SIS but it is the social context into which such technologies are integrated that defines the nature of these systems. For example, in the field of Green IS, the democratisation of knowledge enabled by Web 2.0 technologies provides opportunities to bring together multidisciplinary and cross-cultural perspectives in the development of policies in relation to sustainable environmental development (Hasan *et al.*, 2009).

While the two perspectives of social information systems are not mutually exclusive, they lead to alternative foci of analysis. The first perspective, with a focus on social technologies and communication, raises questions around how users of social information systems create, share and apply knowledge within and across processes and systems with implications for the design and use of these systems (Schlagwein *et al.*, 2011). The second perspective, with a focus on applying information technologies to improve problems in society, shifts attention to understanding the context of the societal problem being addressed and how ICTs are integrated within those contexts. Typically, the contexts in which such systems will be developed will be associated within a particular social policy domain. It is this perspective of social information systems that is explored in this paper.

3. Social information systems, complex problems and policy networks

The objective of this paper is to explicate the features of, and issues surrounding, social information systems which are designed to address social concerns. Social problems such as unemployment, social housing, access to healthcare, the digital divide, etc., are usually wholly or partially the in the domain of public policy and the delivery of social programmes.

Therefore social information systems which are purposefully designed to address such problems need to be integrated within the networks of relations among the various entities involved in policy development and delivery.

The investigation presented in this paper address broad questions. First, what are the features of the context in which social information systems for societal benefit developed? The second question involves understanding how social information systems are integrated within the wider context. To aid the investigation and provide a framework for analysis, this paper draws on two sources of research literature. First, to understand the context, concepts associated with policy networks which have developed in the public policy literature are used. In terms of characterising the social information system integration, Schlagwein *et al.*'s (2011) framework is used to provide an initial characterisation of the social information system in the case study and an institutional perspective is adopted in order to analyse the social information system integration in the context.

"Policy network" is a broad term for describing and explaining policy development, implementation and outcomes (Marsh and Smith, 2000). In the public policy literature, the widely cited "Marsh and Rhodes model" of policy networks (Marsh and Rhodes, 1992) distinguishes different forms of networks according to characteristics such as membership type and size, the frequency of interaction among actors, and the distribution of resources and power (Blom-Hansen, 1997). For descriptive purposes therefore, policy networks can be characterised along a continuum with "policy communities" at one end (few participants who frequently interact on a focused policy issue); through professional networks, intergovernmental networks and producer networks; through to issue networks which comprise a relatively large number of participants whose interactions vary around multiple interests.

Social problems are often unstructured and multi-layered and therefore by their very nature, cannot be "solved" – rather they are ongoing and relentless (Weber and Khademian, 2008). When addressing the complexity of "wicked problems" (Rittel and Webber, 1973) faced by society (i.e. systemic poverty, drug addiction, etc.) networks of actors develop and implement policy and services on an ongoing basis. Policy networks involve actors in the political and administrative domains as well as actors in the wider community and it is through their interactions that policies emerge and services are delivered. They provide the connection between public policies and the institutionalised context in which public services are developed and delivered to the community (Kickert *et al.*, 1997). Policy networks therefore represent the context in which social information systems designed to address complex or "wicked" problems are developed and implemented.

Because of potential differences in interest and focus among stakeholders, effective policy networks need to manage knowledge and information processes in ways that promote shared learning (Agranoff and McGuire, 2001) and social capital (Fountain, 2001). ICTs in many forms can influence and have an impact on these network knowledge and information exchanges. For instance, effective cross-organisational ICTs and databases are a necessary foundation to enable effective policy networks

(Ferlie *et al.*, 2011). Furthermore, existing policy networks which can influence the trajectory of policy initiatives have been extended by the internet by enabling a wide range of non-traditional actors to position themselves in "virtual policy networks" (McNutt, 2010). Communication in this wider range of networks can be further enhanced through facilitating social interaction with Web 2.0 technologies and forms of virtual communities (Hui and Hayller, 2010). At the same time however, the existing ICT infrastructure of individual agencies can also be a significant barrier to successful collaboration (DeSouza, 2009).

