Global Co-Operation in the New Millennium
The 9th European Conference on Information Systems
Bled, Slovenia, June 27-29, 2001

OPERATIONALISING GUIDELINES FOR INTER-ORGANISATIONAL SYSTEMS PLANNING: EXPLORING A LEARNING MODEL [RESEARCH IN PROGRESS]

Patrick Finnegan

Management Information Systems, University College Cork, Ireland
Tel: +353 (0) 21 4903344, Fax: +353 (0) 21 4903819
P.Finnegan@ucc.ie

Robert D. Galliers

Department of Information Systems, London School of Economics, Houghton Street, London WC2A 2AE, England
Tel: +44 (0) 20 7955 6019, Fax: +44 (0) 20 7955 7385
R.D.Galliers@lse.ac.uk

Philip Powell

School of Management, University of Bath, Claverton Down, Bath BA2 7AY
Tel: +44 (0) 1225 323256, Fax: +44 (0) 1225 826473
mnspp@management.bath.ac.uk

ABSTRACT

This paper addresses the issue of operationalising guidelines for IOS planning. The authors explore the usefulness of Triple Loop Learning in light of the IOS development experiences of three inter-organisational networks. They conclude that the principles of Triple Loop Learning explain the evolutionary planning process studied, and that further analysis must be undertaken to determine the suitability of the underlying techniques.

1. INTRODUCTION

While the emergence of electronic trade and commerce has increased the profile of inter-organisational systems (IOS), it has also resulted in a growing need to develop guidelines for their successful implementation. Planning can contribute significantly to successful IOS implementation (Finnegan *et al*., 1998a). However, it suffers from a paucity of empirical research. Researchers advocate a move towards externally-oriented IS planning processes as the importance of the environment increases. Indeed, emergent approaches to strategy formulation place much emphasis on consideration of external entities. However, development of an IOS involves more than this. As IOS become more complex and have a significant impact, situations where one organisation develops a system and simply extends it to others will be

inadequate, especially IOS that require business processes to be altered. Early IOS were developed internally and extended to others. Success had as much to do with serendipity as with planning. They had little impact on processes and used existing IT. As systems become more complex, this research argues that planning needs to be inter- rather than intra-organisational.

2. CURRENT VIEW OF IOS PLANNING

Our previous research (Finnegan *et al*, 1998b) illustrates that IOS planning has more to do with spheres of influence within inter-organisational networks than with technology or structures. Planning processes emerge from how this influence is leveraged rather than from a formulated structure, illustrating that the manner in which decisions are made and implemented is the result of an evolving set of IOS planning environments that can be characterised according to the dispersal of power and influence.

IOS planning environments can be typified along a continuum ranging from monarchist to club. The monarchist environment is based on a strong organisation that holds power over others. Planning is traditional as the strong organisation can set objectives and design a process that others must meet. Conversely, the club environment is based on the premise that no single organisation holds much power. The planning process is more participative as participants must attempt to accommodate each other's needs and expectations. This is a learning environment where strategies tend to evolve.

Planning environments are not inter-organisational structures such as those proposed by Konsynski and McFarlan (1990). Rather, they relate to the dispersal of planning influence with networks. Planning environments are an appropriate basis from which to develop IOS planning guidelines since they affect the approaches open to participants and deal with the negotiation/co-operation aspects that are important. Operational aspects of IOS planning also differ, evidenced by how the planning environments influence the approaches individual organisations take, roles adopted, the manner in which changes in organisational activity are handled, and how planners deal with technology and systems planning. Planning guidelines consequently need to focus on 9 issues (Table 1).

Guidelines should:
1. Enable individual organisations to investigate their network position, and determine their role in the planning environments
2. Facilitate design of IOS planning processes for individual organisations, and at a network level, appropriate for their role in the planning environment
3. Delineate inter-organisational roles and assigning people to these consistent with the planning environment
4. Co-ordinate network participants in efforts to match business requirements with IOS infrastructure consistent with appropriate planning environments
5. Determine the effects of IOS on organisational activity that recognises the dependence of such considerations on IOS planning environments
6. Proactively determine organisational changes that facilitate the consideration of external parties
7. Aid inter-organisational planning for structural integration recognising the substantive issue as being beyond systems and technology
8. Cover data planning issues of ownership, sharing methods and editing rights
9. Facilitate planning for systems and technology that is inclusive of all stakeholder needs. These should consider communications standards and protocols as well integration with internal systems

Table 1: *IOS planning guidelines*

These proposals require operationalisation. While action research is appropriate, there is a need to analyse organisational experience in light of our understanding of existing methods. This paper examines IOS

planning in light of the principles of Triple Loop Learning (Flood and Romm, 1996). This examination is considered appropriate as IOS planning is dominated by spheres of influence termed 'planning environments', which necessitate learning and the consideration of power play in the planning process.