The key to successful integration within these networks involves understanding how various stakeholder interests can be accommodated and their needs supported across the networks of organisational environments. In the information systems discipline, institutional theory offers a substantial theoretical base on which to understand the organisational contexts in which ICT's are developed and deployed (Mignerat and Rivard, 2009). The institutional perspective views organisations as "suspended in a web of values, norms, beliefs and taken-for-granted assumption" (Barley and Tolbert, 1997). The context of an organisation is thus defined by the social structures (institutions) that provide organisations with their orientation while at the same time controlling and constraining them. An underlying assumption of institutional theory is that actors and organisations seek legitimacy in their environments in order to be accepted and ensure their ongoing survival (Barley, 2008). Policy networks can be considered from an institutional perspective (Blom-Hansen, 1997) and therefore the integration (or institutionalisation) of social information systems into policy networks can be examined in terms developing legitimacy.

4. Methodology and analysis

In order to investigate social information systems for addressing societal concerns, this paper draws on data collected in the course of a study into the role of ICTs in policy networks in an Australian context. The overall study has been ongoing since 2006 and for the purposes of this paper, the data examined focuses on an organisation which was established in order to facilitate internet-based information resources and promote collaboration and information exchange in different aspects of indigenous health. Given the objective of this paper is to explore and characterise this particular class of social information system, the case is considered to be revelatory (Yin, 2009) in that there are relatively few well-established social information systems that are available for observation and analysis. Following a largely interpretivist approach (Walsham, 1995, 2006), the data used to develop the following narrative is drawn from a variety of primary and secondary sources and has been collected over several years as part of an ongoing study. The description and discussion of the case study is presented in three sections.

First, an overview of a social information system called the Australian Indigenous HealthInfoNet which serves as a portal for information exchange among a variety of communities interested in different aspects of indigenous health, is presented. HealthInfoNet is assessed against characteristics of social information systems (Schlagwein *et al.*, 2011) to demonstrate that the system can be characterised as a social information system. The historical context in which HealthInfoNet was developed is also described in order to illustrate the primary motivations behind the system's development and the interests embedded in the system's operations.

Second, to illustrate that social information systems can involve multiple actors pursuing different interests, the network of actors concerned with one topic (Indigenous Road Safety (IRS)) supported by HealthInfoNet is examined in detail.

The actors involved in the wider IRS policy network and their online and offline interactions are the focus of this second part of the analysis. The relations among actors analysed occur within and across a range of state and federal agencies including collaborations with private sector organisations and local indigenous communities. In order to characterise the IRS network, it is assessed against the characteristics of issue networks developed by Marsh and Rhodes (1992).

Third, the integration of the HealthInfoNet into the wider IRS network is examined.

4.1 Data collection

The HealthInfoNet system and the wider IRS network involve traditional face-to-face interactions, information exchanges facilitated by standard e-mail communication, and online forms of interaction in virtual communities. Data collection therefore relied on a variety of sources to develop an understanding of how HealthInfoNet operates and the efforts to integrate it within the IRS network.

Understanding of the wider HealthInfoNet portal and its operation was primarily informed by separate interviews conducted with the director and two HealthinfoNet research officers responsible for the development of resources for the IRS topic. One of the features of Healthinfonet is the support for online discussions via "yarning places" which have been modelled on communities of practice. In addition to analysis of the structure and content of the HealthInfoNet IRS portal, the membership, activity and content of yarning place discussions were examined to provide an analysis of the structure of online interactions. Furthermore, the operation of HealthInfoNet promotional activities at national forums were observed.

Data which informs understanding of the wider IRS policy network has been collected through interviews with various participants in the network. In 2010, interview participants were identified using a snowball sampling approach. Commencing with the senior policy officer responsible for IRS at the coordinating agency for IRS policy in Western Australia, key projects related to IRS were identified, together with those individuals who were considered to be important stakeholders in the policy area. Interviews were subsequently conducted with 15 individuals in the Western Australian and national network, representing a range of local, state and federal government agencies, private sector organisations and research institutions. Interviews were semi-structured of 45-90 minutes in duration and focused on the interviewee's interest(s) and role(s) in the IRS policy network and their perceptions of the effectiveness of communication and collaboration within them. Where project documentation and reports relevant to road safety were available, these were considered in the analysis and used to further identify relevant stakeholders.

As the primary researcher has been involved in this project since 2006, he has also had many informal conversations with network participants. In particular he participated in two, two-day IRS forums (in 2006 and 2010) which physically brought together over 160 stakeholders in IRS across Australia to discuss policy directions. The field notes collected during these workshops also informs the analysis of the case.

As analysis of the various sources of data proceeded, a series of network maps were produced in order to visualise the network and relations between the various interacting organisations and individuals. The production of these maps was based on developing a matrix of data in which individual network participants (people) were matched against the various organisations that they were associated with. This network mapping approach can be considered as the development of a "two-mode" network in which relationships are identified through their co-membership (Wasserman and Faust, 1994).

The co-relation matrix was developed using the social network analysis software UCINET and subsequently visualised with the associated package NETDRAW. Due to the qualitative nature of data collection, the boundary of the network cannot be precisely determined and formal measures for analysing social networks (such as centrality and density) have not been estimated. These measures are, in fact, not required for this analysis, given its primary purpose was to identify the interactions in the network. The full network developed in the course of data collection comprised 192 individuals across 111 different organisations. Figure 2 depicts a sample network map which represents HealthInfoNet's relations with organisations in one State.

5. Case study: the Australian Indigenous HealthInfoNet

The Australian Indigenous HealthInfoNet is an internet-based resource which represents the front-end of a research centre located in a university in Western Australia. The mission of HealthInfoNet is "to contribute to improving the health of Australia's Indigenous people and assist in 'closing the gap' (between Indigenous and non-Indigenous Australians) by facilitating the sharing and exchange of relevant, high quality knowledge" (HealthInfoNet, 2013). The Australian Indigenous Healthinfonet acts as a "one-stop" portal to research and information on a range of Australian Indigenous health issues. The roots of Healthinfonet can be traced back to 1981 when the founding director (a medical doctor with a deep interest in indigenous health issues), was appointed to a research fellowship with a statutory body which promoted understanding and knowledge of Australian Indigenous cultures. In this role, Dr Thompson recognised that the knowledge base in relation to indigenous health was fragmented, inaccessible and inappropriate for the individual communities who needed the knowledge to take action at a local level (Thompson, 2005). In 1997 Dr Thompson developed HealthInfoNet based around the key tasks of; translation research (involving primary data collection and analysis, and the synthesis of a wide variety of data and other information obtained from academic, professional, government and other sources); and the dissemination and exchange of information. With the development of the internet capabilities in the 1990s, the original information "clearinghouse" functions of the centre, evolved towards the current platform. In addition to providing access to research reports and data on a wide range of health issues from heart disease and diabetes through to road safety, HealthInfoNet supports online discussions through various "yarning place" forums and chat rooms, and integrates Twitter and Facebook accounts.

As a research organisation, HealthInfoNet relies heavily on funds from external sources with core activities supported by the Australian Government Department of Aging and Health and specific research activities supported by funds and collaboration with a variety of sources including State government departments and federally funded programmes with interests in indigenous health. The organisational structure through which these activities are carried out is depicted in Figure 1.

The underlying design of HealthInfoNet content and structure was guided by an understanding of the fact that decision makers in areas of indigenous health cover a variety of roles from key bureaucrats and politicians, through to health professionals (including indigenous health workers, doctors and nurses), health service and health programme managers, researchers, teachers and students. Consequently, different types of knowledge and information are presented within a specific topic area targeted at four different types of potential users: those requiring a comprehensive introduction to an area of knowledge; those requiring comprehensive coverage of a topic