The work of Flood and Romm (1996) is centred on managing the diversity of issues within organisational affairs in a manner that ensures that choices regarding models, methodologies and theories are made intelligently and responsibly. According to Flood and Romm 'triple loop learning is about increasing the fullness and deepness of learning about the diversity of issues and dilemmas faced. It is about ways of managing them. It wants to establish tolerance between all three centres of learning and preserve the diversity therein. It does this by bringing together the three centres of learning from the three loops in one overall awareness.' There are three types of single loop learning, each with a specific focus. The first asks whether something is being done right. The second asks whether the right things are being done, in recognition that the identification of things to do is problematic. The third 'centres the issue that rightness is often buttressed by mightness, and mightness by rightness, resulting in very little learning at all' (Flood and Romm, 1996). Useful approaches at each centre of learning are shown in table 2.

Centre of Learning	Useful Approaches
Design Management	Hierarchical Relationships Democratic Hierarchy Organic Organisation Viable Systems Community Organisations Postmodern Organisation
Debate Management	Action Learning Action Research Strategic Assumption Surfacing and testing Soft Systems Methodology Postmodern debate
Might – Right Management	Dialogical Intervention Strategy Critical Systems Heuristics Collaborative Inquiry Self-Reliant Participatory Action Research

Table 2: *Approaches to Centres of Learning*

3. DATA GATHERING

Our empirical evidence is gathered from case studies of three inter-organisational networks. Cases are most appropriate when the objective involves studying contemporary events, without the need to control variables or subject behaviour. The inter-organisational networks were selected on the basis of type, structure of network, type of planning experience, technology and systems. The study examines the planning processes within the network. The cases illustrate diversity in the nature of networks rather than any preconceived notion of best practice.

The primary methods of data collection were interview and document analysis. The choice of personnel was based on willingness to co-operate, involvement in IOS implementation, knowledge, and seniority.

Network 1 operates in the pharmaceutical industry and uses an open-standard IOS, co-operatively developed by wholesalers and pharmacies during the mid-1980's to share information on product pricing and availability, and to act as an electronic market for ordering.

Network 2 uses EDI-based IOS operating between a supermarket and its suppliers in the Irish grocery sector. The systems involve invoicing, price catalogues, credit notes, and dispatch advice.

Network 3 is a group of 15 European organisations, operating virtually to provide and promote technologies for process transformation via Internet-based products and services.

4. PRELIMINARY ANALYSIS

Different planning environments operated within the networks. However, Network 2 (retail) can be characterised as monarchist, and Network 3 (virtual) tended to club, with Network 1 (pharmaceutical) operating in-between. However, within these classifications others are evident. Technical issues in Network 3 were generally approached in a monarchist manner.

A review of the proposals (table 1) indicates that IOS planning guidelines have to enable all three centres of learning. All guidelines necessitate consideration of whether the network or firm is 'doing the right things' and whether 'rightness is butressed by mightness or vice versa'. In addition, proposals 2, 5, 8 and 9 point to the need for the first centre of learning; a consideration of whether 'we are doing things right'. However the principles of triple loop learning indicate that interventionists in systems (planners) must consider each learning centre as part of the overall process.

4.1. Loop 1: Design Management

Design management is concerned with organisational design and process design. The planning guidelines identify needs for both; for individual organisations and for the network. An organisation must consider its own design in relation to the needs of the network and ask whether they are 'doing the right thing'.

The research demonstrates that organisational and network design was not clearly addressed as part of the planning process. There is no evidence that any organisations considered their design as a consequence of their network involvement. The pharmaceutical and retail networks evolved as natural extensions of existing transactional relationships. Organisations in network three did not have a pre-existing relationship. An examination of network relationships reveals that network one can best be described as pooled interdependence, network two as sequential, and network three as reciprocal interdependence as defined by Kumar and Van Dissel (1996). However no consideration was given to whether the inter-organisational network was 'right' given these inter-dependencies.

The effects of IOS on structure was not considered by their implementers. The potential of such systems to affect structure was realised, but not planned for. However, according to one partner (Network 3), *'as a virtual organisation, a completely new organisational structure was being created using IOS'*. However, while at a high level this structure was planned, roles and their consequential structural issues emerged as opposed to being formulated, '*The structures being created were dependent on the organisations involved. These structures were centred around areas of expertise, and evolved more than were planned'*. When the planning process considered explicit roles and tasks within the context of delivering a commercial product, it based many decisions on roles that participants already fulfilled.