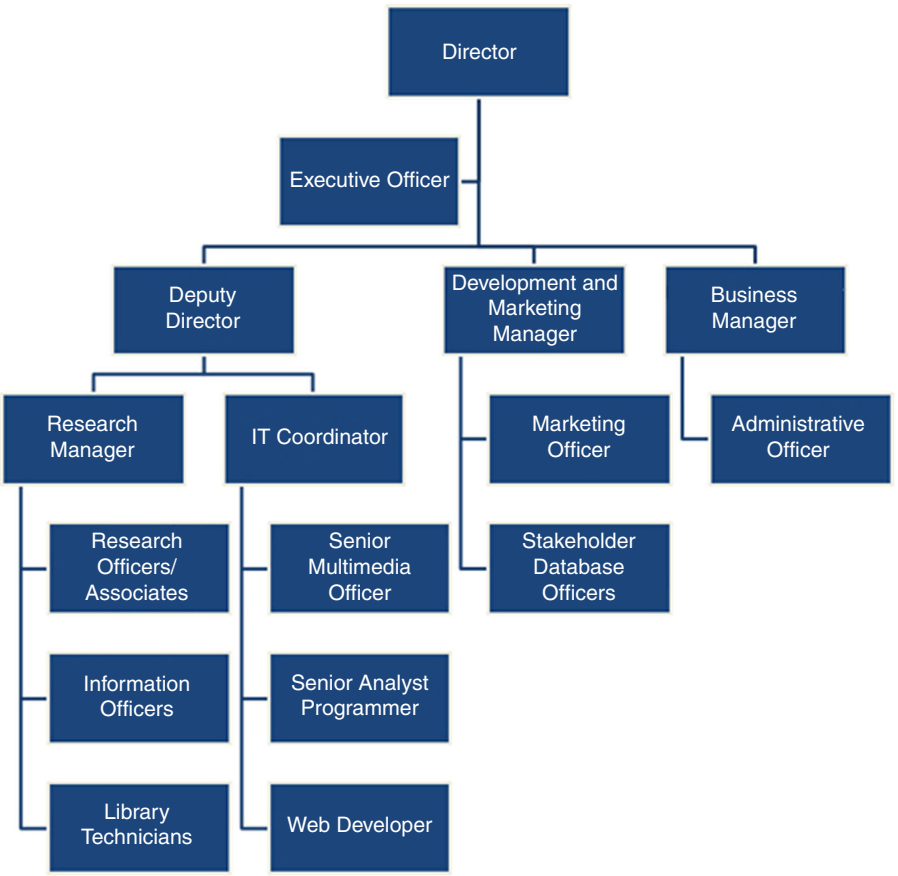

Figure 1.
HealthinfoNet organisation chart

(e.g. someone responsible for developing a programme or strategy); a member of the general public; and someone wanting an overview of indigenous health.

While, the HealthInfoNet portal provides a source for accessing information on over 60 indexed topics related to indigenous health, engaging the various potential users and stakeholders of this information is challenging. To address this challenge, HealthInfoNet aims to actively engage with indigenous communities as well as the various stakeholders with an interest in the related knowledge area. A primary mechanism used is to work with key government agencies and identify appropriate forums and conferences that will be attended by interested stakeholders. These "HealthInfoNet cafes" are designed to introduce conference participants to the available online services and to encourage enrolment into the appropriate discussion forums (yarning places).

5.1 HealthInfoNet as a social information system

From the perspective of understanding social information systems as "[…] information systems based on social technologies and collaboration" (Schlagwein *et al.*, 2011), it is possible to assess the characteristics of the HealthInfoNet portal. Table I shows that HealthInfoNet comprises all of the features ascribed to this perspective of social information systems.

Features of social information systems (Schlagwein *et al.*, 2011)	HealthInfoNet characteristics
Sociality: community; focus on information exchange	Brings together communities interested in aspects of indigenous health; makes various forms of information content available to different communities; yarning places promote information exchange through discussion forums
Openness – large number of users; voluntary contributions	Multiple users drawn from multiple agencies; multiple locations; voluntary participation
Contributors – externals; employees outside of formal hierarchy	Contributors are both internal and external to the formal HealthInfoNet structure
Contents – user generated	Mixed generation of content – generated both by HealthInfoNet through translation and external contributors
Technology – lightweight tool, flexible structures, open source software	Internet based; incorporates various social media tools; readily accessible from external locations and devices
Location – online; networked	Online; networked

Table I.
HealthInfoNet's social information systems characteristics

The following section describes the integration of the IRS HealthInfoNet resources into the wider network of stakeholders with interests in the topic.

5.2 The IRS network

Indigenous disadvantage is a constant theme in the realm of Australian social issues (Hunter and Jordan, 2010) and the multi-faceted nature of the problem of indigenous disadvantage carries over into the policy realm of road safety. Road traffic injuries are a major cause of death for all Australians but on a population basis, Indigenous Australians are significantly over-represented in crash statistics. For example, Indigenous Australians are two to three times as likely to have a fatal injury and 30 per cent more likely to have a serious injury compared to non-Indigenous Australians.

HealthInfonet's integration into the wider IRS network can be traced back to 2005 when the lobbying of various State and Federal government agencies secured funding to develop and support space on HealthInfoNet dedicated to IRS. The securing of this funding involved various actors in the area of indigenous health convincing other actors whose interests were primarily in the more general topic of transport safety, that IRS was a health issue that could be addressed through the resources and networks of indigenous health. In this sense, efforts were made to align the interests of road safety actors with those of indigenous health.

In Australia there is no single agency which has responsibility and authority for IRS nationally. However, the issues associated with IRS policy have been addressed directly and indirectly for many years by different state and federal government agencies. For instance, each of the state governments run separate agencies that administer indigenous affairs within their jurisdiction, as well as separate agencies to administer and regulate transport (road safety), health and law enforcement. Each of these agencies have interests in aspects of IRS policy but act as autonomous entities governed by separate legislation. At the level of the federal government, separate agencies responsible for each of state-level interests exist but with a national, rather than a state-based focus. Historically there had been little formal coordination of activities among the interested agencies and any collaboration in policy development was on an informal basis. In recognition of the need to take a more coordinated

approach to IRS, in 2006 the National Indigenous Road Safety Working Group (NIRSWG) comprising members of each state and federal agency with responsibility for road safety policy was formed. In the ensuing years, the IRS policy network that has emerged involves increasing levels of information and knowledge exchanges and collaboration horizontally within and across separate jurisdictions, as well as vertically between levels of government.

In analysing the IRS policy network, network analysis techniques were used to depict the variety of organisations involved. The term "organisation" is used here to describe both formal organisations (i.e. public sector agencies and private sector organisations) as well as formalised activities that bring people together in the network (i.e. committees, projects and services). Therefore individual members of the network can be associated with one or more organisations. A snapshot of the full network with a focus on only the state of Western Australia is depicted in Figure 2.

While all of the participants mapped in the IRS network had tangible interests in the wider policy area of IRS, it was clear that there were several different perspectives taken and some participants played more active roles than others. Following the Marsh and Rhodes (1992) model, the IRS network can be categorised as an issue network. Table II summarises the characteristics of the IRS network against the features of an issue network.

On closer inspection of the characteristics of the IRS network, it is seen that the work performed by various participants is multi-faceted and interactions actually occur in inter-related sub-networks. Interactions in these sub-networks are quite different in