In terms of affecting processes, the cases reveal that IOS begin as a technical issue that tend to spread into other organisational facets. A pattern emerges whereby IT staff champion the IS/IT, and convince senior management and functions to adopt it. When the systems become stabilised, they become the responsibility of functions. Process changes occur at this level rather than as a result of top-down planning. However, some procedures may be developed as part of the process.

4.2. Loop 2: Debate Management

Debate management is concerned with the learning and understanding that comes from the process of debate. Central to this is that people are informed of the issues, given the opportunity to participate, and to influence the outcome. Our analysis indicates a need for a transparent process for establishing whether the 'right things are being done'.

Planning begins as a learning process where organisations attempt to find out about IOS technologies and their application in specific circumstances. This creates a business argument, used to conceptualise the nature of the systems. This process is inter-woven with issues of the nature of data to be exchanged. Finally, an implementation process is planned. A dominant partner who imposes or sells these decisions to trading partners may undertake all these. Alternatively, the processes can be more co-operative. Nevertheless, knowledge of the technology or experience of its use elsewhere proves an advantage in convincing partners to support the ideas.

Even with a strong proponent leading IOS strategy, planning requires lower level decisions. IOS planning decisions are taken in one of two ways. First, issues were debated to reach a solution. Second, one member made the decision and sold it to others. Many of these decisions concerned details relating to technology or process requirements. Power and influence of key players are an important element of these decisions, regardless of whether the decision process was by negotiation or by decree. The hub firm and the VAN in the retail network made the technical decisions. Decisions in the others were more co-operative. However, partners with technical expertise were influential. Nevertheless, the nominal involvement of interest parties made implementation of technical decisions easier.

4.3 Loop 3: Might – Right Management

Loop 3 is reflective and considers how design and debate management are undertaken in context of the underlying power plays.

IOS is based more on the strategies of individual organisations rather than on a network strategy. These individual strategies led organisations to work together, and, often, the network strategy emerged from the collective strategies of network participants rather than being formulated in advance. However, it is notable that, where one organisation had a more powerful market position, their strategy became the default network strategy. Lower level decision making and planning appears, therefore, from negotiation among participants based on their own goals. It is at this level that key decisions are made regarding systems, data and technology.

It is clear that decisions regarding design and debate management were influenced by the power of the individual organisations. Individual organisations often sought outcomes that would preserve their organisational status quo rather than advance the network. It is in this context that the consideration of IOS planning within the context of triple loop learning may prove most beneficial it may result in a more transparent process for less powerful organisations.

5. CONCLUSIONS

Planning tends to have similar features in all networks, despite a lack of formal debate on the form that planning should take. Planning displays characteristics of the organisational IS planning approach (Earl 1993), where planning is a continuous decision activity shared by the business and IS. Planning contributes to the development of IOS by helping to establish co-operation as well as negotiating systems and other details within the confines of inter-organisational influence and objectives. Planning is a negotiation tool used by participants to establish inter-organisational arrangements and delineate systems products. However, existing processes suffer from excessive power-play in relation to design and debate management.

Our preliminary analysis indicates that the three centres of learning approach is useful in explaining much of the evolutionary activity that is labelled planning. The organisational aspects of the current approaches lead to decisions regarding design and debate management that favour more powerful players. Consequently, the principles underlying triple loop learning appear useful for operationalising planning guidelines in a manner that may be more intelligent and responsible regarding inter-organisational choices. The next stage of the reseach is to investigate the appropriateness of the underlying techniques in the context of such operationalisation.

REFERENCES

Earl, M. (1993) Experiences in strategic IS planning, *MIS Quarterly*, 17(1) 1-24.

Finnegan, P., Golden, W. and Murphy, D. (1998a) Implementing EDI, *International Journal of Electronic Commerce*, 2(4) 27-42.

Finnegan P., Galliers, R. and Powell, P. (1998b) "Inter-organisational Systems, Strategy and Structure: The Case for Planning Environments" *Australian Journal of Information Systems*", 6(2) 45-55.

Flood, R. and Romm, N. (1996) *Diversity Management: Triple Loop Learning*, Wiley, Chichester.

Konsynski, B. and Mcfarlan, F. (1990) Information Partnerships, *Harvard Business Review*, (5) 114-120.

Kumar, K. and Van Dissel, H. (1996) Sustainable Collaboration, *MIS Quarterly*, 20(3) 279-300.