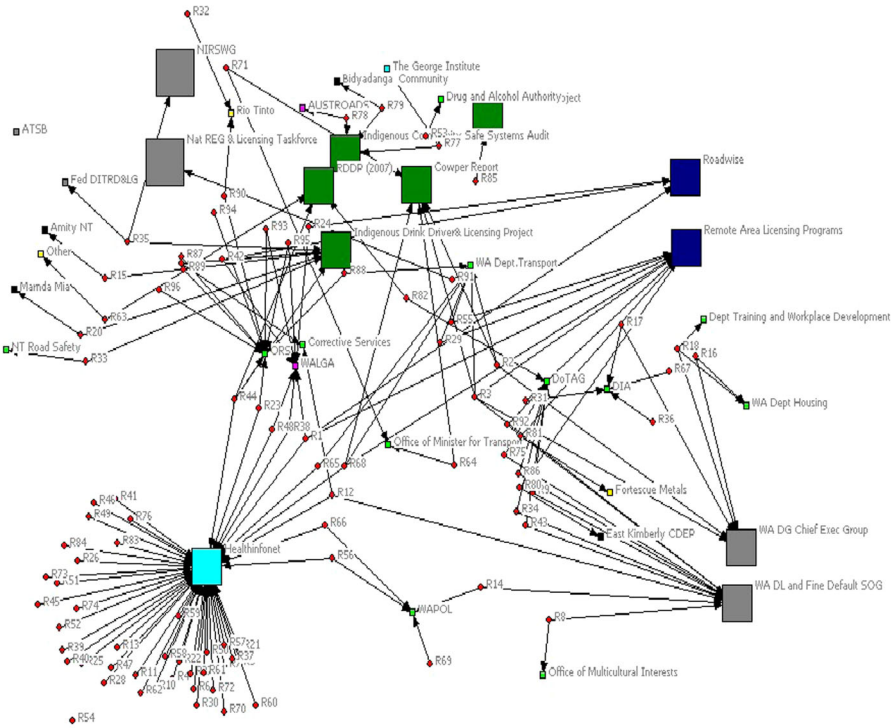

Figure 2.
Western Australian participants in the indigenous road safety network

Features of issue networks (Marsh and Rhodes, 1992)	Indigenous road safety network characteristics
Membership	
Number of participants – large	Over 192 individuals from 111 organisations identified as members
Type of interest – encompasses a range of affected interests	Indigenous road safety is the core issue with interest perspectives including indigenous health; vehicle transport, driver training and licensing; legal concerns; social welfare concerns
Integration	
Frequency of interaction – contacts fluctuate in frequency and intensity	Actors tend to interact within jurisdictions and organisations with less frequent interaction across sub-networks
Continuity – access fluctuates significantly	Interaction fluctuates according to current projects
Consensus – some agreement exists but conflict is present	Agreement around various issues and concerns related to IRS but emphasis on problem resolution varies across in interest types
Resources	
Distribution of resources (in network) – some participants may have resources but they are limited	Departments allocate limited resources to span jurisdictions as well as funding for HIN
Internal distribution – varied, variable distribution and capacity to regulate members	Various parties dedicate resources internally
Power – unequal powers reflecting unequal resources	Power tends to be concentrated in transport authorities and departments in providing support for projects including HIN

Table II.
Indigenous road safety network as an issue network

terms of how participants collaborate and exchange information and knowledge. Three distinct sub-networks can be identified.

First, programme and service delivery networks involve interactions which ultimately deliver a service to the community (e.g. a driver training programme). Programme and delivery networks are the touchpoints at which the recipients of the service will be engaged and therefore provide opportunities to exchange information with clients. Second, policy development and coordination networks involve interactions and exchanges that are relatively abstract, involving the negotiation of interests among stakeholders. They operate at a high level and are involved in agenda setting in the policy domain, obtaining funding for policy development activities, liaising with and coordinating stakeholder interests. Such interactions may have a political flavour as decisions need to be made regarding the allocation and distribution of resources. The impact of these allocation decisions will have repercussions for which projects and services are prioritised and funded in other sub-networks.

Third, research and projects networks are short-term collaborations which come together specifically to work on a project that will provide input to policy development. These networks rely on funding and emerge as the result of interactions in policy and coordination networks. The outcome of these networks feedback in to policy development and coordination networks. These sub-networks are the source of much of the new knowledge that is generated specifically in the policy area (Figure 3).

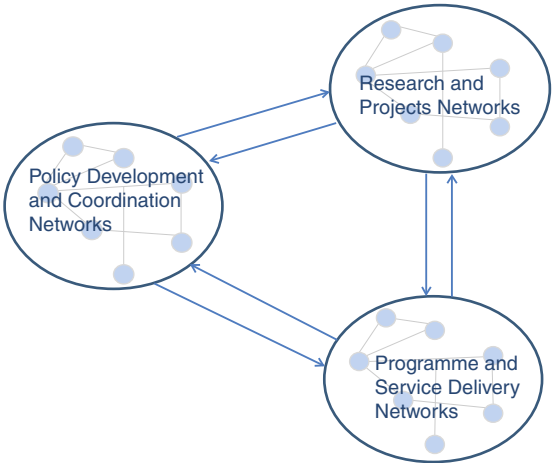

Figure 3.
Sub-networks in the wider IRS network

While membership of these sub-networks is not strictly circumscribed or mutually exclusive, they broadly pursue different interests and therefore have different information requirements.

5.3 HealthInfoNet's integration into the IRS network

The content of the IRS space on HealthInfoNet comprises over 200 documents related to IRS policies and strategies, programmes and projects, publications, resources and links to a wide array of related organisations and materials. The majority of materials available on HealthInfoNet IRS space are provided by various external agencies and curated by the HealthInfoNet research officers.

Members of each of the three sub-networks in the wider IRS network (service delivery, policy development and research) contributed material to the HealthInfoNet site. For example, agencies and programmes involved in service delivery networks have made available a variety of resources that can be used by community service providers; the responsible agency in each mainland state has made available the relevant policies and strategies that pertain to their jurisdiction; and independent research organisations has made available reports of their ongoing and completed research projects.

In 2011 the NIRSWG which provided funding for the IRS section of the Healthinfonet portal, commissioned an evaluation of the resource. That report concluded that the site had broad appeal and there is a high level of interest in the website from a diverse range of stakeholders and disciplines. The review's survey of stakeholders found that the information on the website is considered relevant and useful to people interested in IRS and is generally valued by practitioners who use it. The online forum (or "yarning place") was considered to be useful but not widely used. The commissioned evaluation concluded that the low usage is due to limited time availability on the part of stakeholders.

The findings of the review are consistent with the participants who were interviewed for this study. There was a high awareness of the site and a generally good knowledge of the available content. As a repository of resources for reference when preparing policy papers, Healthinfonet was seen as being valuable. However, the

material available on the site was not considered by any of the interviewees to be critical in performing their jobs since it could be sourced elsewhere. Furthermore, while it was acknowledged by interviewees that the discussion forum was useful for raising awareness of new projects and the posting of job opportunities, they were hesitant in their use of the forum for in-depth discussions of issues. Face-to-face and telephone conversations were viewed as being a more appropriate means for such discussions.

It was also clear from the network analysis that formal membership of the online network is very low among participants in the offline network[1]. The majority of the 150 or so members of the IRS "yarning place" are actually working in organisations related to indigenous health and have no direct links to the road safety network. This situation is depicted in Figure 2 in which membership of the IRS discussion forum (yarning place) is shown as the larger square in the bottom left hand corner of the diagram. Links to the wider IRS policy network is through a few key participants who are members of relevant agencies, working groups or committees. To some extent this is a reflection of the historical roots of Healthinfonet as a clearinghouse for indigenous health information. The policy world of road safety on the other hand has its roots in transport planning and engineering.

Despite the positive evaluation of the HealthInfoNet IRS resource, funding from the NIRSWG ceased in 2013. HealthInfoNet continues to maintain the existing road safety content but new material is not actively curated.

6. Discussion

HealthInfoNet can be considered a social information system both in terms of its use of social and collaborative technologies, and the underlying principles and objectives of ameliorating the complex social problems associated with the health of Indigenous Australians. IRS is only one of over 60 indigenous health topics supported by HealthInfoNet. While some other topics directly related to indigenous health are widely used in their respective networks, HealthInfoNet did not become fully integrated into the underlying sub-networks of IRS.

HealthInfoNet as an organisation has clear social objectives in improving indigenous health. In practice however, the IRS policy network context is not concerned with a single issue. Rather, it involves an ecology of interests being pursued by multiple actors. Within sub-networks, different actors pursue their own interests in relation to IRS. For example, the programme and service delivery networks include initiatives by transport agencies to provide education programmes to remote communities, as well as initiatives by justice and law enforcement agencies to ameliorate the consequences of incarceration of unlawful driving behaviour. Similarly, the projects and research networks include actors involved in projects managed by university-based research centres, as well as projects funded and managed by federal and state government agencies. While there is qualitative similarity between the types of work performed, the focus and objectives can be quite different.

Recognising that the IRS is an ecology has implications for the design and management of social information systems. For instance in the HealthInfoNet case, how social software tools might be used to support collaboration among members of an inter-agency working group is likely to be different from the way that a service provider might use social software to support a road safety programme targeted at a remote indigenous community. The features and collaborative tools available to the IRS network through HealthInfoNet however were designed based on the success of the portal in other indigenous health domains which were focused on the needs and

requirements of indigenous health workers. The dominant interests in the IRS network were those associated with the transport agencies which tend to view IRS as a systems and law enforcement issue rather than a health concern.

HealthInfoNet's failure to become fully integrated within the IRS sub-networks can be viewed in terms of questions of its institutional legitimacy. To be considered a legitimate entity, HealthInfonet would require a high degree of cultural and political support (Scott, 2001). By gaining national funding from the key transport agencies, HealthInfoNet was granted the legitimacy to act as a resource facilitating interaction within the wider IRS network. Thus, at a network-wide level, HealthInfoNet adequately supported the functions of an information repository and acted as a central reference for the various members of the wider IRS network. HealthInfoNet, however, did not build on this initial legitimacy in ways that addressed the contexts in which the various sub-networks operated and therefore was in some ways at odds with the norms, values and beliefs of the network participants (Suchman, 1995). In general, the day-to-day activities of network participants does not focus attention on IRS at a national level. Rather, participants are mostly focused on completing their specific projects, conducting their research or delivering services making use of their traditional ICT-based infrastructures. Use of HealthinfoNet is largely peripheral to their immediate concerns. As an opt-in platform for collaboration, HealthInfoNet did not develop sufficient legitimacy among sub-network participants to be fully integrated into network activity. The failure to fully integrate (institutionalise) HealthInfoNet into the IRS networks highlights that social information systems in policy networks are not necessarily centred on a single institutional context. Therefore such systems need to be institutionalised by a variety of participants interacting in a range of activities across organisational and jurisdictional boundaries.

7. Conclusion

This paper has investigated a class of social information systems which pursue objectives associated with societal benefit. It is proposed that such systems often deal with complex social problems and need to be integrated within the wider public policy networks associated with that problem. Through the description of the Australian Indigenous HealthInfoNet case and analysis of the IRS policy network, it was illustrated that policy networks are comprised of many actors engaged in different forms of activity. Interactions among actors in the policy domain are seen to cluster around sub-networks of activity which have different priorities and interests and pursue different objectives. The context into which the social information system is integrated is therefore not homogeneous and the policy network can be viewed as an ecology of interests.

The ecology of interests perspective brings into sharp focus that there are multiple institutional contexts in play. HealthInfoNet was successful in developing an institutional context around the wider IRS network but failed to address the needs and requirements of the major sub-networks. Key stakeholders were identified but the interests they pursued on a regular and ongoing basis were of passing concern in each of the sub-networks. Work within these sub-networks appeared were more focused on specific outcomes which did not require support from the HIN.

For social information systems which aim to address issues of societal concern, the need to think in terms of networks of organisations arises from the realisation that public policy issues are rarely discrete and cannot be handled by a single agency alone. Agencies need to collaborate with other agencies as well as a range of stakeholders and

actors external to the public sector (DeSouza, 2009). While communication in this wider range of networks may also be enhanced through the use of social media and technologies, key questions for social information systems arise with regard understanding how the interests can be accommodated and use ICT to facilitate collaborations within and across networks of agencies, stakeholders and other actors.

While this paper is based on a single case study, there are design and management implications of recognising that social information systems need to integrate within wider policy networks. Recognising the context in which these systems are integrated as an ecology of interests, shifts the focus of social information systems design from the examining the requirements of a relatively homogenous community of actors to understanding how social information systems can be developed to enable information exchange within and across heterogeneous communities. Any definition of technical, contextual and process requirements will be dependent on the sub-network under analysis. Therefore discerning the type of sub-networks and the underlying interests will be an initial step in the integration of any social information system. Furthermore, for complex policy arenas, the design should also consider relationships and exchanges with other sub-networks in the wider ecologies of interest.

Note

1. For an association with HealthInfoNet, the data collected only represents those participants who have formally registered as members of the IRS yarning place and does not include non-registered users of the HealthInfoNet resources or casual browsers.

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Corresponding author
Nick Letch can be contacted at: nick.letch@uwa.edu.au